

Reduction of Commercial Losses

Non-Revenue Water Management Training
DMCI Homes Corporate Center, Nov 18-19, 2010



Elements of Commercial Losses

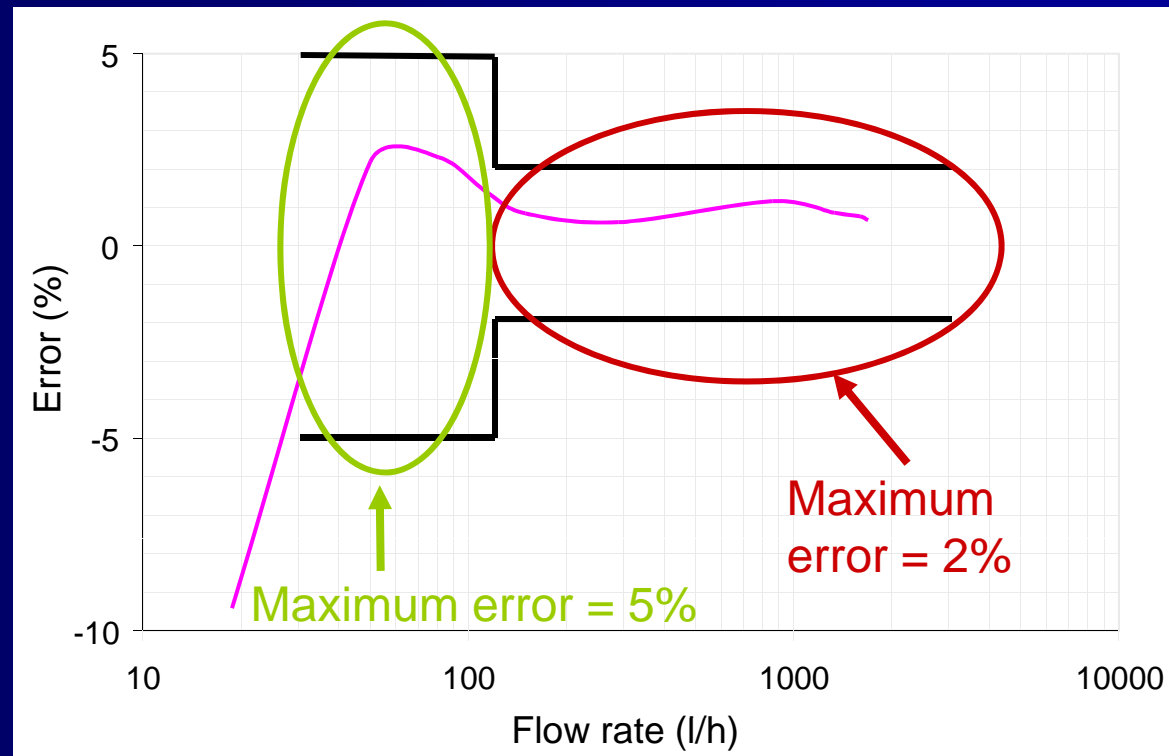
- 💧 **Customer meter inaccuracies**
- 💧 **Unauthorized consumption; illegal connections, theft and fraud**
- 💧 **Customer data base errors**
- 💧 **Data collection and transfer errors**

The Many Causes of Meter Inaccuracies

- 💧 Wrong installation layout
- 💧 Poor materials, improper installation
- 💧 Poor water quality, intermittent supply
- 💧 Unsuitable size, meter flow profile
- 💧 Inappropriate class and type of meter
- 💧 Spinning or jetting
- 💧 Roof Tanks
- 💧 Lack of proper maintenance/replacement

