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NON-REVENUE WATER MANAGEMENT AND EXPERIENCES FROM TURKIYE



3rd Saudi Water Forum

29 April – 01 May 2024, Riyadh - Kingdom of Saudi Arabia

Presenter: Yasin Torun, Chairman, TSITT



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What is Non-Revenue Water?

Non-Revenue Water (NRW) is the difference between the amount of water that is produced by a water utility for consumption/use, and the amount of water that is actually billed to customers.

What is Non-Revenue Water?

NON-REVENUE WATER

Hear That?

It's the sound of non-revenue water and your budget going down the drain.





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What is Non-Revenue Water?

The global volume of NRW has been estimated to be 346 million cubic metres per day or 126 billion cubic metres per year. Conservatively valued at only USD 0.31 per cubic metre, the cost/value of water lost amounts to USD 39 billion per year.

Source: Quantifying the global non-revenue water problem, R. Liemberger and A. Wyatt, IWA Publishing 2019

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What is Non-Revenue Water?

Not only is this an enormous financial concern, but elevated NRW also detracts from water utilities, in a time of increasing scarcity and climate change, from reaching their goals of full service coverage, at a reliable level of service at an affordable price.

Source: Quantifying the global non-revenue water problem, R. Liemberger and A. Wyatt, IWA Publishing 2019

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What is Non-Revenue Water?

In developing countries, roughly 45 million cubic meters of water are lost daily with an economic value of over US\$3 billion per year. Saving half of those losses would provide enough water to serve at least 90 million people.

Source: World Bank & IWA press release, Stockholm, Sweden, September 1, 2016

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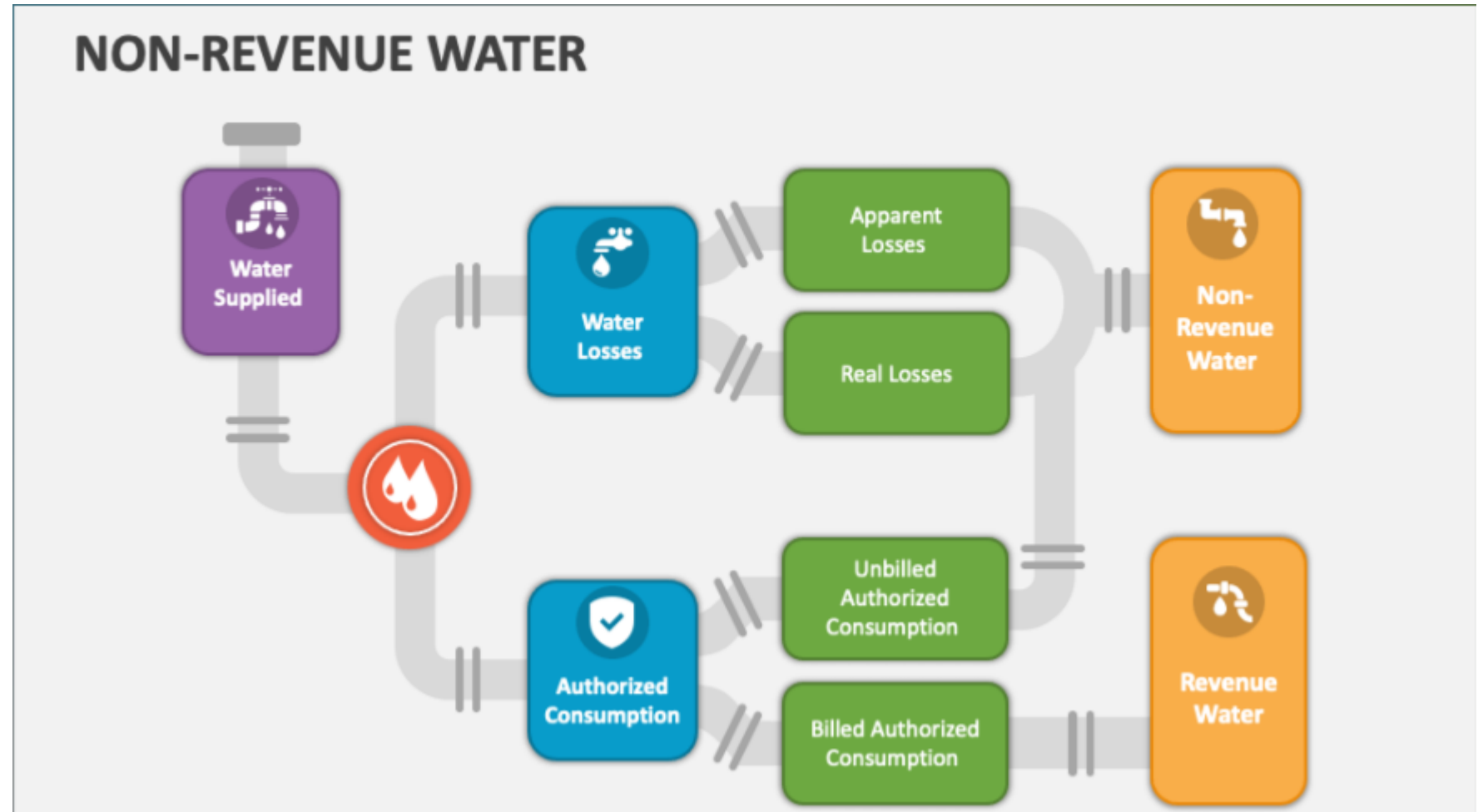
What is Non-Revenue Water?

