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Realising the Challenge of Data Noise in Post-Liberation Syria

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Abstract

Syria's post-liberation reconstruction presents an unprecedented challenge, with economic output declining by over 60% and reconstruction costs estimated at hundreds of billions of dollars. However, the country faces a more fundamental obstacle that precedes physical rebuilding: the fragmentation, inconsistency, and unreliability of national data. The World Bank has explicitly documented that "data for estimating monetary poverty in the Syrian Arab Republic are outdated" and that the country faces a context of "data scarcity" requiring innovative methodological approaches.

This paper introduces the concept of "data noise" as a framework for understanding Syria's statistical crisis—the proliferation of fragmented, inconsistent, and methodologically flawed information that obscures rather than illuminates reality. Drawing on evidence from United Nations assessments, IMF technical assistance, in-depth Syrian media investigations, and the Syria Advancement Lab's field research, the paper argues that Syria must prioritize a national transformation program to clear this noise through the establishment of a coherent system of key national indicators (KNIs). The paper demonstrates that institutionalizing data systems is not merely a technical exercise but a foundational requirement for building trust, attracting investment, and enabling evidence-based governance.

The paper further examines comparative cases from Iraq, Yemen, Bosnia, Lebanon, and Rwanda, revealing that post-conflict data challenges are a common but surmountable obstacle. The analysis shows that success depends on institutional independence, methodological innovation, transparent governance, and sustained international partnership.

The paper concludes that the cost of failing to address data noise is staggering, misallocated resources, missed opportunities, and a reconstruction process that perpetuates rather than rectifies the inequalities and inefficiencies of the past. The cost of a national transformation program, by contrast, is modest compared to the reconstruction bill. In the arithmetic of post-liberation recovery, reliable data is not a luxury but an essential investment in Syria's future.

Keywords: Data noise, Syria reconstruction, key national indicators, post-conflict statistics, institutional transformation, evidence-based governance, data scarcity, political manipulation of statistics, humanitarian data, SDG framework

1.0 Introduction: The Information Deficit in Reconstruction

Fourteen years of conflict have left Syria facing one of the most complex reconstruction challenges of the twenty-first century. The World Bank estimates that Syria's GDP has contracted substantially from pre-conflict levels, and poverty has surged from 12% to over 65% of the population (Redaelli, Infanzon, & Moreno Herrera, 2024). The cost of reconstruction is estimated at between \$216 billion and \$400 billion, dwarfing the country's current economic capacity.

Yet alongside this physical and economic devastation lies a less visible but equally damaging crisis: the collapse of Syria's statistical and information systems. The United Nations Human Settlements Programme (UN-Habitat) has documented that "the lack of a harmonised reporting format between local, national and international stakeholders has complicated the process of including studies' results into strategic resource allocation processes" (UN-Habitat, 2022). Moreover, "the unavailability of comprehensive cross-sectoral datasets is an obstacle for devising and implementing resource efficient and transformative recovery actions" (UN-Habitat, 2022).

The depth of Syria's data crisis is starkly illustrated by the fact that the last comprehensive national census was conducted in 2004, leaving a critical gap of over two decades with only fragmented estimates of the population. Syrian media investigations have revealed that official statistics have often been deliberately manipulated for political purposes. As one source from the Central Bureau of Statistics (CBS) told Independent Arabia, "We are governed by governmental directives that are not subject to appeal or discussion. Sometimes we issue statistics that cannot pass even a small child, such as the population count of Syria; we raise the count by millions every year without any methodological, scientific, academic, or even statistical basis—we are given ready-made numbers to publish" (Independent Arabia, 2024). An economic advisor confirmed this practice, explaining that "when you claim to have 30 million Syrians instead of 10 million, you pressure the United Nations and its organizations to increase aid," while acknowledging that "there are not 30 million Syrians residing inside Syria today after a decade and a half of war and the emigration of 7 million people" (Independent Arabia, 2024).

The World Bank has further confirmed that "data scarcity" is a defining feature of Syria's current information landscape, with the most recent comprehensive Household Income and Expenditure Survey dating to 2009—over a decade and a half out of date (Redaelli, Infanzon, & Moreno Herrera, 2024). The Bank's analysis notes that "in the context of data scarcity," researchers must rely on methodological innovations such as "poverty nowcasting" to address "the knowledge gap regarding welfare in Syria over the past decade" (Redaelli, Infanzon, & Moreno Herrera, 2024).

This information deficit creates what we term "data noise"—the proliferation of competing, inconsistent, and incomplete information that obscures rather than illuminates Syria's true condition. The UN has identified that "years of conflict have fragmented urban systems, displaced communities, and weakened local capacities," creating a situation where "significant data exists across humanitarian, development, and public sectors—ranging from satellite imagery and administrative records to socio-economic surveys and needs assessments—[but] these datasets remain fragmented and rarely integrated into long-term recovery strategies" (UN World Data Forum, 2025).

2.0 Understanding the Risks of Data Noise

2.1 Defining Data Noise

In signal processing and information theory, "noise" refers to unwanted or meaningless information that interferes with the clarity and utility of a signal. By analogy, data noise in the context of national statistics and policymaking refers to the proliferation of fragmented, inconsistent, contradictory, politically manipulated, or methodologically flawed information that obscures rather than illuminates reality. Data noise makes it difficult for decision-makers to distinguish between reliable signals (accurate, actionable information) and misleading interference (inaccurate, biased, or irrelevant data).

Data noise is not simply the absence of data—though that is a significant problem in Syria—but the presence of too much low-quality, contradictory, or strategically distorted information that overwhelms the capacity of policymakers, investors, and international partners to make sound decisions.

The concept of "data noise" is central to understanding Syria's current statistical crisis and the imperative for a national transformation program. This section elaborates on what data noise means, its manifestations in the Syrian context, and why clearing this noise is essential for effective reconstruction.

2.2 Manifestations of Data Noise in Syria

2.2.1 Numerical Noise: Contradictory Estimates for the Same Indicator

One of the clearest manifestations of data noise is the proliferation of widely divergent figures for the same phenomenon. In Syria, this numerical noise is pervasive across multiple sectors:

Population Estimates: As documented by Enab Baladi (2022), in northwestern Syria alone, the UN Office for the Coordination of Humanitarian Affairs (OCHA) estimated the population at 4.6 million, the Humanitarian Needs Assessment Programme (HNAAP) estimated 4.5 million, and the Assistance Coordination Unit (ACU) estimated 5.39 million. This represents a gap of approximately 700,000 people—nearly 20% of the population—in a limited geographical area. At the national level, the Central Bureau of Statistics (CBS) claimed the population had grown from approximately 20 million in 2004 to 30 million in 2024, despite the emigration of 7 million people during the conflict (Independent Arabia, 2024). These figures are not merely different; they are logically incompatible.

Poverty Rates: The United Nations and the World Bank estimate that approximately 90% of Syrians live below the poverty line. However, Syrian economic advisors acknowledge that "in reality they have become 99% effectively" (Independent Arabia, 2024). The gap between 90% and 99% represents approximately 1.5 million people—a difference that fundamentally affects the scale of humanitarian response required.

Death Toll: The Syrian conflict alone caused an estimated 306,887 civilian deaths between 2012 and 2022, but this figure does not include indirect deaths from lack of health services, clean water, and food. The National Institutes of Health (2025) notes that methodological differences "lead to different estimates that can be difficult to interpret and may prompt questions about the validity of estimates."

Military Personnel: As documented by Independent Arabia (2024), estimates of the Syrian army's size ranged from 178,000 to 325,000 personnel, with official sources maintaining complete secrecy, making it impossible to verify any figure.

This numerical noise creates a situation where policymakers must choose between competing versions of reality—a choice that has profound implications for resource allocation and policy design.

2.2.2 Methodological Noise: Incompatible Approaches to Data Collection

Data noise in Syria is exacerbated by the use of fundamentally different methodologies that produce incomparable results. Enab Baladi (2025) identified several methodological sources of noise:

Ad-hoc vs. Systematic Collection: UN-Habitat (2022) documents that "due to limited capacities, municipalities in general collect data on an ad-hoc basis, and not according to agreed indicators or methodologies." This means that data from different municipalities cannot be aggregated or compared.

Different Sampling Frames: International organizations use different sampling methodologies, geographical coverage, and temporal frames. The UN Multiple Indicator Cluster Survey (MICS) dates to 2006, while Humanitarian Needs Overviews sample 20,100 households but use different definitions and methodologies.

Definitional Inconsistencies: What constitutes a "refugee," an "IDP," a "casualty," or even a "household" varies across sources. These definitional differences create data that cannot be reconciled, even when covering the same geographical area.

