



Yemen Economic Compass: City & Stakeholder Intelligence Expansion

1. Introduction

Yemen's economic and financial landscape has been reshaped by more than a decade of conflict and institutional fragmentation. The dual central bank split that began in 2016 spawned separate monetary regimes in Aden and Sanaa, and the collapse of banking settlement pushed money into the hands of exchangers and microfinance institutions. Real GDP per capita has fallen by over half, inflation has surged above 30%, the Yemeni rial has depreciated to levels exceeding 2800 per USD, and poverty rates have climbed above 75%. Humanitarian cash flows, channelled through non-bank payment systems, now exceed US\$2.8 billion per year and account for much of the country's monetary transmission. Any analytical platform must therefore combine macroeconomic data, regulatory decisions, humanitarian aid flows and informal financial networks to capture the full picture.

This report sets out a comprehensive plan for expanding the **Yemen Economic Compass** into a truly holistic knowledge system. It covers two inter-related dimensions:

1. **City Intelligence Pages** – Each major city in Yemen will have a dedicated page offering deep economic, social, conflict and infrastructural analysis. These pages will draw on high-resolution data, historical context and real-time monitoring to reveal how local dynamics shape the national economy.
2. **Stakeholder Intelligence Pages** – Every significant actor (banks, MFIs, exchangers, donors, ministries, business conglomerates, humanitarian agencies) will have a richly detailed, evidence-based profile highlighting their role, contributions, risks and opportunities.

Alongside these core pages, the report proposes advanced algorithms, tailored dashboards and a robust technical architecture to ensure that the platform serves decision-makers at all levels: central bankers, regulators, donors, investors, civil society and citizens.

2. Methodology for Data Integration

1. **Source Catalogue & Whitelisting** – Create a master register of all data providers: national ministries, central banks, World Bank, IMF, UN (WFP, OCHA, UNDP, UNICEF), IOM, FEWS Net, ACLED, sanctions lists, research institutes and audited company filings. Each data stream must list its update frequency, coverage, licensing terms and confidence level.
2. **Ingestion & Version Control** – Build ETL pipelines that fetch data at prescribed frequencies. Each new record is stored with a `vintage_date`, `source`, `confidence_score`, and `revision_id`. Past vintages remain archived to allow time-series analysis and counterfactual modelling.
3. **Data Normalisation & Linking** – Standardise units, currencies, administrative divisions and actor names. Use relational keys to link indicators to cities, stakeholders and events. For instance, a

cholera outbreak in Al Hodeidah would be linked to health indicators, port traffic, humanitarian funding and local economic output.

4. **Cross-Source Triangulation** – Where multiple sources report the same indicator (e.g. inflation or exchange rate), compute a weighted average based on source reliability and recency, but also display the range and variance. Highlight discrepancies and encourage users to explore the underlying data.
5. **Dynamic Updates** – Integrate real-time feeds for FX rates, humanitarian funding pledges and conflict incidents. When new data arrives, update all affected dashboards and narratives immediately. Automate alerts when thresholds are breached (e.g. currency depreciation, staple food price spikes, banking stress).

3. City Intelligence Pages

For each major city, the platform will produce a comprehensive, self-contained profile summarising demographic trends, economic structure, infrastructure, conflict history, humanitarian situation and key stakeholders. Each city page will also host interactive dashboards and forecasting tools. The following sections illustrate how the pages could be structured.

3.1 Aden

- **Overview & Demography:** Aden is the largest city in southern Yemen, the de facto seat of the internationally recognised government and the base for CBY-Aden. It hosts roughly 1.15 million residents (2025 estimate) and has seen rapid population inflows from surrounding regions. The port of Aden and the nearby oil refinery remain critical assets.
- **Economic Structure:** The city's economy revolves around port services, fuel distribution, retail trade and government administration. Since the dual-currency split, Aden's rial often trades at a steep discount to Sana'a's, pushing up import costs and inflation.
- **Conflict Timeline:** Outline major events: the 2015 capture by Houthi-Saleh forces and subsequent recapture, the 2019 STC self-administration announcement, repeated clashes between presidential guards and rival militias, port closures due to blockades, and occasional air strikes.
- **Humanitarian & Development Indicators:** Provide statistics on poverty, unemployment, food insecurity, school attendance, electricity access and health service coverage. Show how humanitarian cash distributions via exchangers have reshaped Aden's retail liquidity, highlighting the pivot away from banks.
- **Governance & Stakeholders:** List local authorities (governor's office, Aden Municipality), key ministries, port authorities, CBY-Aden, major banks, exchange houses and business conglomerates (e.g. part of Hayel Saeed Anam group). Provide an organogram of relationships and power dynamics.
- **Dashboards:** Include time-series charts of exchange rates, consumer price index (CPI), fuel and food prices, humanitarian funding flows, bank branch counts and employment. Provide filters for comparing against other cities and forecasting under different policy/scenario assumptions.

