Performance-Based Contracts: Advancing Efficiency in the Water Sector

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INTRODUCTION

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Definition: A contract where payment is based on achieving specific performance targets rather than traditional input-based delivery

- E.g.: Traditional contracts: The contractor is paid for the work they do or the resources they use, no matter what results are achieved.
  Paying a plumber for the number of hours worked and materials used, even if the leak comes back later.
- PBCs: The contractor is paid for the results they deliver, not just for the effort or inputs.
  Paying the plumber only if the pipe stays leak-free for 12 months.

Focus: Outputs (e.g., water loss reduction, service improvement), not just activities

Application areas:

- Water loss reduction (NRW)
- Energy efficiency
- Wastewater treatment
- Infrastructure maintenance and rehabilitation

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Non-revenue water: A global challenge

- NRW = Water produced but not billed due to leaks, theft, or metering inaccuracies
- In South Africa, NRW averages over 40%, costing billions annually

Why PBCs are suited for NRW projects

- Align contractor incentives with performance (e.g., leak reduction, metering accuracy)
- Foster innovation and efficiency from private sector
- Shift focus from short-term repairs to sustained loss reduction

Typical structure in NRW projects

- Baseline verification of NRW levels
- Defined targets for NRW reduction (e.g., % reduction over 3 years)
- Payments linked to verified savings
- Risk and reward shared between utility and contractor

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Early experiences

- First notable use in water sector: eThekwini Municipality NRW Reduction (2008–2012)
- Early adopters: Johannesburg Water, Nelson Mandela Bay
- Mixed results due to:
  - ➢ Weak baselines
  - ➢ Capacity constraints
  - ➢ Inadequate legal frameworks

Current trends

- Increasing interest from DWS and municipalities
- Used in energy, roads, and sanitation sectors
- Development Finance Institutions (DFIs) promoting PBCs in water security programs

CASE STUDIES

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Case Study 1: eThekwini Municipality

-Scope: Leak detection and pressure management

-Outcome: 20% reduction in system losses

-Key Success Factors

- Municipal support
- Capacity for monitoring

Case Study 2: Nelson Mandela Bay Municipality

-Challenge: Contractual disputes over performance metrics

-Lesson: Importance of clear KPIs and dispute resolution mechanisms

Case Study 3: Manila, Philippines (International Benchmark)

-Private operator with NRW reduction targets

-Results: NRW dropped from 63% to 16% over 10 years

-Relevance to SA: Highlights the power of long-term, well-structured PBCs

SUITABILITY OF PBCS IN SOUTH AFRICA

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Opportunities

- Leverage private sector skills
- Improve service delivery without upfront capital
- Potential for climate adaptation and energy savings
- Suitable for municipalities with low technical capacity

Challenges

- Lack of baseline data
- Weak contract management skills
- Resistance to private sector involvement
- Inadequate regulatory frameworks

Required Adjustments for Local Conditions

- Capacity building for municipalities on contract oversight
- Use of blended finance (DFI + municipal + private)
- Community engagement to build trust
- Locally adapted KPIs (e.g., job creation, community upliftment)

BROADER APPLICATIONS OF PBCS BEYOND NRW

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Energy Performance Contracting (EPC)

Overview: EPCs are a type of PBC where an Energy Service Company (ESCO) implements energy-saving measures and is paid from the actual energy savings achieved. These contracts are widely used in public buildings, street lighting, and water treatment plants.

Structure

- A baseline of energy use is established
- The ESCO designs and installs energy-saving equipment (e.g., LED lighting, efficient pumps, solar panels)
- The client pays the ESCO from the savings generated (shared savings or guaranteed savings model)
- Performance is verified through Measurement and Verification (M&V) protocols.

Benefits

- No upfront capital required from the public entity
- Guaranteed reduction in operational costs
- Transfer of technical and performance risk to private sector.

BROADER APPLICATIONS OF PBCS BEYOND NRW CONTINUED

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South African Context, EPCs have been implemented by:

- SANEDI (South African National Energy Development Institute) under its Public Building Energy Efficiency Programme
- City of Cape Town piloted EPCs for municipal buildings and street lighting upgrades
- Government has mandated EPCs for large public buildings under Regulations for Energy Performance Certificates (2020).