Formal vs. Informal Economy: The formal statistical system cannot capture the massive informal economy. Dr. Abdullah Al-Obaid notes that "informal estimates indicate that 60-70% of economic activity has become unregistered, due to the collapse of the tax system and the shift of economic activity to the black market" (Enab Baladi, 2025). This creates a fundamental gap in economic data that no single methodology can easily bridge.

Dr. Ramazan Darwish, a professor of applied statistics, emphasizes that "the current period is considered one of the most precise and difficult stages Syria has passed through in its modern history, because it requires rebuilding society with its indicators and rebuilding all its institutions on sound foundations, far from the personalization and privileges of parties, individuals, or private agendas" (Enab Baladi, 2025). He argues that "the correctness of decisions depends on the accuracy of information, especially the accuracy of the statistical figure, because statistics provide the decision-maker with information that guides their appropriate and timely decision" (Enab Baladi, 2025).

The United Nations has recognized the imperative of data noise through the development of what it terms the "SDG11+" framework which aims to capture activities and outcomes at several levels of engagement, from neighbourhood to city to national scales (UN-Habitat, 2022). This framework draws on 37 indicators across thirteen different Sustainable Development Goals, providing a structured approach to data collection and analysis that can guide reconstruction.

2.2.3 Political Noise: Deliberate Data Manipulation

Perhaps the most destructive form of data noise in Syria is the deliberate manipulation of statistics for political purposes. Independent Arabia (2024) documented that:

- The Central Bureau of Statistics was given "ready-made numbers to publish" by the former regime, with officials acknowledging that statistics were "not subject to appeal or discussion."
- Population figures were inflated to pressure international organizations for increased aid, with one official acknowledging that "when you claim to have 30 million Syrians instead of 10 million, you pressure the United Nations and its organizations to increase aid."
- Statistical secrecy was a deliberate state policy rooted in "a policy of extreme secrecy and information confidentiality, no matter how simple or obvious it may seem," which is considered "part of the psychological and media warfare" dating back to the era of Hafez al-Assad.

The Humanitarian Practice Network (2025) further documented how international organizations were drawn into this political noise, with the UN's interpretation of state consent being "weaponised by the Assad regime to obstruct aid." The UN in Damascus "surrendered independence at the operational level," and "state consent became the primary gatekeeper of humanitarian access." This meant that even international data was subject to political constraints and manipulation.

2.2.4 Institutional Noise: Fragmentation and Coordination Failures

The fragmentation of data collection across numerous institutions creates another layer of noise. The Humanitarian OpenStreetMap Team (2025-2026) documented that "the fragmentation of datasets across institutions and platforms meant that actors were often working with different, incompatible versions of reality." This institutional noise is characterized by:

Siloed Data: UN-Habitat (2022) notes that "significant data exists across humanitarian, development, and public sectors—ranging from satellite imagery and administrative records to socio-economic surveys and

needs assessments—[but] these datasets remain fragmented and rarely integrated into long-term recovery strategies."

Operational Fragmentation: The UN's "Whole of Syria" framework operates through three distinct hubs—Damascus, Gaziantep, and Amman—each managing access through different political and operational channels. This creates "a delicate balance of political and operational autonomy across hubs" rather than unified data collection and analysis (Humanitarian Practice Network, 2025).

Exclusion of Local Actors: Health information systems in northwest Syria, such as the Early Warning Alert and Response Network (EWARN) and Health Resources and Services Availability Monitoring System (HeRAMS), are "directed toward advocacy and managed by external experts with little participation or access from local stakeholders to these datasets" (King's College London, 2024). This institutional noise means that data is collected but not meaningfully shared with those who need it for planning and decision-making.

2.2.5 Temporal Noise: Outdated Data and Discontinuous Time Series

Temporal noise refers to the unreliability caused by outdated data and the absence of consistent time series. In Syria, this manifests as:

Outdated Baselines: The most recent comprehensive Household Income and Expenditure Survey dates to 2009, and the current statistical base year is 2000—a quarter-century out of date (IMF, 2025). This means that all economic indicators are built on fundamentally outdated foundations.

Discontinuous Collection: Population censuses have been suspended since 2004, despite Syria experiencing the largest internal and external displacement in its modern history (approximately 13 million displaced according to the UN) (Enab Baladi, 2025). The absence of regular updates creates data gaps that cannot be filled through modeling alone.

Intermittent Reporting: Data is often "published intermittently or incompletely, with a lack of regular updates since 2011" (Enab Baladi, 2025). This makes it impossible to identify trends or assess the impact of policies over time.

2.2.6 Trust Noise: The Erosion of Data Credibility

The cumulative effect of these forms of data noise is the erosion of trust in data itself—what we term "trust noise." When stakeholders cannot distinguish between accurate and inaccurate data, they become skeptical of all data. This has several consequences:

Investor Hesitation: The World Bank (2025) stated that "economic data for Syria is extremely scarce and hard to come by," creating uncertainty that deters investment.

Policymaker Paralysis: Dr. Zukwan Qureit notes that "any defect or deficiency in [statistical data] is a disaster, and it is backwardness itself, as the success of developed countries is based on correct information and data" (Enab Baladi, 2025). Without confidence in data, policymakers fall back on intuition, ideology, or patronage.

International Distrust: A "persistent deficit of trust in the UN constrains its ability to lead, adapt, or credibly coordinate the response in Syria" (Humanitarian Practice Network, 2025). This institutional distrust extends to all data produced through UN channels.

Citizen Alienation: it is important that official statistical structures be given independence and the authority to publish data accurately and transparently so that citizens can trust government decisions (Enab Baladi, 2025).

2.3 Comparison with Post-Conflict Regional Cases of Data Noise

Syria's struggle with "data noise" is not unique. Several countries emerging from prolonged conflict have faced similar crises of fragmented, politicized, and unreliable statistical systems. Examining these cases provides valuable lessons for Syria's own transformation program.

2.3.1 Case of Iraq

Iraq's experience following the 2014-2017 conflict with ISIL offers striking parallels to Syria. The conflict displaced over 6 million Iraqis – around 15 per cent of the entire population of the country (International Organization for Migration, IOM, 2024). This massive population movement created enormous challenges for data collection and statistical accuracy.

IOM Displacement Tracking Matrix (DTM) serves as a primary data source. The DTM collects data on numbers and locations of IDPs and returnees using an extended network of over 4,000 Key Informants (IOM Iraq, 2024). However, the methodology involves complex tracking systems with significant challenges in accuracy. The IOM differentiates between conflict-induced displacement and displacement from natural disasters, creating definitional complexities that affect data comparability (European Union Agency for Asylum, 2025). The geographic dispersion of displaced populations creates enormous logistical challenges for comprehensive data collection, resulting in gaps that undermine national statistical systems.

This mirrors Syria's problem of multiple actors using different methodologies, producing incompatible data sets.

The DTM's Location Assessment collects information at aggregate level, on the majority of IDPs and returnees living in a given location, and not on individual families. Sex and age disaggregated data is collected on a random sample of 30 families in each location, and the IOM explicitly cautions that "the precision of these estimates is variable: the higher the number of IDPs in a location, the less precise the estimates are. The precision decreases considerably when numbers are added up at a district or governorate level. Therefore, these numbers must be read with caution" (IOM Iraq, 2024). This selective coverage creates data that cannot be generalized to the entire displaced population—a form of methodological noise directly comparable to Syria's fragmented data landscape.

2.3.2 Case of Yemen

Yemen's statistical system has experienced an almost complete cessation in statistical production, analysis and dissemination during the current war (OECD, 2026). This represents perhaps the closest parallel to Syria's institutional collapse.

The Central Statistics Organization (CSO) in Yemen stopped conducting key statistical activities after 2015, including the production of national accounts statistics (IMF, 2025). Reliable data collection has not occurred since 2014, forcing the IMF and World Bank to provide partial estimates (OECD, 2026). *This mirrors Syria's situation where the Central Bureau of Statistics has been unable to conduct regular surveys or maintain consistent statistical production.*

The World Bank noted that "the protracted conflict has deeply weakened Yemen's statistical system and public finance management, undermining evidence-based policymaking and economic recovery" (World Bank, 2025). The CSO has been split between Sana'a and Aden since 2019, leaving CSO-Aden with limited resources and capacity (OECD, 2026).

Yemen's statistical system suffers from "lack of co-ordination between different sectors, stemming from the weak role of CSO and a generally low statistical culture across institutions" (OECD, 2026). This "institutional noise" reflects the same challenges identified in Syria's system, where "the institutional overlap between public bodies" undermines data coherence.

2.3.3 Case of Bosnia

After the 1992-1995 war, Bosnia's economic output plunged to merely 10% to 30% of pre-war levels by late 1995. Gross domestic product shrank to below 20% of pre-war levels, with per-capita income being less than \$500 (CIA, 1996). The war displaced about half the prewar population of 4 million, with 750,000 fleeing the country (CIA, 1996). This demographic upheaval made population data—a cornerstone of any statistical system—fundamentally unreliable.

