


Addis Ababa Water and Sewerage Authority




Vitens Evides
international

NRW - CareTaker


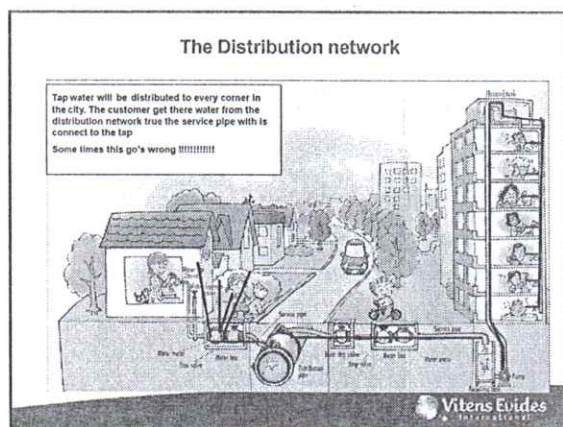
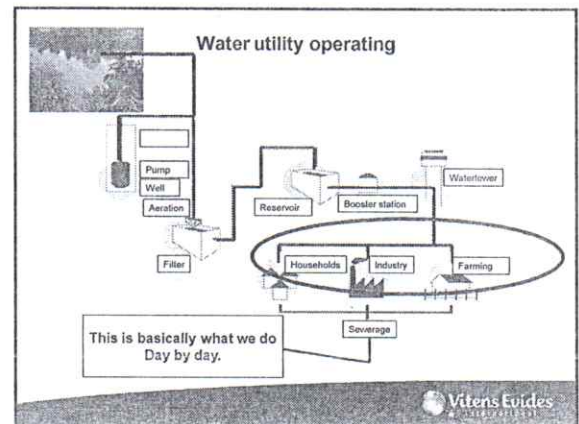
addis ababa water and sewerage authority

Introducing

What's your name?
From which Branche are you?
What's your position/function?






Introduction NRW

NRW The Big Picture

NRW – Non Revenue water


Difference between produced water and billed water.

Non Revenue Water

What is Non Revenue Water (NRW)

It is the volume of water supplied into the network that does not generate sales revenue





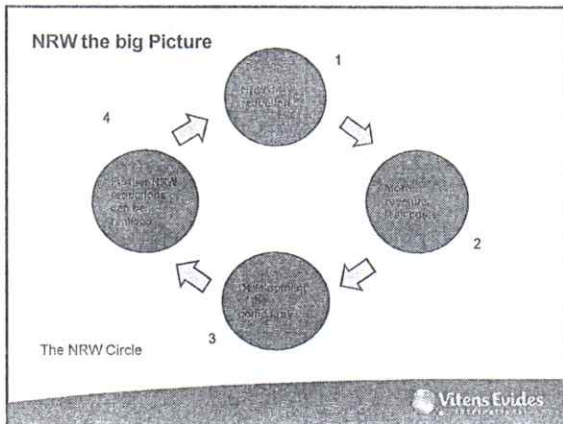
Non Revenue Water

What is Non Revenue Water (NRW)

It is the volume of water supplied into the network that does not generate sales revenue

Usually expressed in:

- m³/day; or
- % of $\frac{\text{Water Volume Sold}}{\text{Water Volume Produced}}$


The NRW-circle

Reducing NRW releases more water and money

Reducing real losses:

- More water available for consumption
- Postpone the need for investing in new sources
- Lowers operating costs


Reducing commercial losses more money available for the company for investment



NRW The Big Picture

IWA Water balance


System Input Volume	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption	Revenue Water	
		Unbilled Authorised Consumption	Billed Unmetered Consumption		
	Water Losses	Apparent Losses	Unbilled Metered Consumption	Unbilled Unmetered Consumption	Non Revenue Water
		Real Losses	Unauthorised Consumption: Billing & Customer Meter Inaccuracy	Leakage on Overflows at Storage Tanks	
		Leakage on Transmission and Distribution Main			
		Leakage on Service Connections up to point of Customer Meter			



Unbilled Authorised Consumption

IWA Water balance


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Unbilled Authorised Consumption

What is Unbilled Authorised Consumption?

- Water legitimately consumed but not billed
- Cannot be reduced unless there is a change in policy
- Still should be metered as part of the water balance
- This can be:
 - > Water fountains
 - > Pipe and sewer flushing
 - > Water bowsters
 - > Watering parks and gardens / sprinklers
 - > Public drinking fountains
 - > Fire fighting – e.g. hydrants




Unbilled Authorised Consumption (Unbilled)

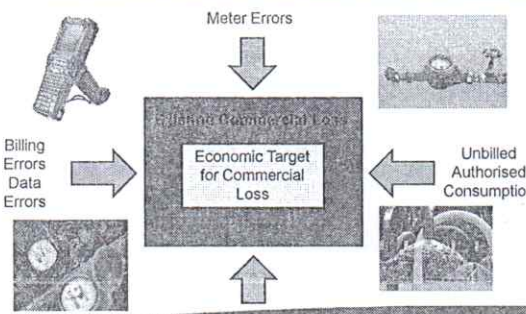
Apparent losses

RWA Water balance

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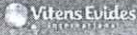