3.2 Sana'a

- **Overview & Demography:** Sana'a, the country's historic capital, lies under the control of the de facto authorities. Population estimates exceed 2 million.
- **Economic Structure:** The city hosts government ministries, commercial markets and manufacturing. Because the Houthi authorities enforce strict capital controls, the official exchange rate is kept artificially strong. Prices are controlled for staple goods, but parallel markets reveal higher inflation.

- **Conflict Timeline:** Highlight key events such as the 2014 Houthi takeover, the 2015 Saudi-led intervention, the shift of the central bank to Aden, bombardments of strategic sites and the ongoing blockade at Sanaa airport.
- **Humanitarian & Development Indicators:** Compare food basket costs with Aden, noting that differences partly reflect regional price controls. Cover humanitarian cash distribution volumes, health and education infrastructure, and public service provision.
- **Governance & Stakeholders:** List the de facto authorities (Supreme Political Council, Central Bank Sanaa branch), ministries, local business elites, currency traders and charitable foundations. Identify cross-border relationships (e.g. trade links through Omani borders or smugglers).
- **Dashboards:** Provide similar indicators as Aden but highlight the contrasts in FX rate, inflation trajectory and living standards. Allow users to overlay conflict events and regulatory decisions to see immediate effects.

3.3 Taiz

- **Overview & Demography:** Taiz is Yemen's industrial heart but has been battered by prolonged frontline fighting, siege and fragmentation. Population is estimated at ~800 000, but urban services are degraded.
- **Economic Structure:** Once known for its factories (cement, textiles, food), Taiz has seen industrial output collapse due to blockades and conflict. Trade has largely shifted to informal channels.
- **Conflict Timeline:** List major events including the 2015 siege, 2017 humanitarian corridors openings, intermittent truces and local governance changes. Show maps of shifting frontlines.
- **Humanitarian & Development Indicators:** Present data on malnutrition rates, displacement flows, cholera outbreaks and humanitarian presence. Chart how humanitarian cash and food assistance changed across sub-districts and its correlation with market prices.
- **Governance & Stakeholders:** Outline the actors: local authorities aligned with IRG, anti-Houthi militias, humanitarian actors (INGOs, local NGOs), major business families. Provide contact points for developers and regulators.

3.4 Hodeidah

- **Overview & Demography:** Yemen's principal Red Sea port city, Hodeidah, controls the bulk of imported food and humanitarian supplies. Population estimates exceed 500 000.
- **Economic Structure:** Port throughput underpins both local livelihoods and national food security. Document fluctuations in cargo volumes due to coalition blockades, the Stockholm Agreement (2018) and UN inspection regimes.
- **Conflict Timeline:** Detail the 2018 offensive, ceasefire negotiations, shifting checkpoints and the presence of Saudi-UAE joint forces.
- **Humanitarian & Development Indicators:** Track nutritional status, cholera and malaria outbreaks, labour market developments and food basket prices.
- **Governance & Stakeholders:** Identify port authorities, Houthi administrators, UNVIM (Verification and Inspection Mechanism) role, local business groups and humanitarian agencies. Show how port closures ripple through national indicators and cause food and fuel shortages.