The Bosnian statistical system faced severe capacity challenges. The CIA estimated post-war reconstruction costs for Bosnia at "at least \$8 billion," but explicitly caveated that "these numbers should serve only as approximate orders of magnitude," noting that "undetermined variables or changes in our assumptions could substantially alter these estimates" (CIA, 1996). This uncertainty reflects the fundamental data noise that plagues post-conflict economic planning—the very problem Syria now faces.

2.3.4 Case of Lebanon

Lebanon's recent experience following the 2023-2024 conflict offers insights into the role of international organizations in post-conflict data collection (World Bank, 2025).

The World Bank's Rapid Damage and Needs Assessment (RDNA) for Lebanon estimated reconstruction and recovery needs at \$11 billion (World Bank, 2025). The assessment methodology combined "ground- and remote-based data, including ground surveys, key informant interviews, sample visual checks, satellite imagery, Synthetic Aperture Radar analysis, anonymized cellphone data, and social media analytics" (World Bank, 2025). This hybrid approach reflects the necessity of innovative methodologies when traditional statistical systems are compromised. However, the underlying data required for these estimates—population numbers, housing stock, economic activity levels—was itself compromised by the conflict. This circular challenge mirrors Syria's situation: reliable data is needed for assessment, but assessment itself depends on reliable data.

This collaborative approach, while valuable, also reflects the fragmentation and potential methodological inconsistency that can arise when multiple actors with different mandates and approaches coordinate data collection. Lebanon demonstrates the value of rapid, multi-method assessments in post-conflict settings. However, the need for international coordination—and the potential for fragmentation—offers important lessons for Syria's own reconstruction planning.

3.0 Methodology

This paper employs a multi-method qualitative research approach designed to capture the full complexity of Syria's statistical crisis and identify actionable pathways for reform. The methodology is structured around four complementary components that together provide a comprehensive understanding of the problem and its potential solutions.

3.1 Research Design

This study adopts an exploratory case study design focused on Syria's statistical system as a single, bounded case. The case study approach is particularly appropriate for understanding complex, context-dependent phenomena where the boundaries between the phenomenon and its context are not clearly evident (Yin, 2014). In the Syrian context, the statistical crisis cannot be separated from the political, institutional, and conflict dynamics that produced it. The case is bounded by geography (the Syrian Arab Republic), time (the post-2011 period, with particular focus on the post-2024 transition), and subject (statistical data collection, analysis, and dissemination).

The exploratory nature of the study reflects the limited academic research specifically addressing Syria's statistical infrastructure. While there is extensive literature on conflict, reconstruction, and humanitarian response in Syria, the statistical dimension has received comparatively little scholarly attention. This study seeks to fill that gap by systematically documenting the nature, causes, and consequences of Syria's data crisis, and by proposing a framework for addressing it.

3.2 Data Collection Methods

3.2.1 Documentary Analysis of International Reports

The primary data source for this study is the systematic analysis of reports and assessments produced by international organizations with mandates relevant to Syria's statistical infrastructure. These include:

- **United Nations Agencies:** Reports from UN-Habitat, UNDP, OCHA, UNFPA, and UNESCWA were analyzed for their assessments of data availability, quality, and institutional capacity. Particular attention was paid to the SDG11+ monitoring framework and the "Whole of Syria" coordination architecture.
- **International Financial Institutions:** The World Bank's Policy Research Working Papers (including Redaelli, Infanzon, & Moreno Herrera, 2024) and the IMF's Technical Assistance Reports provided critical data on the state of national accounts, poverty measurement, and statistical capacity.
- **Humanitarian and Development Organizations:** Reports from the Humanitarian OpenStreetMap Team (HOT), the Humanitarian Practice Network (ODI), and King's College London's research on health information systems in northwest Syria provided ground-level insights into data collection challenges and fragmentation.

The documentary analysis employed a thematic coding approach, with codes developed inductively from the data and organized around the dimensions of data noise identified in the conceptual framework (fragmentation, inconsistency, political manipulation, institutional weakness, and temporal gaps).

Figure (1) defines "data noise" as the overwhelming flood of low-quality, contradictory, and strategically distorted information that prevents decision-makers from seeing reality. It identifies the key sources of this noise as fragmented methodologies, deliberate political manipulation, and unreconciled definitions, which collectively lead to institutional paralysis among international organizations, investors, and policymakers.

Figure (1)



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3.2.2 Syrian Media Investigations

A second major data source consisted of in-depth journalistic investigations conducted by Syrian media outlets, particularly Enab Baladi and Independent Arabia. These investigations provided unique access to Syrian officials, including sources within the Central Bureau of Statistics, who disclosed information about the manipulation and suppression of official statistics. The investigations also documented the experiences of Syrian researchers, academics, and officials working with statistical data.

These media sources are particularly valuable because they provide perspectives that are often absent from formal reports: the insider accounts of how statistics were produced, the political pressures on statistical institutions, and the practical consequences of data failure for Syrian citizens. While journalistic sources require careful evaluation for accuracy and potential bias, the consistency of these accounts with formal reports from international organizations strengthens their credibility.

3.2.3 Syria Advancement Lab - Field Observations and Publications

The Syria Advancement lab's field research in Aleppo and other governorates, conducted through the Syria Advancement Lab, provided primary data on the ground-level challenges of data collection and institutional capacity. The field research included:

- **Exploratory Visits:** Extensive field visits to Aleppo governorate, including meetings with local stakeholders, field visits to health services (Ibn Rushd Cardiac Hospital, Salah al-Din Clinic), and consultations with community leaders and officials.
- **Stakeholder Workshops:** Workshops on identifying appropriate "Inspiration Economy labs" for community engagement and data collection, with participants from local government, civil society, and professional associations.
- **Change Management Discussions:** Sessions on implementing change management appropriate to the laboratories' nature, addressing the institutional and cultural challenges of rebuilding statistical systems.

The Syria Advancement lab's academic publications provided additional analytical depth, particularly on:

- Visualizing resilience pathways post-DDR (Buheji, 2025a)
- Building self-sufficiency through home-grown approaches (Buheji & Mushimiyimana, 2025)
- Eliminating illiteracy as a foundational investment (Buheji, 2025b)
- Learning from international experiences (Buheji & Mushimiyimana, 2024; Buheji & Hasan, 2025a)
- Bridging divides through goodwill value (Buheji, 2025c)

2.2.4 Secondary Literature Review

A targeted review of academic and policy literature provided comparative context and theoretical grounding. Sources included:

- Research on health information systems in conflict settings (King's College London, 2024)
- Studies on monitoring mortality in fragile states (National Institutes of Health, 2025)
- Research on education and innovation leadership in conflict-affected regions (Artyukhova, Artyukhov, Svynarenko, Rehak, & Pozovna, 2025)
- Broader literature on post-conflict reconstruction, governance, and data systems

2.3 Analytical Framework

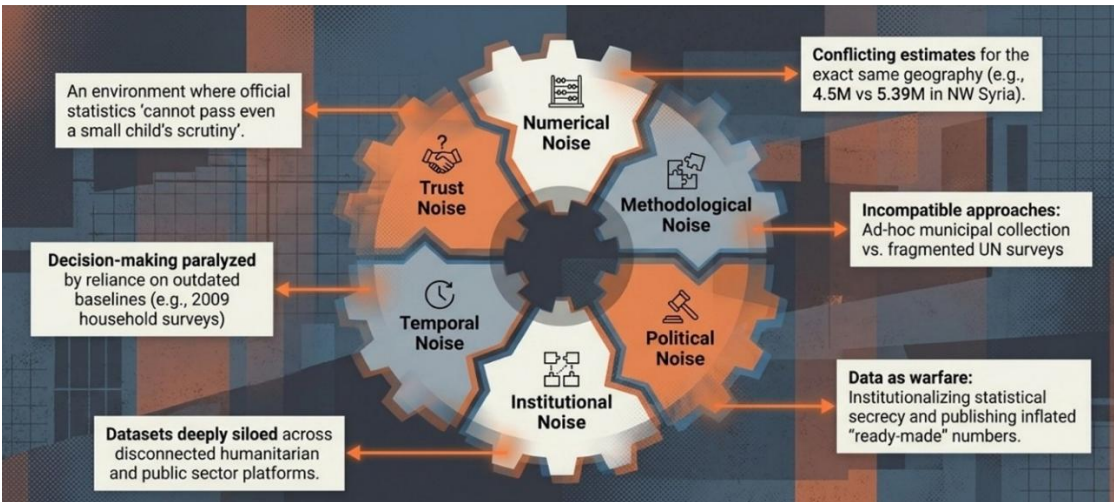
The analysis in this paper is organized around the concept of **data noise**, a framework developed through the combination of the documentary analysis and field research. Table (1) show the data noise framework identifies six dimensions of information dysfunction.

