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Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights

The Role of New Technologies in Own-Source Revenue Generation

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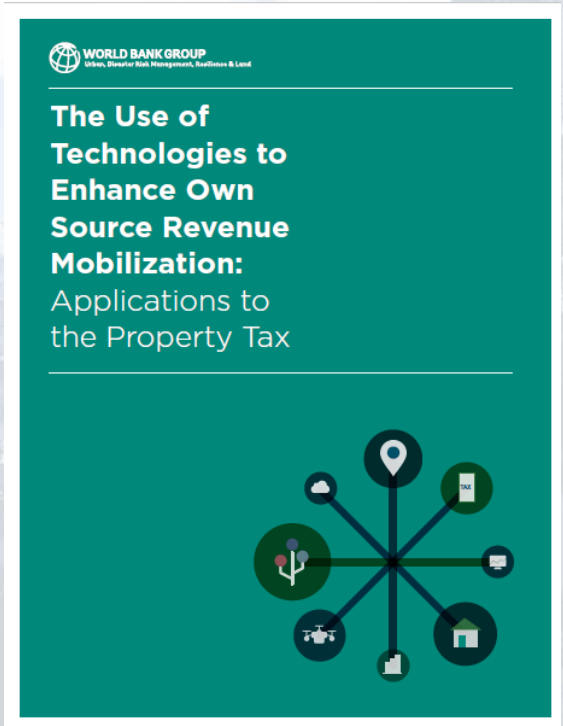

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Why is technology important for enhancing own source revenue (OSR)?

Revenue Flow

- Strengthening OSR mobilization improves fiscal autonomy of subnational government.
- However, OSRs in the developing world only account for 10 to 30 percent of total SNG revenue and less than 1 percent of GDP.

Common Problems

- Incomplete or inaccurate tax data, limited capacity and resources, ineffective data collection and management, lack of data sharing, reliance on manual and paper-based systems, poor billing and collection practices, and weak enforcement

Digital and ICT

- Transformative tool for strengthening local revenue performance by maximizing revenue streams and identifying untapped revenue.
- Improve administrative efficiency across the whole revenue chain, including transparency, compliance and accountability

Case Studies: Evidence of the benefits of ICT solutions for revenue administration

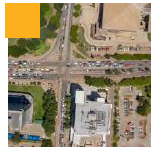
Objective

To bring together various technological solutions to present key strengths and challenges for implementation in specific environment.

- **Case studies across Africa, Southeast Asia, and Latin America.**

Sierra Leone *High-resolution imagery and automatic building footprint capture in Freetown*

Registration of almost 100,000 new properties, compared to the 30,134 property records in the old valuation roll.

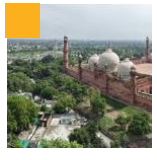


Ghana *Mobile application for data collection in Accra*

Reduction of manual labor from 120 to 20 days to capture revenue data of 10,000 parcels.

Kenya *Automated and simplified mass valuation in Nairobi*

Revaluation of 142,000 properties first time since 1980, increasing revenue to US$210 million.



Pakistan *Digitization and GIS-based system in Punjab*

Tax base expansion by increasing 19% of the urban immovable property records.

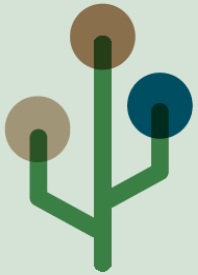
Colombia *Integrated information and AI for building change detection*

Revenue increased from property tax to $ 9.04 billion (peso, millions) in 2021, as compared with $ 1.73 billion in 2004.

Technological solutions for enhancing OSR and limitations on the role of ICT

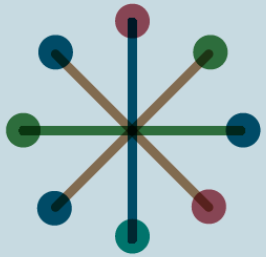
Data Capture/Identification

- ✔ Remote sensing and high-resolution imagery (satellite/ aerial/UAV/mobile mapping, and open-source imagery)
- ✔ Spatial data extraction
- ✔ Mobile surveying application



Assessment / Processing

- ✔ GIS-based data management
- ✔ AI/ML-based assessment
- ✔ Automated data processing (automated assessment and valuation)



Integrated Administration Systems

- ✔ Web-based OSR administration systems
- ✔ Integrated payment gateways
- ✔ Mobile/electronic payment solutions

- **Enabling Environment:** HR Capacity, Legal Framework, Political Ownership, and Institutional Collaboration, among others.