3.5 Marib

- **Overview & Demography:** Marib's population has quadrupled since 2015 due to displaced people seeking safety and jobs. With its oil, gas and electricity facilities, it is crucial for Yemen's energy and revenue.
- **Economic Structure:** Summarise oil and gas production, distribution of electricity (despite sabotage), nascent manufacturing and expanded services sector.
- **Conflict Timeline:** Include key battles for Marib, Houthi offensives, tribal negotiations, Saudi intervention and local developments.
- **Humanitarian & Development Indicators:** Present data on IDP camp sizes, service delivery, humanitarian projects and cost of living.
- **Governance & Stakeholders:** List the Marib Governorate leadership, tribal alliances, oil and electricity authorities, private sector investors and humanitarian actors.

3.6 Mukalla & Hadramawt Coast

- **Overview & Demography:** Mukalla is the capital of Hadramawt and a major trade hub with port access.
- **Economic Structure:** Document fisheries, port operations, oil revenue share, diaspora remittances and rising tourism potential.
- **Conflict Timeline:** Mention the 2015 takeover by Al-Qaeda in the Arabian Peninsula (AQAP), subsequent recapture by Emirati and Hadrami forces, and relative stability thereafter.
- **Humanitarian & Development Indicators:** Highlight IDP numbers, employment patterns, infrastructure projects and humanitarian presence.
- **Governance & Stakeholders:** Note the Hadramawt Tribal Council, local government, port authorities, universities and major businesses.

3.7 Secondary Cities & Rural Districts

Repeat the pattern for Al Mukha, Sayoun, Seiyun, Al Bayda, Al Dali, Saada, Dhamar, Ibb and others. Provide summarised dashboards for small towns and rural districts—especially those along key trade corridors or conflict hotspots. Where data is limited, note the gaps and offer citizen reporting channels.

4. Stakeholder Intelligence Pages

Each stakeholder page must be deeply researched, transparent and balanced. The platform should provide factual information, allow interactive exploration and highlight positive and negative impacts without propaganda.

4.1 Central Banks (CBY-Aden & CBY-Sana'a)

- **Structure & Governance:** Provide an organogram of each central bank's leadership and departments. Explain the dual-management system created by the split and the resulting policy divergence.
- **Historical Timeline:** List key events (bank split, currency issuance bans, FX auctions, regulation changes, currency redenomination attempts, adoption of new coins/banknotes).
- **Regulations & Policies:** Summarise circulars and monetary policies. Include cross-reference to the national legal repository.

- **Indicators Dashboard for Governors:** Offer a “Governor’s Dashboard” showing reserves, currency in circulation (old vs new notes), FX auctions, FX spreads, inflation, velocity of money, bank branch counts, microfinance penetration and sanctions exposures. Provide forecasting and scenario tools (e.g. what if more FX auctions? what if cash limits for banks?).
- **Compliance & Auditing:** Link to CBY financial statements (if available), IMF Article IV recommendations, World Bank technical assistance and independent audit findings.

4.2 Commercial Banks

- **Profile:** List the bank’s ownership, headquarters location, branch network, asset size, deposit and loan portfolios, credit ratings, market share and correspondent banking relationships.
- **Financial Performance:** Compile key ratios (capital adequacy, NPLs, ROA, ROE, liquidity coverage). Show how these indicators have changed since 2015 due to conflict, sanctions and new regulatory frameworks.
- **Stress & Resilience:** Display the Core Banking Stress Index (CBSI) and highlight exposures to currency risks, loan defaults and sanctions. Provide stress test results under multiple scenarios.
- **Narrative & Impact:** Describe each bank’s role in the crisis—e.g. how they responded to liquidity shortages, whether they launched digital services, and whether they relocated operations to Aden or remained in Sanaa.

4.3 Microfinance Institutions & Exchangers

- **Profile:** Provide licensing status, branch counts, client outreach, average loan size, product mix (microloans, savings, remittances).
- **Financial Data:** Include disbursement volumes, repayment rates, portfolio quality, profitability, donor funding, etc.
- **Hawala Dependence & Regulation:** Show how these institutions operate across the currency divide. Document how humanitarian cash flows transformed their role.
- **Impact & Social Indicators:** Quantify the number of households and SMEs served and their geographic reach. Provide testimonials or case studies (if available) to illustrate positive and negative outcomes.