High levels of NRW reflect huge volumes of water being lost through leaks, not being invoiced to customers, or both. Reducing NRW can significantly improve the performance of public water utilities in developing countries.

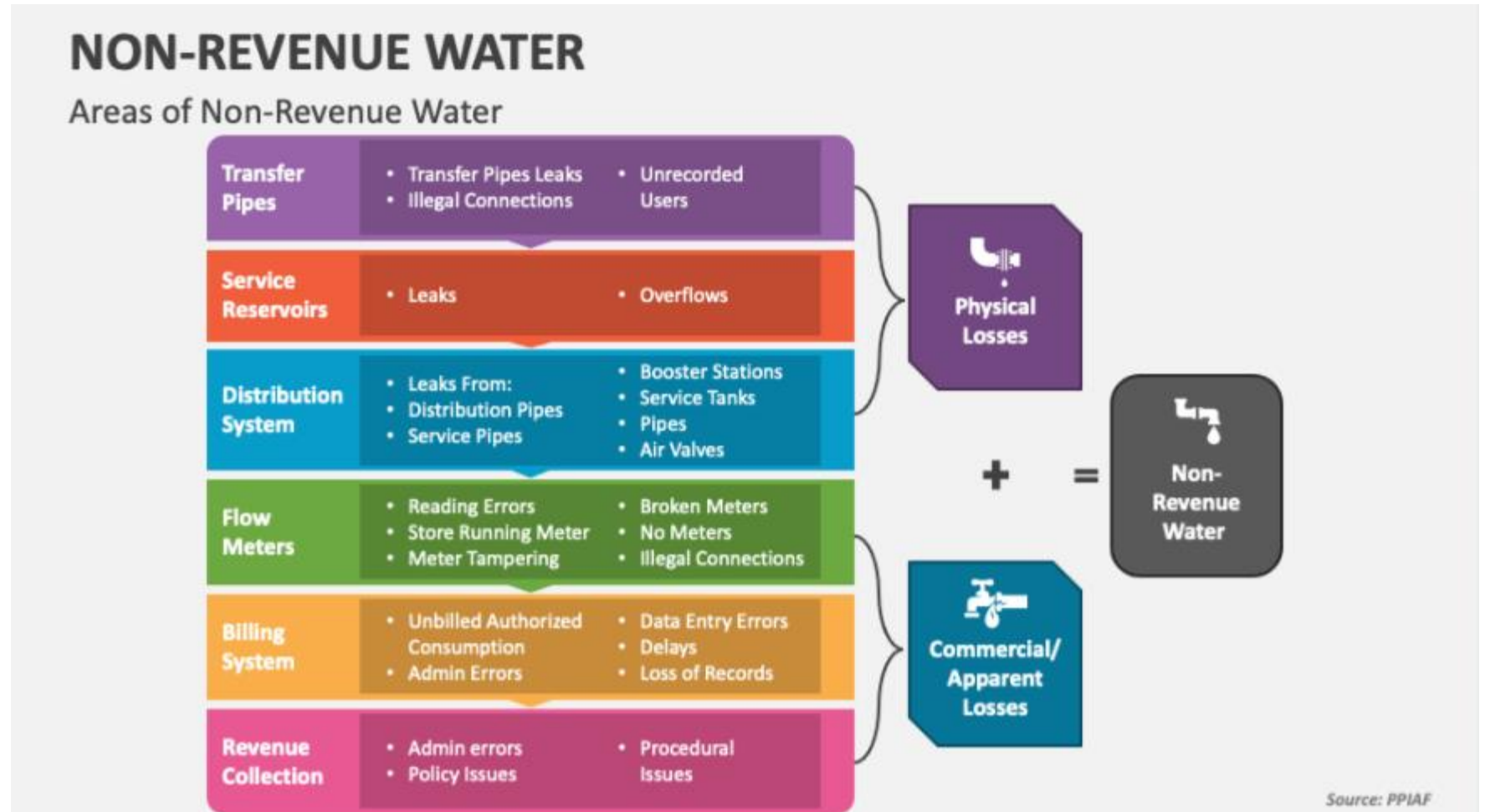
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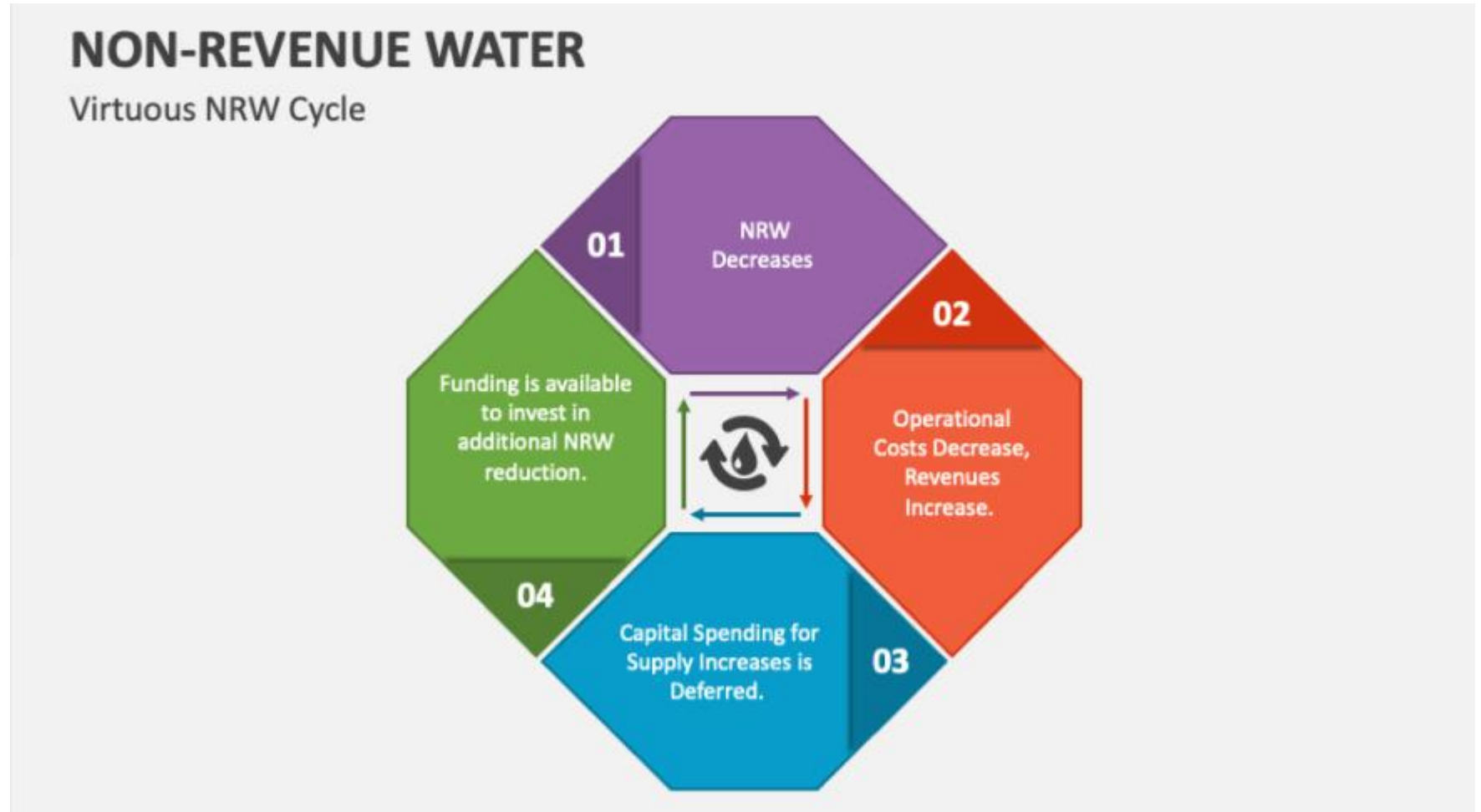
What is Non-Revenue Water?