Challenges

- Lack of ESCO market maturity and limited understanding among public entities
- Delays in M&V and payments due to bureaucracy.

BROADER APPLICATIONS OF PBCS BEYOND NRW CONTINUED

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Road Maintenance

Overview: In road maintenance, PBCs are structured around service quality standards, such as road smoothness, pothole response time, and drainage functioning, rather than just resurfacing kilometers.

Structure

-Contractor is responsible for maintaining a stretch of road over several years (e.g., 5–10 years)

-KPIs include ride quality, crack sealing, response time to incidents, and user satisfaction

-Payments are linked to regular performance audits and penalties apply for non-compliance.

Global Examples

-Argentina and Uruguay pioneered road PBCs in Latin America

-Kenya and Tanzania have used PBCs for routine maintenance with donor support (e.g., World Bank).

South African Context

-SANRAL is a key user of PBCs: Uses Output and Performance-Based Road Contracts (OPRCs) for national roads

-Payment is based on compliance with service levels rather than volume of works

Benefits

-Better cost predictability

-Incentivizes preventative maintenance, reducing long-term costs

-Minimizes administrative overhead.

BROADER APPLICATIONS OF PBCS BEYOND NRW CONTINUED

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Wastewater Treatment

Overview: In wastewater, PBCs focus on **compliance with effluent discharge standards**, **energy efficiency**, and sometimes **sludge handling and reuse**.

Structure

-Contractor is paid based on achieving effluent quality targets (e.g., nitrogen and phosphorus levels).

-May include upgrades or O&M (Operation and Maintenance) of the plant.

-Bonus or penalties tied to compliance and environmental outcomes.

Global Example

-China and Vietnam have used PBCs for Build-Operate-Transfer (BOT) wastewater plants where performance was linked to pollutant removal levels.

-Brazil implemented contracts linking payments to treated volume and quality under its PPP sanitation programs.

South African Context

•Limited but emerging:

- **eThekwini Municipality** has explored private sector partnerships for sludge beneficiation.
- **Amatola Water** considered PBCs for plant operations under water boards.
- Some DWS-supported programs are encouraging outcome-based wastewater treatment projects in smaller towns.

Benefits

-Ensures environmental compliance.

-Encourages energy and chemical optimization.

-Promotes innovation in treatment and resource recovery (e.g., biogas).

Challenges

-Municipal capacity for effluent quality monitoring.

-Risk of environmental fines if contract poorly managed.

-Unclear asset handover and regulatory roles in smaller municipalities.

CROSS-SECTOR OBSERVATIONS: KEY ENABLERS FOR SUCCESS

Enabler	Energy	Roads	Wastewater
Baseline data	Essential (e.g., kWh/year)	Required (road condition index)	Critical (effluent quality)
Monitoring & verification	M&V protocols (IPMVP)	Road condition surveys	Lab testing of discharge
Contract duration	5–15 years	5–10 years	5–20 years
Private sector involvement	ESCOs	Civil contractors	O&M service providers, tech firms
Key risks	Energy price volatility, performance disputes	Weather damage, underfunding	Compliance failure, sludge issues

CONCLUSION

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-PBCs are not one-size-fits-all, but they offer a robust mechanism to deliver infrastructure services with accountability, transparency, and value for money.

-PBCs offer a promising pathway for addressing infrastructure and service delivery challenges in South Africa, particularly in reducing NRW

-With proper safeguards, institutional support, and community buy-in, PBCs can unlock efficiency and resilience in the water sector and beyond

-South Africa has piloted their use in all three sectors, and with stronger policy guidance and institutional support, they could be scaled to address the country's pressing infrastructure delivery and service performance gaps.

CONSIDERATIONS FOR SCALING PBCS IN SOUTH AFRICA

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-National framework for PBCs: Develop standard guidelines and templates.

-Capacity development: Train municipal officials in performance contracting.

-Pilots and demonstration projects: Target high-NRW municipalities with donor support.

-Monitoring and verification mechanisms: Independent, robust systems to verify results.

-Incentivize innovation: Allow room for contractors to propose new technologies or approaches.

Questions?

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Ndo livhuwa

Enkosi

Kea leboha

Thank you

Ndza nkhensa

Ke a leboga

Ngiyabonga

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Dankie