Table (1)

Dimension	Description	Indicators in Syrian Context
Numerical Noise	Contradictory estimates for the same indicator	Population estimates ranging from 4.5-5.39 million in NW Syria (Enab Baladi, 2022); official population growth from 20M to 30M despite 7M emigrating (Independent Arabia, 2024)
Methodological Noise	Incompatible approaches to data collection	Ad-hoc municipal collection; different sampling frames; formal/informal economy gap (Enab Baladi, 2025; UN-Habitat, 2022)
Political Noise	Deliberate manipulation of statistics	CBS given "ready-made numbers" to publish; population inflated for aid purposes (Independent Arabia, 2024)
Institutional Noise	Fragmentation across organizations	Three UN hubs; siloed datasets; exclusion of local actors (HOT, 2025; HPN, 2025)
Temporal Noise	Outdated data and discontinuous series	2004 census; 2009 household survey; 2000 statistical base year; intermittent reporting (IMF, 2025; Enab Baladi, 2025)
Trust Noise	Erosion of data credibility	Investor hesitation; policy paralysis; international distrust; citizen alienation (World Bank, 2025; Enab Baladi, 2025)

Figure (2) presents the "Anatomy of Syria's Statistical Crisis," breaking it down into six distinct dimensions of data noise that collectively obscure the post-conflict reality. These dimensions include Numerical Noise (contradictory estimates for the same geography), Methodological Noise (incompatible approaches to data collection), Political Noise (deliberate manipulation and statistical secrecy), Institutional Noise (fragmented data silos across disconnected platforms), Temporal Noise (outdated baselines like the 2009 household surveys), and Trust Noise (an environment where official statistics cannot pass basic scrutiny).

Figure (2)



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4.0 Deconstructing Syria's Data Noise Problem

4.1 The Fragmentation of Data Sources

Syria's current information landscape is characterized by multiple actors collecting data according to disparate methodologies and mandates. UN-Habitat's comprehensive assessment of urban recovery monitoring identifies the following major data sources, each with its own limitations (UN-Habitat, 2022).

Government-led monitoring includes the Syrian National Report on Sustainable Development (2019), produced by the Planning and International Cooperation Commission (PICC). While this report adopts "an SDG targets-based approach," the data is "not disaggregated at sub-national level" and caveats exist regarding "the objectives of GoS collected data" (UN-Habitat, 2022). The Voluntary National Review (2020) was produced with significant difficulties, noting "two main obstacles: the total time for its production being long (over two and a half years); and, secondly, the low availability of data" (UN-Habitat, 2022).

Municipal and institutional data suffers from severe capacity constraints. UN-Habitat documents that "due to limited capacities, municipalities in general collect data on an ad-hoc basis, and not according to agreed indicators or methodologies. The Central Bureau of Statistics (CBS) is responsible for collating data from the decentralized levels; however, these reporting lines has also been distorted due to limited capacities" (UN-Habitat, 2022).

International organizations' data includes Multiple Indicator Cluster Surveys (MICS), with the last survey carried out in Syria in 2006—years before the conflict—and Humanitarian Needs Overviews produced annually by UN agencies and INGOs, sampled at 20,100 households but not explicitly mapped to SDG indicators (UN-Habitat, 2022).

Civil society and diaspora mapping efforts also contribute significant data. The Humanitarian OpenStreetMap Team (HOT) has documented that "years of conflict had left Syria with severe data gaps and uneven data availability across platforms, making coordination difficult and often forcing actors to rely on outdated or incomplete maps" (Humanitarian OpenStreetMap Team, 2025-2026). Their Syria ReMapping initiative found that "even the most comprehensive automated sources were estimated to be missing nearly a quarter of buildings nationwide" (Humanitarian OpenStreetMap Team, 2025-2026). Critically, "the fragmentation of datasets across institutions and platforms meant that actors were often working with different, incompatible versions of reality" (Humanitarian OpenStreetMap Team, 2025-2026).

4.2 The Problem of Data Accuracy in International Organizations

The data collected by international organizations in Syria faces significant accuracy challenges that reflect the deeply complex, fragmented, and politicized environment in which they operate. These challenges are not merely technical but stem from the fundamental nature of the Syrian conflict and the institutional constraints placed upon humanitarian and development actors.

4.2.1 Methodological Fragmentation and Inconsistent Estimates

A primary problem is the proliferation of competing methodologies that produce widely divergent figures for the same indicators. This is particularly evident in population estimates. Enab Baladi (2022) documented that, in northwestern Syria, the UN Office for the Coordination of Humanitarian Affairs (OCHA) estimated the population at 4.6 million, while the Humanitarian Needs Assessment Programme (HNAP) estimated 4.5 million, and the Assistance Coordination Unit (ACU), a local organization, estimated 5.39 million. This represents a gap of approximately 700,000 people—nearly 20% of the population—in a limited geographical area. Such discrepancies directly affect humanitarian response, potentially depriving large segments of the population of aid due to miscalculations.

The problem extends to mortality data. The Syrian conflict alone caused an estimated 306,887 civilian deaths between 2012 and 2022, but this figure does not include indirect deaths from lack of health services, clean water, and food. The National Institutes of Health (2025) notes that "differences in scope (for example, inclusion of only documented deaths, rather than both documented and undocumented), as well as methods (eg, use of population based methods v passive reporting such as body count), lead to different estimates that can be difficult to interpret and may prompt questions about the validity of estimates." This methodological diversity, compounded by the politically charged nature of measuring conflict-related deaths, has led to criticism of estimates, including those produced by UN agencies.

4.2.2 Coordination Failures and Institutional Fragmentation

The UN's operational architecture in Syria has contributed to data fragmentation rather than coherence. The adoption of UN Security Council Resolution 2165 in 2014, while intended to expand humanitarian assistance, institutionalized a fragmented response through three distinct hubs

Damascus, Gaziantep, and Amman—each managing access through different political and operational channels. This created a "Whole of Syria" framework that, in practice, was characterized by "a delicate balance of political and operational autonomy across hubs" rather than unified data collection and analysis.

The consequences of this fragmentation are well-documented in the health sector. Research on health information systems in northwest Syria (King's College London, 2024) found that "reliable and aggregate health information in the NWS is limited, despite some improvements made over the past decade." Although the UN established the Early Warning Alert and Response Network (EWARN) and Health Resources and Services Availability Monitoring System (HeRAMS) as common data collection systems, these systems are "directed toward advocacy and managed by external experts with little participation or access from local stakeholders to these datasets." This creates data that is collected but not meaningfully shared with those who need it for planning and decision-making.

4.2.3 Politicization and Institutional Bias

Perhaps the most serious challenge is the politicization of data and the institutional constraints that undermine accuracy. Multiple sources document that the UN system was perceived by Syrians as operating as an extension of the former regime, a perception that has persisted after the political transition. Investigative reporting by the International Consortium of Investigative Journalists (2024) revealed that the UN paid more than \$11 million to a security company owned by the former regime's security services, which was used to monitor UN activities and control aid distribution. The UN also paid money into Syria through official banking channels, allowing the regime to profit from the gap between official and real exchange rates.

This institutional alignment affected data quality. As documented by the Humanitarian Practice Network (2025), the UN's interpretation of the principle of state consent was "weaponised by the Assad regime to obstruct aid." The UN in Damascus "surrendered independence at the operational level," and "state consent became the primary gatekeeper of humanitarian access." This meant that data collection could be obstructed or manipulated, with the UN sometimes forced to use figures that aligned with regime narratives rather than field realities.

The Independent Arabia (2024) investigation documented how this politicization operated at the national level, with a senior official in the Central Bureau of Statistics acknowledging that official statistics were subject to government manipulation. International organizations, operating within this environment, often had to navigate between official data and their own assessments, with the UN sometimes pressured to align its data with regime figures.

4.2.4 Data Scarcity and Technical Limitations

International organizations also face severe technical constraints in collecting accurate data. The IMF's Technical Assistance Report (2025) confirmed that "data quality and timeliness are impacted by the lack of key underlying source data." The Central Bureau of Statistics employs only nine data compilers responsible for collecting, processing, and validating national accounts statistics, and "financial and security constraints limit the ability to conduct large-scale or frequent surveys." The previous household income and expenditure survey dates to 2009, and the current statistical base year is 2000—a quarter-century out of date.