Areas of Non-Revenue Water



Virtuous Cycle of Non-Revenue Water



Importance of Non-Revenue Water Management

NON-REVENUE WATER

Importance of NRW Management

- 01** Improves customer service levels - higher pressures and better continuity and expanded coverage.
- 02** Enhances asset lives and utility management - if NRW reduction leads to 24/7.
- 03** Improve utility financial performance by reducing costs and increasing revenues.
- 04** Makes cities more competitive when accompanied by service improvement.
- 05** Improves climate resilience by reducing demand for scarce water resources.
- 06** Reduces emission of GHGs - less energy/m³ delivered.

Source: PPIAF



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Practice Field of Non-Revenue Water Management

1. Top Management Interest / Leadership regarding good NRW management
2. NRW Management Organization
3. Communication and Coordination among Departments regarding NRW

Source: PBC in NRW Reduction Programs, Session 5, March 2017, WB PPIAF

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Practice Field of Non-Revenue Water Management

4. NRW Program Planning and Budgeting
5. Oversight of NRW Program Plans and Budgets
6. Technical Skill Level and Training of NRW Personnel

Source: PBC in NRW Reduction Programs, Session 5, March 2017, WB PPIAF

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Practice Field of Non-Revenue Water Management

7. Technical Resources Available

8. Reporting and Public Information on NRW Progress, Targets, Plans and Budgets

9. Advanced, Ongoing, Staff Training / Capacity Building

Source: PBC in NRW Reduction Programs, Session 5, March 2017, WB PPIAF

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Practice Field of Non-Revenue Water Management

10. Use of internal awards and recognition for excellent staff performance

11. Performance based compensation bonus systems for staff

12. Experience in contracting for NRW services

Source: PBC in NRW Reduction Programs, Session 5, March 2017, WB PPIAF

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Solutions to Reduce Non-Revenue Water

1. Leak Detection and Management: Implementing advanced leak detection technologies can significantly help in identifying leaks and bursts in the distribution network promptly. These technologies include acoustic sensors, remote sensing, and even machine learning algorithms that can analyze data to pinpoint potential leakage points. Regular maintenance and timely repairs based on these findings can help mitigate real losses effectively.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

2. Pressure Management: Maintaining optimal pressure in the distribution system is crucial. High pressure can stress pipes and lead to leaks, while low pressure can encourage backflows and contamination. Installing pressure regulating valves and using smart pressure management systems can help maintain the right pressure levels, reducing the risk of leaks and bursts.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

3. Metering and Data Analytics: Accurate metering and data analysis play a pivotal role in minimizing apparent losses. Upgrading meters to more reliable and accurate ones, along with implementing automated meter reading (AMR) or advanced metering infrastructure (AMI) systems, enables real-time monitoring of consumption patterns and quick detection of anomalies.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

4. Consumer Engagement: Educating consumers about water conservation and leak detection can help reduce both real and apparent losses. Leak detection kits, online portals to monitor consumption, and regular communication about water-saving practices can empower customers to play an active role in NRW reduction.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

5. Asset Management and Predictive Maintenance: Utilizing predictive maintenance strategies can help identify potential failures before they occur. By employing data from sensors and historical maintenance records, water utilities can optimize maintenance schedules and prioritize critical areas for repair, thereby minimizing downtime and water loss.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

6. Investment in Infrastructure: Aging and deteriorating infrastructure contribute significantly to NRW losses. Investing in the rehabilitation and replacement of pipelines, valves, and pumps is essential for reducing leaks and increasing the overall efficiency of the distribution network.

Source: Maine Water Utilities Association

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Solutions to Reduce Non-Revenue Water

7. Regulation and Policy Implementation: Governments and regulatory bodies can play a crucial role by enforcing stricter regulations on NRW reduction and incentivizing water utilities to adopt efficient practices. Financial penalties for excessive losses and rewards for meeting reduction targets can be effective motivators.

Source: Maine Water Utilities Association

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Trenchless Pipeline Rehabilitation to Reduce NRW

Rehabilitating the water distribution network (WDN) is one of the ways to decrease NRW as old or poorly constructed pipes have a higher percentage of water leakage than new and well-constructed pipes. WDN rehabilitation would not only increase service quality but also would contribute to decreasing overall NRW by decreasing water losses among pipes.