4.4 Business Conglomerates & Family Groups (e.g. Hayel Saeed Anam)

- **Corporate Overview:** For groups such as **Hayel Saeed Anam (HSA)**, summarise subsidiaries (food processing, retail, real estate, energy, banking), geographic footprint, turnover and headcount.
- **Financial Transparency:** Include data from available audit reports, IFC investments, or D&B profiles (where accessible). Highlight philanthropic initiatives (food security programmes, water projects, scholarships) and donations to humanitarian funds.
- **Controversies & Compliance:** Document any litigation, sanctions or allegations reported by credible organisations; present responses from the company. If certain claims are disputed, note that clearly and provide links to statements.
- **Impact & Dependency:** Analyse how the group’s operations keep supply chains functioning (e.g. imports of flour, sugar and dairy), and how prolonged conflict or sanctions could affect national food security.
- **Future Scenarios:** Offer a forecast tool showing how changes in port controls, FX regimes or sanctions could impact the group’s supply chains and workforce. Provide recommendations for de-risking and strengthening resilience.

4.5 Donors & International Organisations

- **Funding Flows:** Break down contributions by donor, channel (UN agencies, INGO partners, local NGOs, cash vs commodity), sector and geography. Compare pledges vs disbursements and highlight funding gaps.
- **Impact Analysis:** Connect aid volumes to outcomes (poverty reduction, food security, child nutrition, education attendance) by region. Use data to test the correlation between humanitarian funding and economic or health indicators.
- **Compliance & Standards:** Provide cross-references to aid quality frameworks (DAC criteria, IATI data) and note participation in accountability initiatives.
- **Learning & Feedback:** Summarise evaluations and lessons learned (e.g. WFP's shift to vouchers, cash vs food, security constraints) and compile recommendations for donors to improve impact and reduce harm.

4.6 Government Ministries & Authorities

- **Institutional Profiles:** For each ministry (Finance, Planning, Petroleum, Transport, Social Affairs), outline mandates, budgets, staff numbers, key initiatives, revenues and expenditures.
- **Legal Repositories:** Link to national laws, decrees and guidelines. Provide timelines of major reforms.
- **Performance Dashboards:** Display budgets vs actual expenditures, revenue breakdowns (taxes, customs, oil), debt levels, arrears, and financing gaps.
- **Reform Benchmarks:** Compare each ministry's progress against commitments (e.g. IMF Extended Fund Facility benchmarks, World Bank financial sector reforms).

4.7 Political Parties & Armed Groups

- **Background & Leadership:** Provide a neutral summary of each party or group's origins, leaders and areas of control.
- **Resources & Financing:** Summarise available data on revenue sources (taxes, customs, port fees, external support).
- **Impact on Economy:** Describe how each actor's policies and actions (blockades, fuel pricing, regulations) affect the economy. Where relevant, link to sanctions lists and human rights reports.

4.8 Civil Society & Academia

- **Organisations:** Profile local NGOs, research centres, universities, unions and professional associations.
- **Projects & Impact:** Document their activities (advocacy, training, service delivery) and how they contribute to transparency and accountability.
- **Collaboration Networks:** Map partnerships with donors, ministries and communities. Provide contact points for user engagement.

5. Advanced Tools, Dashboards & Algorithms

1. **Role-Based Dashboards:** For each stakeholder type (central bank officials, regulators, donors, banks, humanitarian agencies), develop dashboards focusing on the metrics they care about

(reserves, credit growth, remittance flows, underfunded clusters). Provide exportable charts, custom alerts and scenario builders.