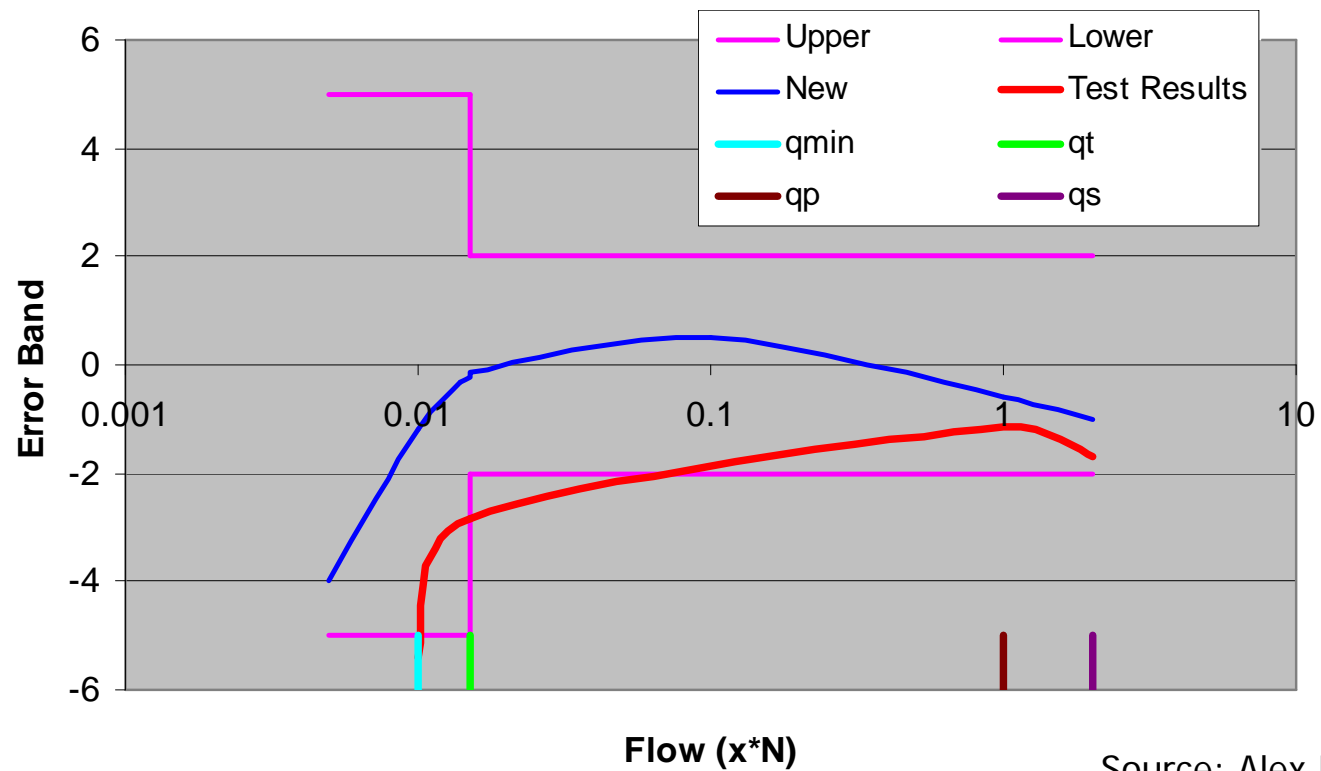
Measuring range

💧 Measuring range of a domestic water meter



Deterioration of Meter Accuracy

Flow Meter Test Results - ISO 4064-1



Source: Alex Rizzo

Avoiding Meter Inaccuracies: Adopt Appropriate Metering Policy/Capacity

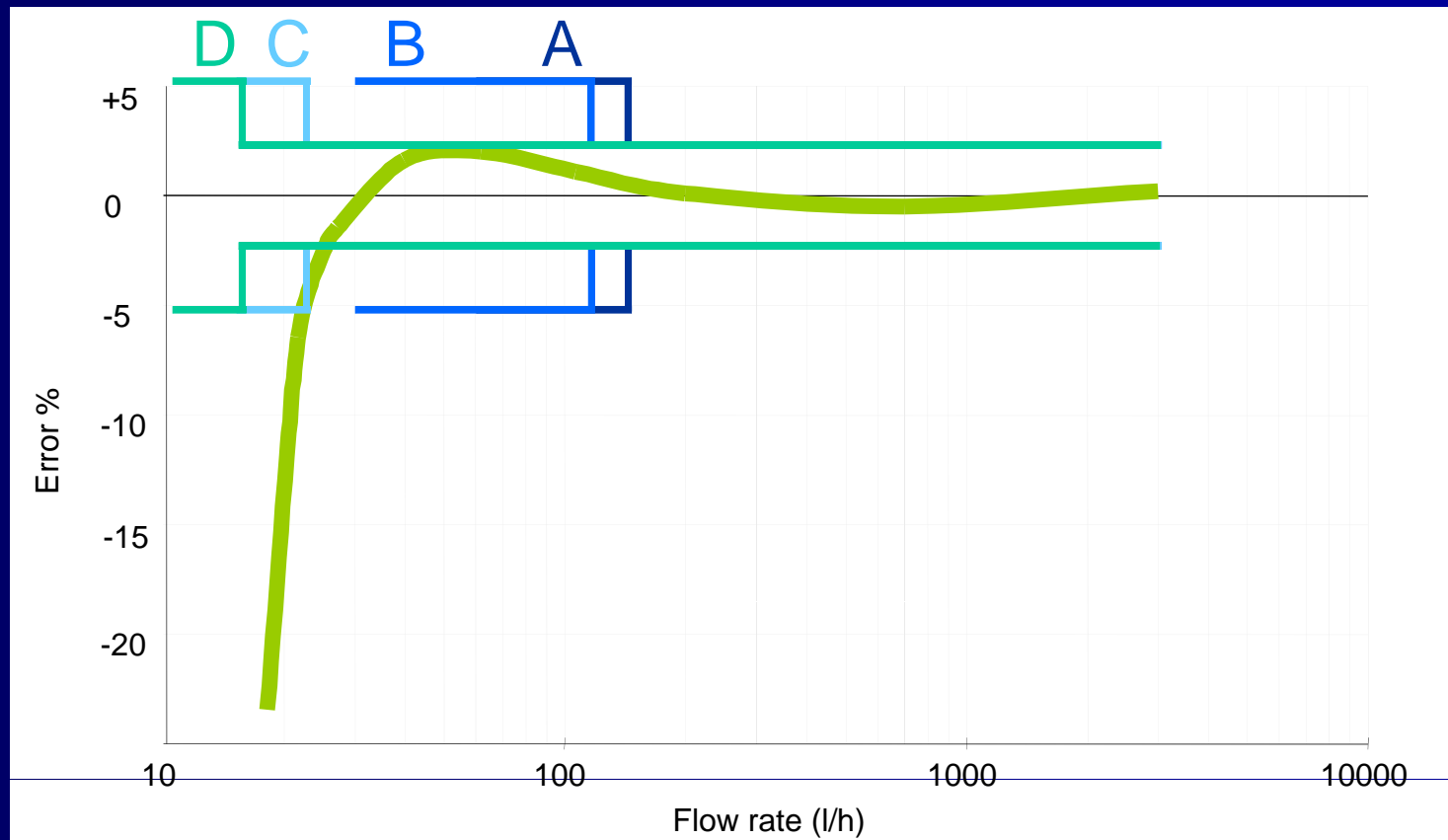
- 💧 **Meter ownership by utility**
- 💧 **Choose the right meter, proper installation, testing**
- 💧 **Pay special attention to large customers**
- 💧 **Clear manuals, instructions, specifications to avoid causes of inaccuracies**
- 💧 **Sufficient funding**
- 💧 **Capable management and staff**
- 💧 **Management/customer support**

Classes of Customer Meters

- 💧 **Meter Classes are from A – D**
- 💧 **The higher the class, the lower the flow at which the meter starts to register**
- 💧 **Accuracy in general is the same for all classes**
- 💧 **The higher the class the less the robustness of the meter (if water quality is doubtful use low class meters)**

Metrological classes

Typical ISO 4064:1993 Domestic water meters



Elements of Unauthorized Consumption

- 💧 **Illegal connections**
- 💧 **Meter tampering, bypasses**
- 💧 **Illegal use of water from hydrants (e.g. tanker filling, construction works)**
- 💧 **Irrigation by breaking mains**
- 💧 **Illegal commercial and industrial consumption**
- 💧 **Corrupt meter readers**