Contextual Continuum Framework of SNG OSR Reform

STATUS	Limited/Adequate coverage, but out of date	Some good/great areas, some bad areas	Comprehensive, but slightly dated coverage	Comprehensive coverage, challenge of upkeep
DATA AND ASSESSMENT	**Limited attribute data, opaque market data** Floor area-based systems with limited discrimination based on few variables Imagery and algorithms can identify extent and basic 'counting' based in tax base coverage	**Basic attribute data, thin market data** Cost-based systems, calibrated by locational adjustments Drone footage, digital cost schedules and broad locational identification from imagery	**Good attribute data, some market data** Robust market value related systems, using a variety of value significant attributes Integrated database and spatial imagery embedded in a GIS-based MIS	**Excellent attribute data, transparent market data** Full ad valorem appraisal to market value, rebased frequently AI/ML and spatial econometric mass appraisal
ADMINISTRATION	**Basic digital records, manual processes**	**Digital fiscal cadaster, some automated process**	**Digital spatial fiscal cadaster, digital processes mostly automated**	**Fully spatially integrated multi-purpose cadastre and MIS**

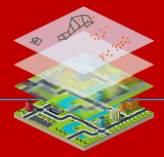
ENABLERS

- Increasing capacity enabled via technology
- facilitated by a benign political context
- sustained via continued investment in system development
- process improvement
- delivered via effective procurement and deployment
- training and public acceptance
- regulatory reform

Theme 1: Data Capture and Identification

The use of imagery, geospatial data and the deployment of GIS are central in data capture and identification.

Technical Considerations



- Data collection and management
- Data sharing and interoperability
- Adoption of technologies
- Innovative developments in data capture

Key Challenges

- Manual approach
- Large amount of data, with objective and subjective elements
- Behavioral obstacle
- Political limitation

Takeaway from Case Study

- Mass data collection exercises (FCC, Zanzibar, Kenya, Punjab)
- Interlinking datasets with GIS-enabled data (Colombia)
- Need for associated operational plan (Zanzibar)
- Need for a clear roadmap for the new tax bills with the updated OSR data (Kenya)

Lessons Learned

1. Access the baseline and develop strategy
2. Leverage Geospatial Data and Technologies
3. Explore Mobile/Matured Technology Options
4. Build Capacity and Maintain Data
5. Ensure Data Sharing and Interoperability
6. Hold Ownership and Manage Risks

Theme 2: Assessment and Processing

OSRs require an assessment to determine the tax and charge. Technology can be applied in the assessment process by applying automated procedures.

Technical Considerations

- Simplified approaches and automation
- Scope of assessment automation with the use of technology

Key Challenges

- Manual, unclear, dated or complex assessment rules
- Limited data availability
- Low-capacity level

Takeaway from Case Study

- Prescribed, rule-based mass assessment model (Kenya, Pakistan)
- Automation system based simplified criteria (Pakistan)
- Flexible approach combined with traditional and automated assessment (Ghana)
- Integration of various data source for regular property assessment and use of data mining for processing (Colombia)

Lessons Learned

- Prioritize Targets
- Recognize Feasible Methodologies
- Embrace Geospatial Technologies and Transit to Digital
- Develop Automation Workflow
- Implement Batch Processing
- Monitor and Make it Sustainable

Theme 3: Integrated Administration System

Administration system host all revenue processes. Selecting a simple and cost-effective solution with a proper package of technologies is key for OSR enhancement.

Technical Considerations

- Phased-system development
- Choice of the right software
- Mobile and e-payment solutions

Key Challenges

- Lack of integrated system
- Partially manual administrative system
- Inefficient billing, collection, and enforcement
- Fragmentation of systems at SNG level

Takeaway from Case Study

- Incremental approach from pilots to cover all SNGs (Tanzania)
- Improvement of taxpayer compliance by automating billing and collection using web-based interface an e-payment (Pakistan)
- Challenges in system implementation due to decentralization (Kenya)

Lessons Learned

1. Determine How the Fragmented Administration Systems Interact
2. Adopt Agile and Affordable System Design
3. Build a Centralized Database
4. Explore Options for Utilizing the National Systems
5. Undertake Incrementally and Make it Sustainable

Where Next?

Transition to Modern OSR Management and Decision on Investment

Decisions over the selection of specific technological solutions to enhance OSR must consider both the capital and operational expenses of each technology, as well as their expected benefits.

Success is not contingent upon the use or selection of a specific technological solution.

Success of technological solutions for OSR enhancement depends on overall commitment to revenue reforms, a full vision and plan for change management, financial constraints, and regulatory and institutional determinants.

With careful technical design and piloting, the initial investment is expected to pay-off.

Technology can simultaneously address the administrative challenges facing SNGs while also producing the much-needed revenue to address SNG funding gaps.

Thank you for listening

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