The World Bank (2024) has explicitly noted that "data for estimating monetary poverty in the Syrian Arab Republic are outdated. In the context of data scarcity, this paper aims to propose a methodological approach to address the knowledge gap regarding welfare in Syria over the past decade." This "data scarcity" means international organizations must rely on innovative approaches like "poverty nowcasting" to fill critical information gaps.

4.2.5 Gaps in Data Coverage

Significant geographical and population gaps remain in international data. The World Bank (2024) found that Syria is among countries with "more than one million IDPs" that lack "datasets with representative samples of them." The Humanitarian OpenStreetMap Team (2025-2026) documented that "even the most comprehensive automated sources were estimated to be missing nearly a quarter of buildings nationwide," while OSM coverage remained significantly lower. Many rural and peri-urban areas lack complete road networks or critical attributes such as surface type and connectivity. The fragmentation of datasets across institutions means that "actors were often working with different, incompatible versions of reality."

These data accuracy problems have direct consequences for Syria's reconstruction. As the World Bank (2025) stated, "economic data for Syria is extremely scarce and hard to come by." The UN's

Transitional Action Plan has faltered, and the creation of a new Humanitarian Response Plan has been extended three times "in a reflection of the UN's continued difficulty engaging with authorities." A persistent deficit of trust in the UN constrains its ability to lead, adapt, or credibly coordinate the response in Syria—a situation that directly impacts the quality and reliability of the data it produces.

4.3 Inconsistency and Data Gaps Within Syrian Sources

The fragmentation is compounded by profound inconsistencies across these sources. The Central Bureau of Statistics (CBS), responsible for collating data from decentralized levels, has seen its reporting systems "distorted due to limited capacities" (UN-Habitat, 2022). A detailed investigation by Enab Baladi (2025) identified the following key characteristics of Syria's current statistical crisis:

Structural Collapse: The infrastructure of official statistical institutions has been severely damaged, with a shortage of qualified personnel and the emigration of expertise, which will have expected repercussions on the ability of the new Syrian state to collect statistical data.

Census Suspension: Population censuses have been suspended since 2004, despite Syria experiencing the largest internal and external displacement in its modern history (approximately 13 million displaced according to the UN). The previous regime's institutions relied on inaccurate estimates, with data often published intermittently or incompletely, and a lack of regular updates since 2011.

International Sanctions and Isolation: The previous regime's isolation from the international community impeded cooperation with international statistical organizations (such as the World Bank), depriving Syrian statistical institutions of technical and financial support throughout the previous period.

Informal Economy Dominance: The formal statistical system is unable to capture the massive informal economy. According to Dr. Abdullah Al-Obaid, a professor in the Department of Statistics and Information

Systems at the Faculty of Economics at the University of Aleppo, "informal estimates indicate that 60-70% of economic activity has become unregistered, due to the collapse of the tax system and the shift of economic activity to the black market, making it difficult to measure due to the absence of official registration mechanisms" (Enab Baladi, 2025).

Source Contradiction: Official figures consistently contradict reports from international organizations (such as the UN) and local field studies.

The World Bank's analysis of microdata on forcibly displaced people confirms that "data is particularly scarce in countries that have endured years of conflict and fragility, such as the Democratic Republic of Congo, Syria, and Yemen" (World Bank Blogs, 2024). The Bank further noted that of the 375 datasets on forcibly displaced people from 53 low- and middle-income countries, Syria is among the countries with "more than one million IDPs" that lack "datasets with representative samples of them" (World Bank Blogs, 2024).

The Independent Arabia investigation (2024) further documented the absurdity of official population statistics. CBS data showed the population growing from approximately 5 million in 1950, to 10 million in 1980, to 20 million in 2004, to 24 million in 2014, and then to 30 million in 2024. When compared to the massive waves of emigration between 2011 and 2024, these figures are "clearly problematic, illogical, and inconsistent" (Independent Arabia, 2024).

4.4 Institutional Weakness and Political Manipulation as the Underlying Cause

The fragmentation and inconsistency of Syrian data reflect a deeper institutional crisis rooted in decades of political manipulation. The head of the Planning and Statistics Authority, Anas Salim, has publicly acknowledged that the main challenges facing the statistical system include "the poor legacy of databases, the lack of specialized cadres and the necessary qualitative expertise, in addition to the institutional overlap between public bodies" (Thawra Newspaper, 2026).

However, the problem goes beyond technical capacity to deliberate manipulation. The Independent Arabia investigation (2024) revealed that Syria's approach to statistical secrecy has been a deliberate state policy, rooted in what a retired colonel described as "a policy of extreme secrecy and information confidentiality, no matter how simple or obvious it may seem," which is considered "part of the psychological and media warfare" dating back to the era of Hafez al-Assad. This has resulted in a situation where "today we and the United Nations agree that the percentage of those below the poverty line in Syria has exceeded 90%, and in reality they have become 99% effectively" (Independent Arabia, 2024).

The IMF has identified that Syria's statistical infrastructure has been severely degraded, with the country needing to rebuild its "statistical infrastructure, Central Bank, Ministry of Finance and other centres of government" (Gulf News, 2025). In April 2026, Syrian Finance Minister Mohamed Yisr Barnieh met with Bert Kroese, Director of the Statistics Department at the IMF, to discuss "support for developing Syria's statistical system" and "challenges in restoring external sector statistics and balance of payments data" (Syrian Arab News Agency, 2026a).

The UN's assessment further notes that "the breakdown of the bottom-up vertical information flow ... combined with the continuing top-down decision-making process continues to obstruct sound decision making" (UN-Habitat, 2022). This institutional weakness is compounded by the loss of skilled personnel and the general collapse of public administration capacity.

5.0 Analysis and Discussion

5.1 The Cost of Data Noise: A Comparative Framework

To understand why data noise is so damaging, it is useful to compare the costs of data noise against the costs of data transformation as shown in Table (2).

Table (2)

Dimension	Cost of Data Noise	Value of Data Transformation
Resource Allocation	Aid and reconstruction funds misdirected to areas with inflated or inaccurate data. 700,000 people potentially deprived of aid due to population estimate discrepancies (Enab Baladi, 2022).	Resources targeted to actual needs based on accurate, disaggregated data.
Investment Climate	Investors unable to assess market size, purchasing power, or infrastructure status, delaying or deterring investment (World Bank, 2025).	Transparent, reliable data creates confidence and attracts capital.
Policy Effectiveness	Policies designed on outdated or manipulated data fail to address actual needs, wasting scarce resources (Redaelli, Infanzon, & Moreno Herrera, 2024).	Evidence-based policies that address real conditions and can be monitored and adjusted.
Governance	Lack of transparent data enables corruption and undermines accountability (Syria TV, 2025).	Independent, transparent data systems support accountability and good governance.
International Relations	Distrust in data undermines international cooperation and aid coordination (Humanitarian Practice Network, 2025).	Credible data enables effective partnership and coordination.

Figure (3) presents a comparative framework showing the high cost of data noise versus the transformative value of investing in data architecture as the highest-ROI reconstruction expenditure. It demonstrates across four critical dimensions—Resource Allocation, Investment Climate, Policy Effectiveness, and Governance & Trust—that failing to address data noise leads to misdirected aid, deterred investment, policy failure, and eroded trust, while transformation enables targeted relief, market confidence, evidence-based policies, and rebuilt credibility.

Figure (3)

Cost of Noise		Value of Transformation
Resource Allocation	700,000 people potentially deprived of aid due to population discrepancies.	Billions in targeted relief reaching actual verified need.
Investment Climate	'Data scarcity' deters Gulf and international capital due to unquantifiable risk.	Transparent baselines create market confidence and unlock massive funding.
Policy Effectiveness	Interventions fail entirely because they target outdated 2009 realities.	Evidence-based, monitored policies capable of agile course correction.
Governance & Trust	Statistical secrecy enables corruption and deepens citizen alienation.	Open, independent data rebuilds the social contract and international credibility.

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5.2 Clearing Data Noise: The Role of Key National Indicators

If data noise is the problem, a structured system of key national indicators (KNIs) offers the solution. KNIs are not simply a collection of statistics but a coordinated framework that provides decision-makers with a reliable,

consistent view of national conditions. They establish common definitions, measurement standards, and reporting protocols that allow disparate data sources to be reconciled and aggregated.

System of Key National Indicators (KNIs) is usually designed by governments in collaboration with both the private and civic society specifically to clear data noise. KNIs provide standardized definitions and measurement protocols that allow disparate sources to be reconciled and aggregated. KNI's would ensure independence and the authority to publish data accurately and transparently while overcoming the political noise. However, KNIs require regular, systematic data collection that addresses the temporal noise caused by discontinuous and outdated data. KNIs provide indicators that can be measured at different geographical scales—from neighbourhood to city to national level—allowing for the integration of local data into a coherent national picture (UN-Habitat, 2022).