Apparent Losses



Economic Target for Commercial Loss

- Meter Errors
- Billing Errors Data Errors
- Unbilled Authorised Consumption




Unbilled Authorised Consumption (Unbilled)

Unauthorised Consumption

What is unauthorised consumption

- Billing errors e.g. legitimate connection where billing team not informed, or no action taken (intentional and accidental)
- Permanent or temporary meter bypass
- Illegal connections




Unbilled Authorised Consumption (Unbilled)

Billing & Customer meter inaccuracy

What is billing and Customer meter inaccuracy:

- Volume under-recorded by revenue meter due to its condition
- Over-sized revenue meters
- Meter tampering (water theft)
- Meter reader and customer collusion (water theft)
- 'Fictitious' readings (water theft)
- Data handling errors




Unbilled Authorised Consumption (Unbilled)

Real Losses (Physical losses)


RWA Water balance

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Real losses

- Leaks on the main pipes





And



Real losses

- Leaks on customer connections.
- Leakage occurs through holes or cracks in the main pipes or at pipe joints, which will leak water constantly over a 24-hour period.

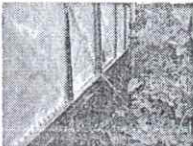




Unbilled Authorized Consumption Unbilled (UUAU)
Real Losses (Leakage)

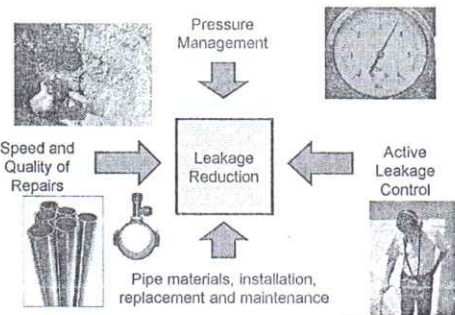

Real losses or Leakage is the:
Water escaping from the distribution network before reaching the customer

This is usually in the form of leaks from the:



- Transfer and distribution pipes;
- Joints and fittings including air valves, hydrants etc;
- Service reservoir floors and walls;
- Reservoir overflows; and
- Service connections up to the point of customer boundary or meter.

Real losses

NRW The Big Picture





NRW The Big Picture

Understand NRW is very important

It is a key performance indicator


- Learn about the network and operating practises
 - - how much water is being lost
 - - where are losses occurring
 - - why are losses occurring
 - - strategie to reduce
 - - maintain strategy and sustain
- NRW requires a long term commitment and involvement of all utility departments




Prioritising NRW Reduction

- Commercial losses represent a loss of potential revenue due to water being consumed but not paid for.
- For every cubic metre of water unbilled, the water company loses the opportunity to collect money for that water.
- Leakage represent a loss of operational and capital expenditure; i.e. the cost of treating and supplying the network with the lost water.
- Generally, there is a greater financial return on reducing commercial losses than for reducing the equivalent physical losses.
- However, the water available from reducing leakage will soon be needed for revenue consumption

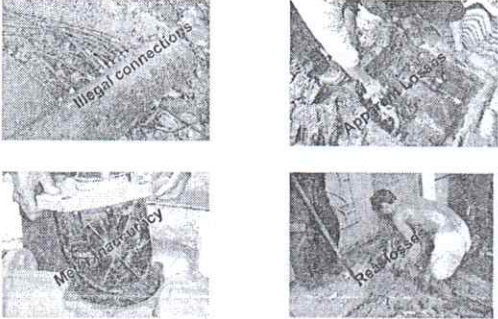

Therefore, the priority is to reduce leakage



IWA Water Balance

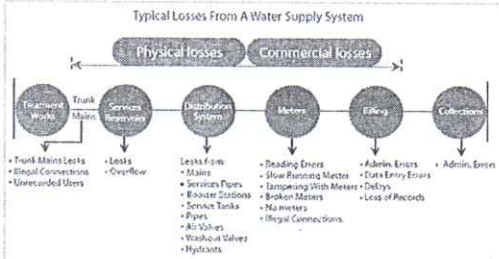


IWA Water balance of NRW

IWA Water Balance

Typical Losses From A Water Supply System




Physical losses

- Trunk Mains Losses
- Illegal Connections
- Unrecorded Users
- Leakage
- Overflow
- Leakage from:
 - Mains
 - Services Pipes
 - Reservoir Stations
 - Service Tanks
 - Pipes
 - At Valves
 - Washout Valves
 - Hydrants
- Reading Errors
- Slow Running Meters
- Tampering With Meters - Delays
- Broken Meters
- No meters
- Illegal Connections

Commercial losses


- Admin. Errors
- Admin. Errors
- Admin. Errors
- Loss of Records



IWA Water Balance

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Questions