Illegal Connections and Water Theft Happen Everywhere

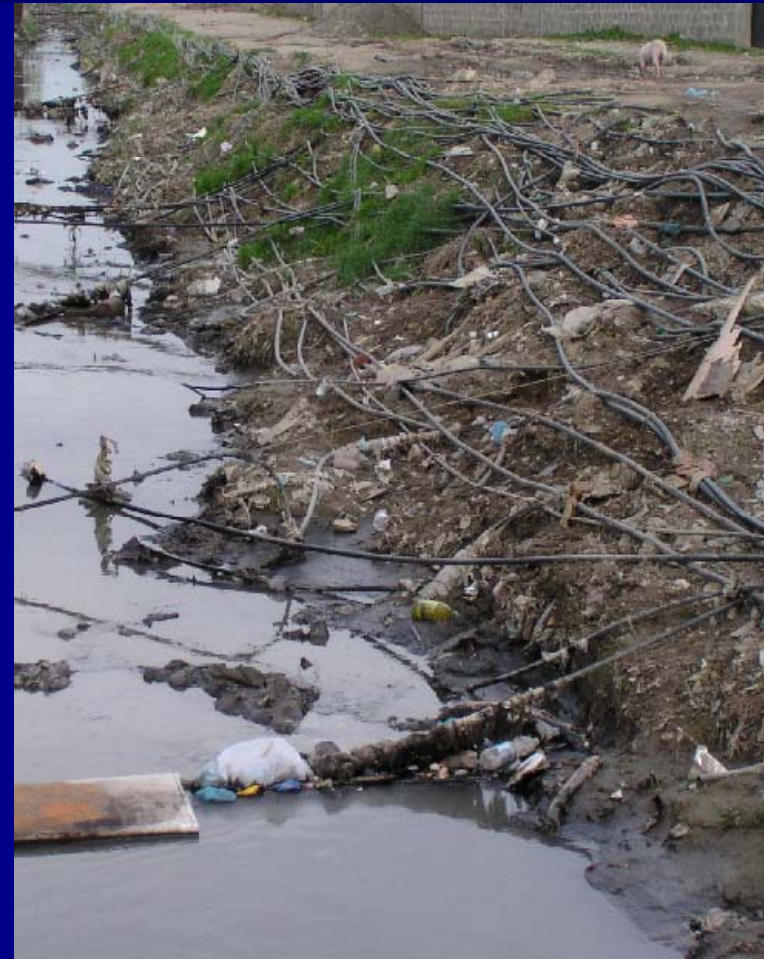


Reducing Theft and Fraud: a Permanent Battle

- 💧 **Enabling regulation to punish theft/fraud**
- 💧 **Penalize illegal connections**
- 💧 **Disconnect for non-payment**
- 💧 **Regular spot checks at large customers,
construction sites**
- 💧 **License, regulate water trucks**
- 💧 **Keep meter readers honest**
- 💧 **Always maintain good records**

Illegal Connections and Informal Settlements

- 💧 Poor quality of installations encourages losses
- 💧 Informal settlements can be measured as a whole (district meter)
- 💧 Work with community to improve and regularize service



Meter tampering, bypasses



- 💧 Regular visual inspection
- 💧 Look for flags, anomalies in billing records
- 💧 Comparison of consumption to average values

Pay Special Attention to Large Customers

- 💧 **Big commercial enterprises are often the biggest thieves of water**
- 💧 **Check consumption monthly to detect anomalies**
- 💧 **In suspicious cases: establish a temporary DMA and measure for a few days**

Water Theft and the Community

- 💧 **Enlist the help of customers and civil society to combat theft**
- 💧 **Create enabling environment, “educate” politicians**
- 💧 **Message to get across:**
 - **piped water is a commercial good, not free**
 - **supply depends on customers paying their bills**
 - **misuse and stealing hurts the community**