2. **Counterfactual Scenario Engine:** Extend the scenario simulator so users can simulate alternative histories. Examples: "What if the CBY split had not occurred?"; "What if humanitarian aid flows were cut by 50% in 2020?"; "What if the rial appreciates 10% following an oil export agreement?" Provide confidence intervals and explain limitations.
3. **Sentiment & Media Analysis:** Use natural-language processing to scan and classify narratives from key reports, media articles and social media (in both Arabic and English). Present dashboards showing sentiment over time toward major actors, policies and economic trends.
4. **Dual Monetary System Analytics:** Develop models to compare exchange rate trajectories, inflation and price levels across Aden and Sanaa. Visualise arbitrage opportunities, price distortions and their social impacts.
5. **Sanctions & Compliance Dashboard:** Map entities under sanctions (UN, US, EU, UK, GCC). Show how sanctions intensity and compliance initiatives affect trade and finance. Provide risk scoring for potential transactions.
6. **Aid Impact Estimator:** Combine humanitarian funding data with outcomes (malnutrition rates, school attendance, cholera incidence) to compute approximate impact multipliers. Use regressions or difference-in-difference models to test how aid volumes correlate with outcomes at governorate or city level. Display results with confidence scores, emphasising that correlation is not causation.
7. **Source Triangulation Assistant:** When multiple conflicting data points exist (e.g. inflation from CBY vs consumer surveys vs INGO trackers), show users the range of estimates, the sources, and the weighted average. Provide an explanation of variance and invite users to drill down.
8. **Learning & Recommendation Engine:** Tailor recommendations to each stakeholder. For example, the central bank governor's page might suggest adopting a system for unified settlement, reactivating inter-bank clearing and expanding capital controls; a bank CEO's page might recommend hedging strategies, anti-money laundering improvements and digital payments investments; a donor's page might highlight underfunded sectors and recommended partners.

6. Governance, Ethics & Transparency

- **Provenance & Citations:** Every data point or statement must link back to its source. Use a citation index and footnotes. For instance, the macroeconomic figures about GDP decline and inflation come from an analysis of Yemen's economic crisis, while insights into the rise of exchangers derive from the humanitarian cash report.
- **Neutrality & Do-No-Harm:** Present information without advocating for any party. Protect individual privacy by aggregating data at community or sector level. Avoid reporting sensitive operational details that could endanger people or hinder humanitarian operations.

- **Community Feedback & Iteration:** Implement a feedback mechanism for users to suggest corrections, request new features and flag potential misinformation. A panel of experts should review and approve changes.
- **Accessibility & Inclusivity:** Make all information available in both English and Arabic, using clear language. Provide alt text and audio descriptions for charts. Ensure the site is mobile-friendly and accessible for users with disabilities.

7. Technical Implementation & Data Sources

- 1. Database Design:** Implement a relational database with core tables (actors, cities, indicators, indicator_values, events, documents, projects, sanctions, etc.). Ensure time-series data can be stored efficiently and queried quickly.
- 2. Data Sources:** Continuously ingest data from CBY statistics, Yemeni ministries, World Bank (WDI, Global Economic Monitor), IMF, UN (OCHA FTS, WFP VAM, UNDP reports), FEWS Net, ACLED, IOM DTM, WFP price monitoring, ESCWA, IMF Article IV, Yemeni central bank bulletins, and credible research institutes.
- 3. APIs & Feeds:** Use the site's own API (once enabled) to serve data to front-end visualisations. Develop connectors to external APIs for real-time data (FX rates, commodity prices).
- 4. Front-End Architecture:** Use modern frameworks (React/Next.js) with state management (Redux/TanStack Query) and chart libraries (ECharts, D3). Implement server-side rendering for SEO. Provide a bilingual interface with right-to-left support.
- 5. AI & Search Infrastructure:** Integrate a vector database (e.g. FAISS) for the retrieval-augmented generation (RAG) layer. Use GPT-style models for summarisation and translation.
- 6. Security & Privacy:** Implement role-based access control. Use HTTPS and encryption at rest. Review logs for anomalies. Comply with data protection regulations.
- 7. Testing & QA:** Include unit tests for data ingestion, integration tests for user flows and accessibility tests. Engage domain experts to vet narrative content and algorithms.

8. Conclusion

Building the **Yemen Economic Compass** into the most comprehensive and intelligent source on Yemen's economy and finance requires a meticulous, multi-disciplinary approach. By expanding city and stakeholder pages, integrating diverse datasets, designing advanced analytics and adhering to rigorous ethical standards, the platform can become the benchmark for transparency and accountability in conflict-affected economies. It will empower decision-makers—from central bankers and donors to businesses and citizens—with accurate information, actionable insights and tailored tools. Such a system, grounded in evidence and built for continuous learning, stands to shape not only Yemen's economic recovery but also the international community's understanding of complex conflict economies.
