5G-WAT-ERR-IB: Deploying 5G for Public Services

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Sofinancira Evropska unija

RURAL PACT

About the Project

Location	Coordinator	Beneficiary
• Municipality of Ilirska Bistrica, Slovenia • Strategic regional area with aging water infrastructure challenges • Focus on both urban and non-permanently inhabited zones • Very rural, 28 inhabitants per sq.km.	• Vahta d.o.o., a private company leading the project • Responsible for deployment and management of 5G technologies • Key driver for integrating innovative tech solutions	• Municipality of Ilirska Bistrica • Local government body aiming to enhance public utilities • Primary recipient of project benefits and improvements

The 5G-WAT-ERR-IB project is an EU-supported (Connecting Europe Facility (CEF): CEF-DIG-2023-5GSMARTCOM-EDGE) initiative coordinated by Vahta d.o.o. in collaboration with the Municipality of Ilirska Bistrica, aiming to modernize water infrastructure and improve public service efficiency.

The Challenge

1

Aging Water Infrastructure Issues

- Water network experiences up to 70% losses in certain parts due to aging pipes and outdated systems.
- High energy costs compound operational inefficiencies of the water infrastructure.
- Aging infrastructure reduces reliability and increases maintenance needs, impacting service quality.
- Significant water losses contribute to resource wastage and higher operational expenses.

2

Coverage Gaps Affecting Emergency Response

- Non-permanently inhabited areas lack sufficient network coverage, creating blind spots.
- Limited connectivity hampers timely and efficient emergency response in remote and disaster-prone zones.
- Emergency services struggle with communication and coordination due to coverage gaps.
- Improving coverage is essential for enhancing safety and response times during crises.

The project faces significant challenges due to aging water infrastructure with losses up to 70% and high energy costs, alongside insufficient mobile signal coverage in non-permanently inhabited areas, which critically limits effective emergency response capabilities.

Our Solution

Private Standalone 5G Network + LoRaWAN + Edge Computing

Deploying a private 5G network integrated with LoRaWAN and edge computing to support real-time data processing and connectivity.

Integration with Existing Fiber Infrastructure

Seamlessly integrating the new 5G network with existing fiber optic infrastructure for enhanced reliability and speed.

Smart Water Monitoring

Real-time monitoring of flow, pressure, and water quality using IoT sensors across the network for efficient resource management.

Emergency Response System

Trailer mounted 5G base stations for temporary coverage on case of need and a drone equipped with thermal and HD cameras and mobile 5G base station enable quick deployment and real-time coordination in emergencies.

Our integrated solution leverages a private standalone 5G network combined with LoRaWAN and edge computing to enable smart water monitoring and rapid emergency response, enhancing efficiency and coverage.

Business Challenges: OPEX Risks

1

Unstable Revenue Stream

- Revenue from the public services alone may be unpredictable and insufficient to cover ongoing operational expenses.
- Dependence on a single revenue source increases financial vulnerability against market fluctuations.
- This instability could impact the ability to maintain and upgrade the 5G infrastructure effectively.
- Regular assessment and financial planning are necessary to manage cash flow and operational costs.
- Exploring diversified revenue sources is critical for long-term project sustainability.

2

Mitigation: Ensuring Spillovers

- Offering private 5G network services to local companies to generate additional revenue streams.
- Open access 5G for Mobile Network Operators (MNOs) to encourage wider network utilization and collaborations.
- These approaches help stabilize income by leveraging commercial opportunities beyond public service use.
- Spillovers increase the project's economic viability and support ongoing operational costs.
- Partnerships with companies and MNOs create a sustainable ecosystem around the 5G deployment.

The project faces OPEX risks primarily from an unstable revenue stream, which could impact financial sustainability. To mitigate this, the project aims to ensure spillovers by offering private 5G services to companies and open access 5G to Mobile Network Operators (MNOs), creating additional revenue opportunities and broader network utilization.

KEY MESSAGE

5G is key for rural areas

5% of non-covered population means 25% of non-covered territory!

There already is a 5G gap in rural areas.

As modern services (autonomous vehicles, precision farming, etc..) are all based on wireless connectivity, the absence of this infrastructure in deep rural areas will imply the depopulation and abandonement of rural land.

Instruments like those implemented to fight the broadband gap in the past will be needed for 5G (6G).

Rural local communities have to get frequency rights for local use.

Thank you

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Business Challenges: CAPEX Risk

Supply chain uncertainties pose significant capital expenditure risks. Early equipment acquisition is essential to mitigate delays and ensure project timelines are met.

Key CAPEX Risks

- Supply chain uncertainty affecting equipment availability from diverse regions including the Far East, USA, and Middle East.
- Global logistics disruptions may cause delays and increased costs impacting project capital expenses.
- Dependence on international suppliers introduces vulnerability to geopolitical and trade fluctuations.

Mitigation Strategies

- Suggested solution: Acquire necessary equipment as soon as possible to avoid supply delays and secure project schedule.
- Proactive procurement helps manage risk by locking in prices and availability amid market volatility.
- Early acquisition supports uninterrupted deployment and integration phases, minimizing downtime and cost overruns.

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