Source: A M Farouk et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 641 012019

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Trenchless Pipeline Rehabilitation to Reduce NRW

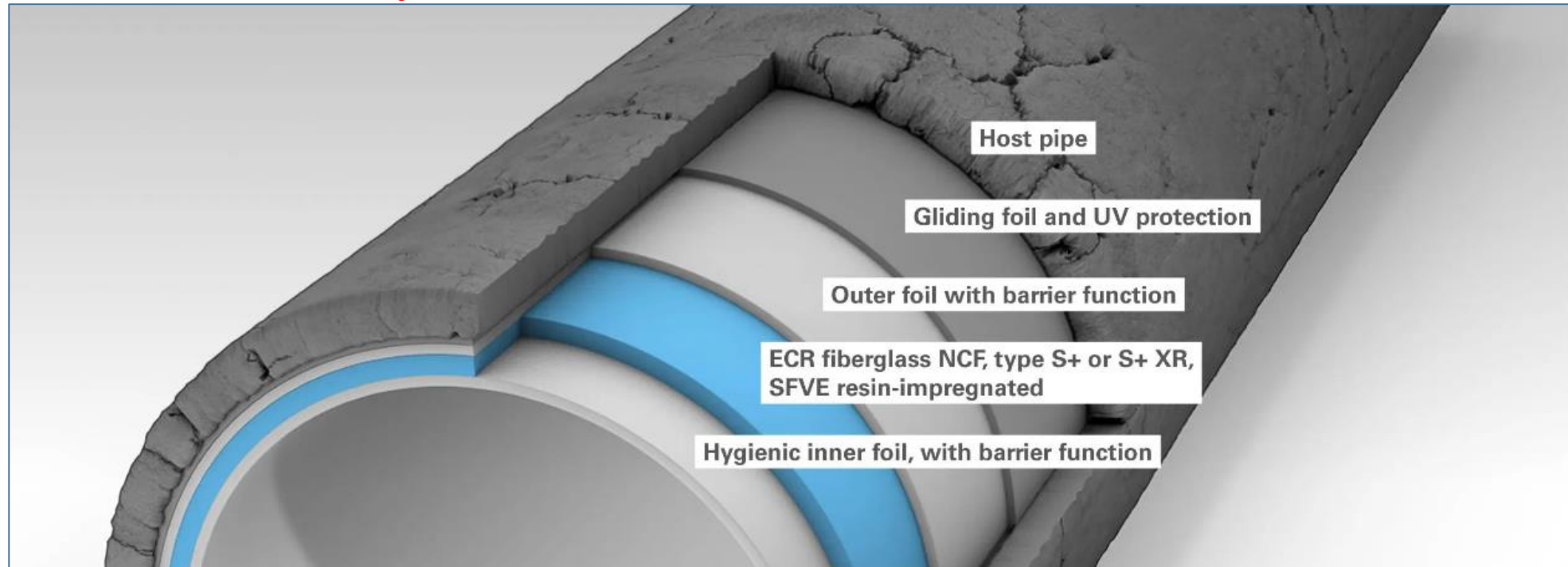


Source: Saertex Multicom

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Trenchless Pipeline Rehabilitation to Reduce NRW



Source: Saertex Multicom



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NRW Management Experience from Turkiye

The Regulation on Control of Water Losses in Drinking Water Supply and Distribution Systems was published in the Official Gazette dated 8 May 2014. Following the Regulation; “The Technical Procedures Communiqué on Control of Water Losses in Drinking Water Supply and Distribution Systems” was published in the Official Gazette dated 16 July 2015. The purpose of this Communiqué is to determine the measures to be taken for the control of water losses in drinking-utility water supply and distribution systems.

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NRW Management Experience from Turkiye

According to the Regulation and the Communiqué, all Water Utilities need to fill the standard water balance form given in the Regulation along with other forms and submit it to the Ministry of Agriculture and Forestry once in every year by the end of February for the previous year. The purposes of this procedure are:

- * Guiding the water utilities in determining at which points/areas of the system the water is lost,
- * Enabling water utilities to make regulations in more accurate areas more easily and quickly,
- * To ensure investment planning and taking precautions.