KNIs enable accountability mechanisms through the monitoring and evaluation of policies, creating accountability that reduces political manipulation. By producing reliable, transparent, and independently verified data, KNIs rebuild the trust that has been eroded by decades of data noise.

Clearing data noise requires recognizing that Syria's statistical crisis is not merely a technical problem but a fundamental challenge to governance, trust, and accountability. The choice facing Syria is stark, the country have the choice of continuing to operate in an environment of data noise, where decisions are made on the basis of fragmented, inconsistent, and manipulated information, or it can invest in a national transformation program that clears the noise and provides the reliable data essential for reconstruction, investment, and accountable governance.

5.3 Current Efforts to Rebuild Syria's Statistical Systems

There is growing recognition among Syrian and international actors of the urgent need to rebuild statistical systems. In April 2025, the head of the Planning and Statistics Commission, Anas Salim, met with UNDP's Assistant Secretary-General and Regional Director, to discuss "the mechanism for developing the statistical system in Syria, building the necessary technical capabilities, and ways to overcome the obstacles facing the work of the office in the next stage" (Syrian Arab News Agency, 2025a).

The discussions "examined the plans prepared by the specialized teams in the office, with regard to building a new statistical system compatible with international technical progress, which can implement sound statistical production, analyze data, reach accurate indicators, and complete national periodic and non-periodic surveys according to correct methodological systems" (Syrian Arab News Agency, 2025a). The UNDP expressed readiness "to provide the required technical and financial support, train Syrian technical cadres, and provide the required expertise according to the needs of the office during the stage of rebuilding the statistical system and updating data" (Syrian Arab News Agency, 2025a).

In response to the crisis, Syria has taken a significant step forward with Presidential Decree No. 18 of 2025, which established the Planning and Statistics Authority to replace the Central Bureau of Statistics (Thawra Newspaper, 2025a). This new authority is tasked with building "a comprehensive database covering the economy, education, and health" and will "announce concrete implementation steps soon" (Thawra Newspaper, 2025a). The Authority is also developing a "national electronic data platform to serve as a unified portal for disseminating data in accordance with international statistical standards, making it easily accessible for researchers, planners, and the public" (Syrian Arab News Agency, 2025b).

5.4 The SDG Framework as a Foundation

The SDG framework provides an internationally recognized foundation for Syria's KNI development. The SDG11+ framework, in particular, offers a structured approach to urban recovery monitoring. As UN-Habitat documents, "the application of an SDG-based monitoring framework will entail a capacity strengthening of, among others, local governments" (UN-Habitat, 2022).

Critically, the SDG framework provides indicators that can be measured at different geographical scales—from neighbourhood to city to national level—allowing for the integration of local data collection into a coherent national picture. This addresses one of the most persistent challenges identified in Syria's data landscape: the inability to aggregate local data into meaningful national statistics (UN-Habitat, 2022).

6.0 The Institutional Transformation Required

6.1 Essentials for Rebuilding Syria's Statistical Infrastructure

Establishing KNIs requires a fundamental institutional transformation that goes beyond technical capacity building to address the legacy of political manipulation. The IMF's Director for the Middle East has emphasized that "Syria is emerging from 15 years of conflict that has led to devastation in infrastructure, as well as in the economy and institutional framework" and that "what Syria needs to do is to rebuild institutions" (Gulf News, 2025).

Dr. Zukwan Qureit, a professor at the Faculty of Economics at the University of Damascus, argues that "statistical data (numbers, standards...) are very important in all periods and conditions, as they form the starting point and end point for any action or decision-making (economic, social, political, and even military)" (Enab Baladi, 2025). In his view, "any defect or deficiency in them is a disaster, and it is backwardness itself, as the success of developed countries is based on correct information and data" (Enab Baladi, 2025).

The institutional transformation must address several key requirements identified by Syrian experts. For example, Dr. Abdullah Al-Obaid emphasizes the need to "provide the necessary funding and train cadres on the latest data collection tools" and "enhance cooperation with international organizations (such as the World Bank) to restore credibility" (Enab Baladi, 2025).

Other mentioned that adopting digital technology, such as using modern systems such as GIS to monitor demographic changes and infrastructure need electronic platforms that help to collect data from public and private sectors, (Enab Baladi, 2025). Syrian experts also called for "passing laws that obligate government and private entities to provide data accurately and transparently" and "conducting periodic field surveys in partnership with local and international organizations to compensate for the lack of official data" (Enab Baladi, 2025).

6.2 Decentralizing Data Collection

A critical element of the institutional transformation is the decentralization of data collection. UN-Habitat notes that "the implementation of a monitoring framework based on a limited set of SDG indicators could act as a pilot for the wider rebuilding of the urban monitoring system in Syria" (UN-Habitat, 2022). This would address the "major gaps in comparable data at the decentralized levels" identified in current assessments (UN-Habitat, 2022).

The Humanitarian OpenStreetMap Team's Syria ReMapping initiative provides a model for such decentralized data collection. The project "combined large-scale data improvement with local capacity building, ensuring that recovery efforts were informed by accurate, locally grounded, and openly accessible geospatial data" (Humanitarian OpenStreetMap Team, 2025-2026). Over "100 Syrians had already expressed interest in contributing to OSM Syria," with diaspora mapping described as "a way to reconnect with their homeland" (Humanitarian OpenStreetMap Team, 2025-2026).

6.3 Building Institutional Trust

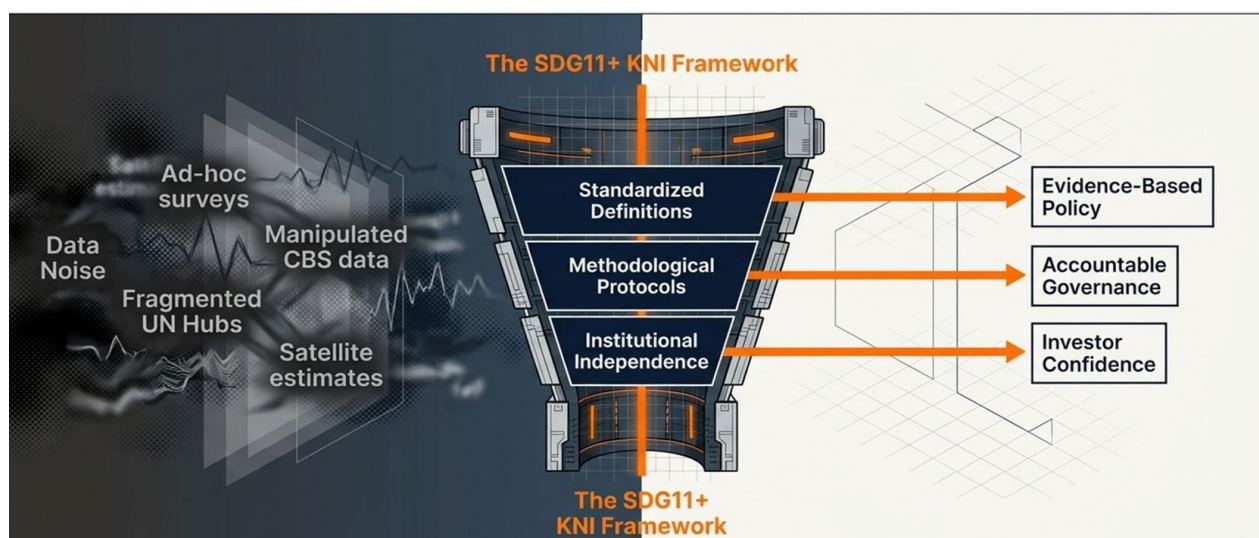
The institutional transformation must also address the issue of trust—both among Syrians and between Syria and the international community. The previous regime's statistical practices, characterized by "the methodology of distortion to highlight imaginary achievements that hid behind them the reality of economic

and social collapse," have left a legacy of deep mistrust (Syria TV, 2025). This mistrust extends to the international community, where data reliability is a prerequisite for investment and aid.

The IMF has emphasized that "Syria needs to prepare the economy to be ready for attracting additional investment and to accelerate recovery and reconstruction," and that "one of [the requirements] is to build institutions" (Gulf News, 2025). The Fund wants regional funding "to rest on credible institutions and transparent governance before major capital commitments begin" (Gulf News, 2025).

Figure (4) presents the structural solution of transitioning from "data noise" to "signal" through a System of Key National Indicators (KNIs) that acts as an institutional filter for Syria's \$400 billion recovery. The framework shows how ad-hoc surveys, manipulated data, fragmented UN hubs, and satellite estimates are processed through standardized definitions, methodological protocols, and institutional independence to produce evidence-based policy, accountable governance, and investor confidence.