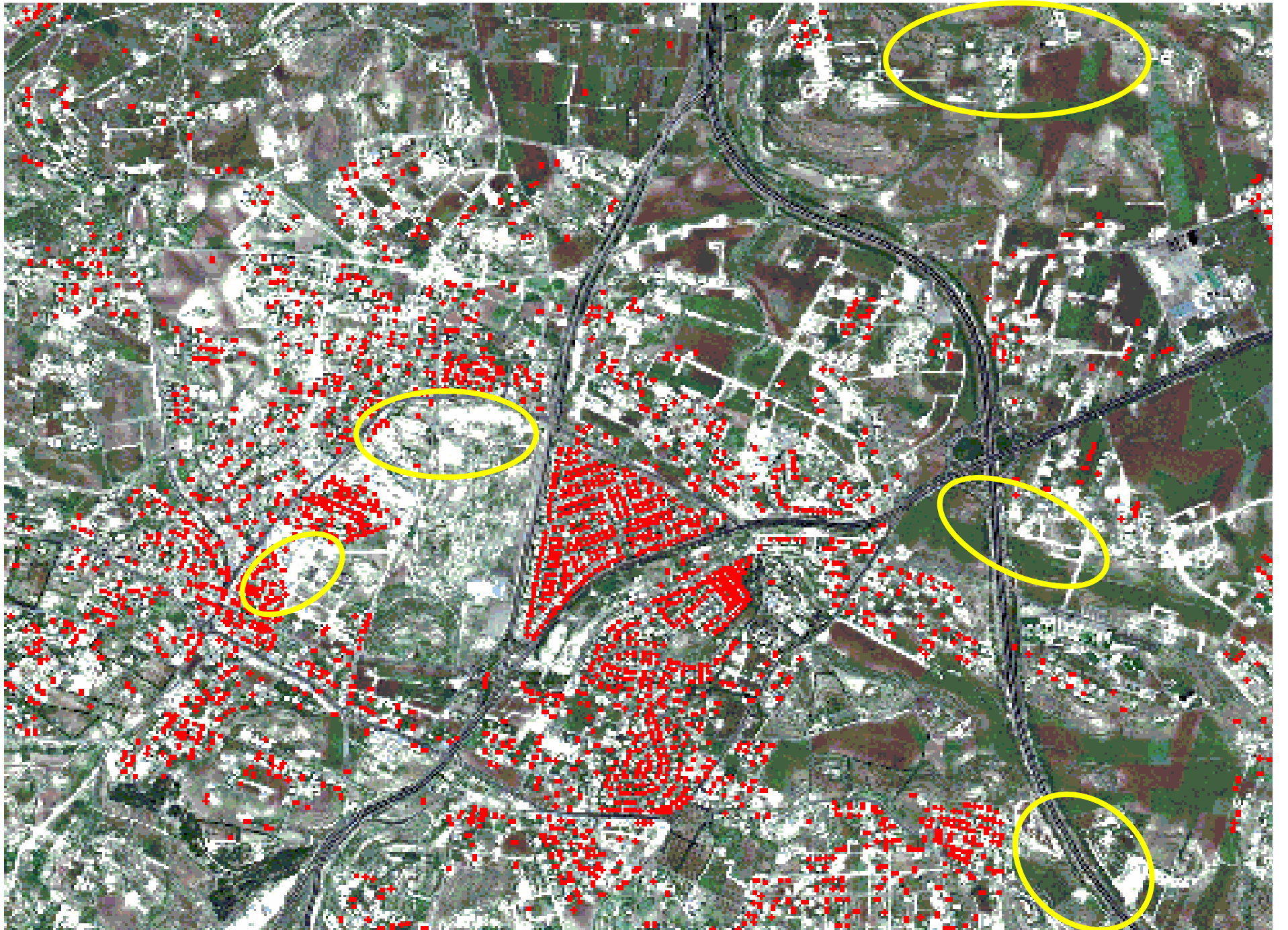
Keep Customer Data Base Correct and up-to-date

- 💧 **Detect and register illegal connections**
 - House to house, customer surveys
 - Work with community; awareness campaigns
 - Keep customer records up to date
- 💧 **Keep data base up to date**
 - Visit customers
 - Check category
 - Check number of people. garden
- 💧 **GIS and aerial photographs may provide clues**



Dataset	Description	Type	Display	Selec	Pen Width	Line/Symbol	Pen Colour	Fill Pattern	FG Colour	B
Zones	Zones	Polygons	✓		7	2	8454143	N	1	0 T
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Use this button to Pan, dragging grabs the map and moves it around



Tackling Problems with Meter Reading, Data Handling and Billing

- 🔹 effective supervision, rotation of meter readers, spot-checks
- 🔹 electronic meter reading devices
- 🔹 periodic auditing of the entire meter reading, data processing, billing, collection chain
- 🔹 statistical analysis, monitoring, verification
- 🔹 appropriate billing system operated by competent management and personnel

Key Elements of a Program to Reduce Commercial Losses

- 💧 Improve the customer database
- 💧 Improve estimates used for billing
- 💧 Introduce/improve customer metering
- 💧 Detect illegal consumption, theft and fraud
- 💧 Control meter reading, billing corruption
- 💧 Communicate with customers
- 💧 Reduce wastage at public taps

A Managerial, Capacity, Political and Socioeconomic Problem

- 💧 Tackling commercial losses not so much a technical/financial problem, but requires:
 - management commitment
 - political support/will for unpopular measures
 - socio economic issues: poverty, illegal settlements
 - capacity, knowledge
 - some resources
 - community support
 - **perseverance**

Commercial Loss Reduction: First Priority in NRW Reduction Effort

Pick the low-hanging fruit first:

Tackle commercial losses immediately



Always Start NRW Reduction with Commercial Loss Reduction

- 💧 Reduction to low levels (2 - 5% of Authorized Consumption) possible with little technical constraints
- 💧 Investments are low and have short payback
- 💧 Commercial loss reduction is easier than physical loss reduction
- 💧 Increased revenues can help to fund physical loss reduction

Key Messages

- 💧 **Commercial losses should be no more than a few % of authorized consumption**
- 💧 **Combating commercial losses requires little financial resources, but management commitment, political will, community support and incentives**
- 💧 **Initiate NRW programs with commercial loss reduction; it's the easier part and brings immediate payback**

**There is no good reason not to
start tomorrow!**