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NRW Management Experience from Turkiye



NRW ratios in Istanbul

2014: 24,01 %

2015: 25,08 %

2016: 25,01 %

2017: 24,40 %

2018: 23,26 %

2019: 23,40 %

2020: 21,34 %

2021: 21,78 %

2022: 21,23 %

2023: 20,49 %

Source: ISKI

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NRW Management Experience from Turkiye

23 - 24 October 2024

8th Water Loss Forum

WOW Istanbul Hotels & Conference Center

In Conjunction with Eurasia Water Expo

184

Days

09

Hours

28

Mins

51

Secs



Water Loss Forum and Exhibition started in 2014 under the auspices of Turkish Ministry for Forestry and Water Affairs. Every year numerous water utilities from Turkiye and other countries gather here.

www.waterlossforum.org

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NRW Management Experience from Turkiye

In conjunction with Water Loss Forum and Exhibition, No-Dig Conference and Exhibition is organized to promote trenchless pipeline rehabilitation solutions which play crucial role to reduce non-revenue water.

www.nodigturkey.com
NO-DIG TÜRKİYE
23-24 Ekim / October **2024**
WOW Istanbul Hotel & Convention Center

In conjunction with / Eş zamanlı olarak



8th WATER LOSS FORUM
SU KAYIP VE KAÇAKLARI FORUMU
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NRW Management Experience from Turkiye



The keynote speech of Prof. Dr. Veysel Eroglu, Turkish Minister for Forestry and Water Affairs, at the opening ceremony of 3rd Water Loss Forum and Exhibition.

Participation of the high level government officials to these events motivate the water utilities.

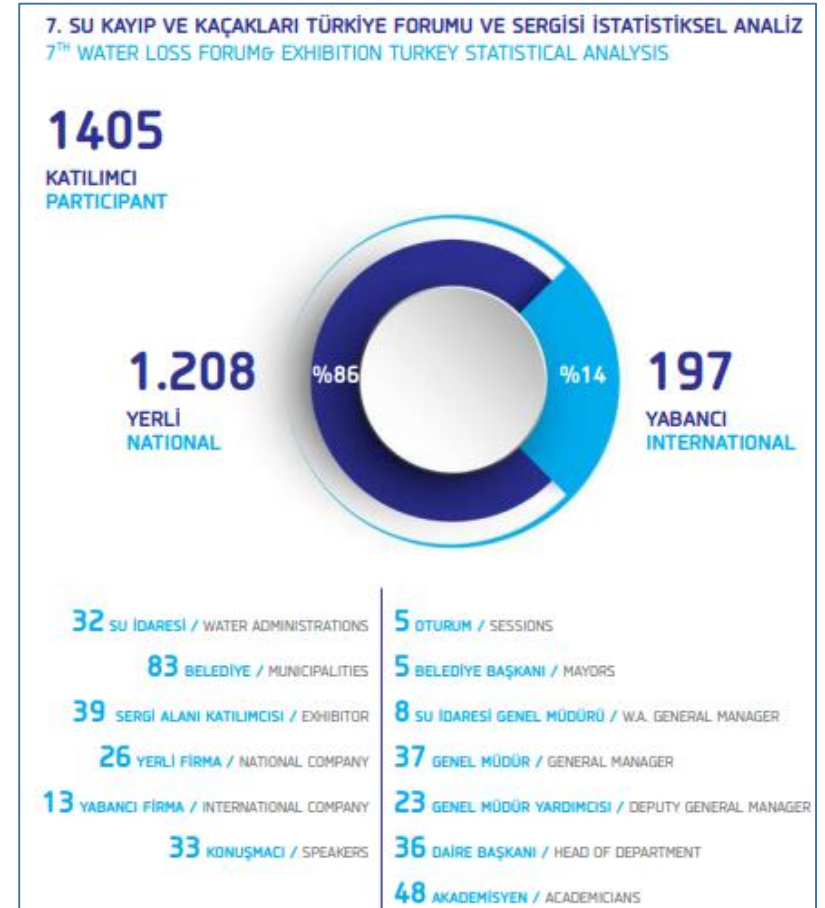
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NRW Management Experience from Turkiye



Mr. Akif Ozkaldi, Turkish Deputy Minister, is moderating the NRW session entitled Future of Water: Leadership and Policies at 7th Water Loss Forum and Exhibition. The speakers are the General Managers of Water Utilities of Istanbul, Balikesir, Konya, Kocaeli and Trabzon.

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NRW Management Experience from Turkiye



During the Water Loss Forum and Exhibition events, General Managers of several water utilities along with their NRW technical teams visit the booths of exhibitors which present innovative NRW reductions solutions. Planning the NRW management programme with private sector may increase the success of the programme.

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THANK YOU

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