Figure (4)



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7.0 Proposing Syrian 'Key National Indicators' Framework

7.1 Defining Syria KNI Top Essential Needs

Based on the current analysis of Syria's urgent and important needs and the lessons from international experience, the government can start with the following KNI framework, organized around four priority categories and then can increase gradually over the years:

7.1.1 Economic Indicators:

- GDP growth (with improved methodological basis and geographical coverage)
- Job creation and unemployment rates (disaggregated by age, sex, and region)
- Poverty rates (national and sub-national)—currently estimated using "nowcasting" approaches due to outdated survey data (Redaelli, Infanzon, & Moreno Herrera, 2024)
- Investment flows (domestic and foreign)

- Informal economy estimates—currently estimated at 60-70% of economic activity (Enab Baladi, 2025)

7.1.2 Social and Humanitarian Indicators:

- Access to basic services (water, sanitation, health, education)
- Housing adequacy and tenure security
- Child nutrition and education enrollment—building on historical MICS data (UN-Habitat, 2022)
- Refugee return rates—Syria has seen "over 1 million people returned" by September 2025 (Humanitarian OpenStreetMap Team, 2025-2026)
- Community security perceptions

7.1.3 Infrastructure and Environmental Indicators:

- Access to electricity and clean fuels
- Functionality of water and sanitation systems
- Waste management effectiveness
- Damage assessment and reconstruction progress—addressing the critical gap in building data (Humanitarian OpenStreetMap Team, 2025-2026)
- Land degradation

7.1.4 Governance Indicators:

- Transparency and accountability perceptions
- Institutional responsiveness
- Community participation in planning
- Corruption perceptions

7.2 Measurement and Implementation Challenges

Implementing this framework faces significant challenges that must be addressed:

7.2.1 Geographical Coverage: The World Bank notes that "major gaps in comparable data at the decentralized levels" remain a persistent obstacle (UN-Habitat, 2022). The Syrian ReMapping initiative found that "many rural and peri-urban areas lacked complete road networks or critical attributes such as surface type and connectivity" and that "villages, neighborhoods, and locally used place names were inconsistently represented, particularly in rural Aleppo, Rural Damascus, and northern Syria" (Humanitarian OpenStreetMap Team, 2025-2026).

7.2.2 Displaced Populations: The World Bank's microdata analysis found that "data scarcity is particularly pronounced among internally displaced people," with Syria lacking "datasets with representative samples" of its over one million IDPs (World Bank Blogs, 2024).

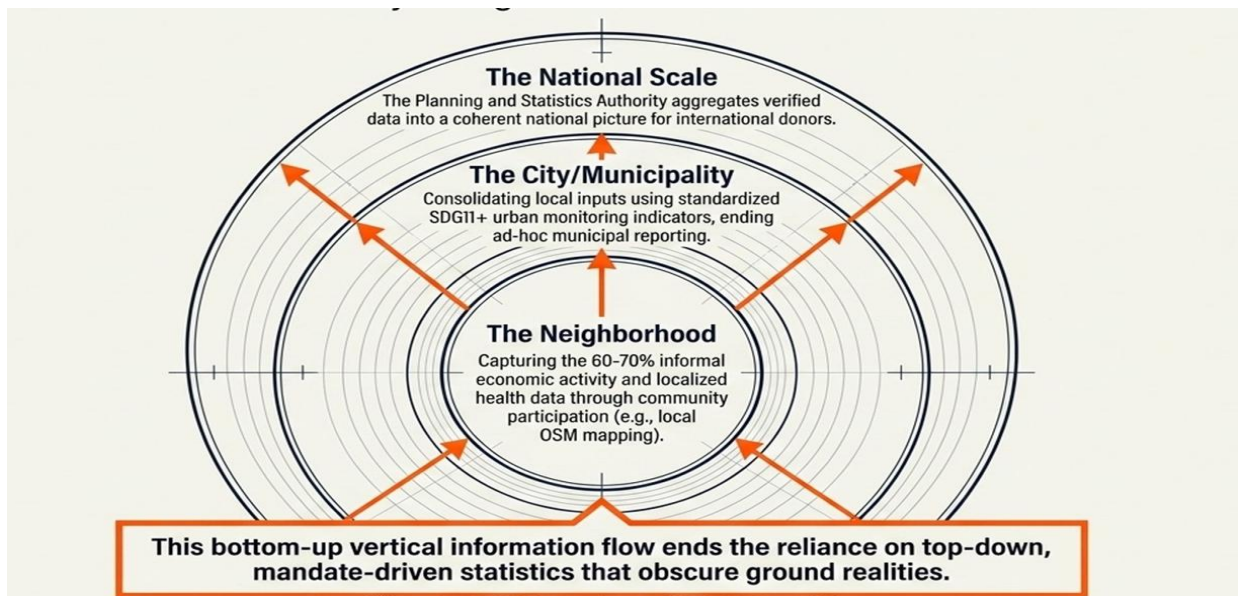
7.2.3 Capacity Building: The CBS faces severe capacity constraints, with reporting lines "distorted due to limited capacities" (UN-Habitat, 2022). Both the IMF and UNDP have identified training and capacity development as priorities (Syrian Arab News Agency, 2025a; Gulf News, 2025).

7.2.4 Institutional Coordination: Coordination between PICC, CBS, line ministries, governorates, and municipalities must be restored and strengthened (UN-Habitat, 2022). The Planning and Statistics Authority has highlighted "the institutional overlap between public bodies" as a major challenge, along with "weak training, the absence of a unified methodology, and conflicting tasks between entities" (Thawra Newspaper, 2025b).

7.2.5 Data Integration: The use of SDG indicators as a monitoring framework "will entail a capacity strengthening of, among others, local governments" (UN-Habitat, 2022).

Figure (5) presents a three-tiered decentralized data collection framework that integrates the massive informal economy through the UN's SDG11+ multi-scalar approach, capturing localized data at the neighborhood level, consolidating it through standardized urban monitoring indicators at the city/municipality level, and aggregating it into a coherent national picture at the national level. This bottom-up vertical information flow replaces the fragmented top-down, mandate-driven statistics that have historically obscured ground realities and empowers community participation through initiatives like local OpenStreetMap mapping.

Figure (5)



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8. The Role of the International Community

8.1 Technical Assistance

The international community has a critical role to play in supporting Syria's data transformation. The IMF has confirmed it is "scaling up capacity-development support to Syria, including by providing them with assistance on some of the issues that you have highlighted" (Syrian Arab News Agency, 2026b).

The UNDP has also been active, with discussions on "the mechanism for developing the statistical system in Syria, building the necessary technical capabilities" (Syrian Arab News Agency, 2025a). The UNDP has expressed readiness "to provide the required technical and financial support, train Syrian technical cadres, and provide the required expertise according to the needs of the office during the stage of rebuilding the statistical system and updating data" (Syrian Arab News Agency, 2025a).

In November 2025, the Planning and Statistics Authority, in collaboration with the UNFPA, launched a five-day workshop in Damascus on "producing and using statistical data to support national development" (Syrian Arab News Agency, 2025c). The workshop aimed to "diagnose the gaps in the current data system, which have worsened over the past years, and to strengthen coordination and integration between national and international bodies, in addition to developing a clear vision for the requirements and mechanisms of support needed by public bodies" (Syrian Arab News Agency, 2025c).

8.2 Funding and Investment

The data transformation must be adequately funded. The IMF has noted that "Gulf countries such as the UAE, Saudi Arabia, Qatar and Kuwait are expected to finance much of Syria's and Lebanon's eventual recovery" (Gulf News, 2025). However, the IMF has cautioned that such funding must "rest on credible institutions and transparent governance before major capital commitments begin" (Gulf News, 2025).

International donors should recognize investment in statistical systems as a fundamental priority—not a secondary concern. Without reliable data, other investments risk being misdirected or wasted.

8.3 Knowledge Sharing and Peer Learning

The international community can also facilitate knowledge sharing and peer learning. The Syria Advancement lab's work on learning from international experiences—including Rwanda's peacebuilding efforts (Buheji & Mushimiyimana, 2024), Vietnam's Doi Moi reforms (Buheji & Hasan, 2025a), and post-conflict reconstruction strategies (Buheji, 2025a; Buheji, 2025b)—demonstrates the value of comparative learning. The UN also emphasizes "the role of regional leadership in advancing data innovation, research collaboration, and knowledge-sharing for post-conflict urban reconstruction across the region and beyond" (UN World Data Forum, 2025).

9.0 Conclusion

9.1 Data as a Foundation for Trust and Stability

Syria's reconstruction is fundamentally a project of rebuilding trust—trust between Syrians and their government, trust between Syria and the international community, and trust between investors and the Syrian economy. Data systems are central to this trust-building because they provide the transparency and accountability that stakeholders demand.

The World Bank has documented that Syria faces a context of "data deprivation" requiring innovative methodological approaches (Redaelli, Infanzon, & Moreno Herrera, 2024). The UN has identified that "fragmented" and "rarely integrated" datasets undermine long-term recovery strategies (UN World Data

Forum, 2025). The IMF has explicitly stated that Syria must "rebuild institutions, including the statistical infrastructure" before reconstruction can proceed (Gulf News, 2025).

A national transformation program centered on key national indicators would demonstrate Syria's commitment to evidence-based governance and institutional integrity. It would show the international community that Syria is prepared to be transparent about its needs and its progress. And it would give Syrian policymakers the reliable information they need to make sound decisions about the country's future.

9.2 The Six Pillars of Syria's Statistical Reconstruction

Based on the analysis in this paper, we identify six essential pillars for Syria's statistical reconstruction:

First: Institutional Independence and Empowerment. The Planning and Statistics Authority must be given genuine independence, adequate resources, and the authority to publish data without political interference. As Dr. Ramazan Darwish emphasizes, statistical institutions must be given "independence and the authority to publish data accurately and transparently" (Enab Baladi, 2025). This is the foundation upon which all other reforms depend.

Second: Methodological Innovation and Modernization. Traditional statistical methods are insufficient in post-conflict settings. Syria must embrace hybrid approaches that combine ground surveys, satellite imagery, remote sensing, and digital data collection. Lebanon's RDNA methodology—which combined "ground- and remote-based data, including ground surveys, key informant interviews, sample visual checks, satellite imagery, Synthetic Aperture Radar analysis, anonymized cellphone data, and social media analytics" (World Bank, 2025)—provides a model for innovation while maintaining methodological rigor.

Third: Population Data as a Priority. Iraq's displacement tracking and Bosnia's population displacement demonstrate that conflict fundamentally alters population distribution (IOM Iraq, 2024; CIA, 1996). Syria's outdated 2004 census and unreliable subsequent estimates mean that population data must be the first priority for statistical rebuilding. This includes not only counting the population but understanding its distribution, demographics, and needs.

Fourth: Decentralization and Local Participation. UN-Habitat notes that "the implementation of a monitoring framework based on a limited set of SDG indicators could act as a pilot for the wider rebuilding of the urban monitoring system in Syria" (UN-Habitat, 2022). The Syria Advancement Lab's field research in Aleppo demonstrates the value of engaging local stakeholders in data collection and institutional rebuilding (Buheji, 2025a). Local participation builds ownership, trust, and sustainability.

Fifth: Transparent Governance and Accountability. The previous regime's statistical practices, characterized by "the methodology of distortion to highlight imaginary achievements that hid behind them the reality of economic and social collapse," have left a legacy of deep mistrust (Syria TV, 2025). Transparent governance—including clear methodologies, public data platforms, and independent oversight—is essential for rebuilding trust.

Sixth: Sustained International Partnership. The IMF has confirmed it is "scaling up capacity-development support to Syria" (Syrian Arab News Agency, 2026b). However, the international community must also address the legacy of its own institutional failures in Syria. As the Humanitarian Practice Network (2025) has documented, the UN's operational architecture in Syria has been fragmented and politicized. Rebuilding trust requires acknowledging these failures and committing to genuinely independent, transparent, and locally accountable data systems.

9.3 A Phased Implementation Roadmap

The paper recommends a phased implementation approach:

Phase 1: Immediate Actions (0-12 months):

- Establish the Planning and Statistics Authority with guaranteed independence and transparent governance structures, building on Presidential Decree No. 18 of 2025 (Thawra Newspaper, 2025a)
- Launch a rapid population census to establish a credible baseline
- Develop and launch the national electronic data platform as a unified portal for disseminating data (Syrian Arab News Agency, 2025b)
- Conduct a comprehensive inventory of existing data sources and identify critical gaps
- Initiate emergency surveys in priority sectors (health, education, food security)
- Establish formal coordination mechanisms with international partners

Phase 2: Institutional Strengthening (12-36 months):

- Implement comprehensive training programs for statistical personnel
- Develop and implement the legislative framework for data transparency and accountability
- Pilot the SDG11+ monitoring framework in selected governorates (UN-Habitat, 2022)
- Begin regular household and economic surveys with updated methodologies
- Establish independent oversight mechanisms for data quality and integrity

Phase 3: Full Implementation (36-60 months):

- Complete the transition to the System of National Accounts 2025 framework (IMF, 2025)
- Achieve full disaggregation of data at sub-national levels
- Establish a functioning system of regular, timely, and transparent data dissemination
- Develop a culture of evidence-based policymaking across all government institutions
- Achieve full integration of Syrian data into international statistical systems.

9.4 The Cost of Inaction: A Comparative Perspective

The cost of failing to address data noise is staggering and will manifest across multiple dimensions, as documented throughout this paper. The Bosnia case demonstrates that even with substantial international assistance, post-conflict statistical reconstruction is a long-term challenge, and reconstruction cost estimates were described as "approximate orders of magnitude" due to limited information (CIA, 1996). This uncertainty hampered effective reconstruction planning—a mistake Syria must avoid by prioritizing statistical rebuilding before major reconstruction investments begin.

The Iraq case demonstrates how protracted displacement creates "data scarcity" where traditional statistical systems cannot track population movements (IOM Iraq, 2024). The need for humanitarian organizations to fill data gaps creates institutional fragmentation, with multiple actors producing incompatible estimates—a direct parallel to Syria's "Whole of Syria" coordination challenges.

The Yemen case demonstrates that weak, under-resourced statistical systems cannot maintain operations during conflict (OECD, 2026). Syria's new Planning and Statistics Authority must be given genuine independence, adequate resources, and the political support needed to produce reliable data.

9.5 A Call to Action

This paper conclude with a call to action addressed to four key audiences:

To Syrian Policymakers: The opportunity is now. The political transition creates a unique window to rebuild Syria's statistical systems from the ground up—to ensure that the Syria that emerges from conflict is governed by evidence, not by noise. The Planning and Statistics Authority must be given genuine independence, adequate resources, and the political support needed to produce and disseminate reliable data. As Dr. Abdullah Al-Obaid argues, "rebuilding the statistical system must be a priority, keeping pace with humanitarian and political efforts after the full liberation of Syria, because accurate data is the foundation of effective decision-making in any economy" (Enab Baladi, 2025).

To the International Community: The IMF, World Bank, UN agencies, and bilateral donors must prioritize support for statistical infrastructure as a foundational investment. The technical assistance currently being provided by the IMF and UNDP must be scaled up and sustained. However, the international community must also address the legacy of its own institutional failures in Syria. Rebuilding trust requires acknowledging these failures and committing to genuinely independent, transparent, and locally accountable data systems.

To Civil Society and Researchers: Syrian civil society organizations, diaspora communities, and researchers have played a critical role in documenting conditions and filling data gaps. This role must continue and expand. The Humanitarian OpenStreetMap Team's Syria ReMapping initiative demonstrates the power of participatory, community-based data collection (HOT, 2025-2026). Civil society must also hold both Syrian authorities and international actors accountable for data transparency, ensuring that the new statistical system serves all Syrians, not just those in power.

To the Syria Advancement Lab and the Research Community: The academic and policy research community has a responsibility to continue documenting Syria's statistical crisis and advocating for reform. Our research on visualizing resilience pathways (Buheji, 2025a), learning from international experiences (Buheji & Mushimiyimana, 2024; Buheji & Hasan, 2025a), and building hope amidst uncertainty (Buheji & Hasan, 2025b) demonstrates the value of comparative analysis and evidence-based advocacy. Future research should focus on the implementation challenges of rebuilding statistical systems, the development of specific indicators for Syria's reconstruction, and the monitoring of progress toward data transparency and accountability.

9.6 A Vision for Syria's Statistical Future

We envision a future in which Syria's statistical system is:

- Independent: Statistical institutions operate free from political interference, with a mandate to publish accurate, timely, and transparent data.
- Comprehensive: Data covers all governorates, all population groups (including IDPs, refugees, and vulnerable populations), and all sectors of the economy (including the informal economy).
- Disaggregated: Data is available at sub-national levels, enabling targeted resource allocation and evidence-based policymaking.
- Open and Accessible: Data is publicly available through open platforms, accessible to researchers, policymakers, civil society, and citizens.
- Trusted: Syrian data is trusted by Syrians and the international community alike, enabling effective governance, investment, and partnership.
- Sustainable: Syria has the institutional capacity, technical skills, and resources to maintain its statistical systems without ongoing external dependency.
- Integrated: Syrian data is fully integrated into international statistical systems, enabling comparison, learning, and accountability.

This vision is achievable. The cost of inaction is too high to contemplate. The opportunity is now.

Declaration of Conflicting Interests

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