SDG 6, clean water and sanitation:

‘Water for the White River Valley’ – Managing the Water Crisis in the Municipality of Nowa Dolina

The Municipality of Nowa Dolina is a local government unit located in central Poland, with a population of approximately 38,000, nearly 60% of whom live in rural areas, while the rest reside in a small municipal town. The municipality has a mixed character, with agriculture, small-scale food industry, fruit and vegetable processing, and services all developing within its area. The White River flows through the municipality and, for decades, has been a fundamental element of the local landscape, a source of irrigation for agriculture, and an important environmental resource.

As recently as a dozen or so years ago, residents viewed water as a widely available good that required no special care. Over time, however, signs of a worsening situation began to emerge: declining groundwater levels, increasingly frequent summer droughts, deteriorating water quality in local intakes, failures in the outdated water supply network, and a growing conflict between the needs of residents, farmers, and local businesses.

Over the past three years, the problem has taken on a strategic dimension. The municipal authorities have faced the need to make decisions that no longer concern merely the technical maintenance of infrastructure, but in practice amount to answering the following question: how can residents be guaranteed safe, equitable, and long-term access to water while at the same time reconciling social, economic, and environmental objectives?

For many years, Nowa Dolina developed relatively steadily. After Poland joined the European Union, the municipality received funding for the modernisation of roads, sewage systems, and parts of the water supply network. At the same time, new private investments began to emerge. On the outskirts of the municipal town, a food processing plant called ‘FreshFood’ was established, employing around 280 people. The company uses large quantities of water in its washing, cooling, and agricultural product processing operations.

Also at this time, orchard farming and greenhouse vegetable production began to expand rapidly. Farmers increasingly invested in irrigation systems as rainfall became less predictable. On the surface, this appeared to be a sign of modernisation. In practice, however, the total extraction of water from local resources was steadily increasing.

In rural areas, some residents continued to rely on private wells. The problem was that:

- some of the wells were shallow and prone to drying up periodically,
- some did not meet the required water quality standards,
- not all residents could afford regular water quality testing,
- some households were not connected to a modern sewage system.

In localities situated farther from the municipal centre, residents had long reported that water pressure was sometimes too low, especially during the summer. In some villages, there were periodic interruptions in the water supply or notices advising that the water should be boiled before use.

The turning point came during an exceptionally dry summer. In June and July, rainfall was less than half the region's long-term average. At the same time, temperatures remained above 30°C for many days. As a result, household water consumption rose sharply, farmers increased water extraction for irrigation, groundwater levels fell, some local wells began to dry up, and the municipal water supply system was unable to maintain stable pressure throughout the entire network.

The situation was further worsened by a failure of the main pipeline supplying two villages and a residential estate on the outskirts of the town. As a later technical assessment showed, parts of the network were more than 35 years old, and water losses caused by leaks amounted to as much as 26% of the total volume pumped into the system.

Shortly thereafter, the District Sanitary and Epidemiological Station detected elevated bacterial levels and exceedances of certain water quality parameters at one of the intake points. The municipal authorities issued a notice temporarily prohibiting the consumption of water from that intake without prior boiling. On social media, accusations began to appear concerning years of negligence, lack of investment, and the alleged favouring of businesses at the expense of residents.

Main stakeholders

- **Municipal authorities** – the mayor and the municipal council found themselves under strong pressure. On the one hand, residents demanded immediate action; on the other, the municipality's budget was limited. The local government had to make decisions burdened with political and social risk.
- **Residents** – the local community was not homogeneous. The interests of residents of the municipal town differed from those of farmers, and these, in turn, differed from

those of inhabitants of peripheral villages. For some families, problems with access to water meant everyday difficulties in cooking, maintaining hygiene, caring for children, and looking after elderly people.

- **Farmers** argued that without irrigation, their production would become unprofitable. They emphasised that their activity underpinned family incomes, seasonal employment, and the local economy.
- **The 'FreshFood' plant**. The company stressed that it operated legally, held the required water permits, and was one of the largest employers in the municipality. Restricting its water intake could result in reduced production, job cuts, and lower tax revenues.
- **Schools, kindergartens, and the health centre**. Public institutions needed stable access to safe water in order to provide basic services. School principals warned that a lack of water, or poor water quality, could paralyse the functioning of their establishments.
- **Community organisations and local activists**
  An informal initiative called 'Save the White River' operated in the municipality. It criticised the authorities for the lack of a long-term water policy and pointed to environmental degradation: falling river levels, the disappearance of wetlands, and declining biodiversity.

At an extraordinary meeting of the municipal council, a report prepared by the investment department and the municipal utility company was presented. It contained the following information:

- length of the water supply network: 132 km,
- share of the network more than 30 years old: 47%,
- average water losses in the system: 26%,
- number of residents not connected to the sewage network: approximately 6,500,
- number of households relying on private wells: approximately 1,800,
- estimated increase in water consumption in summer months compared to winter months: 34%,
- share of agriculture and business activity in total local water consumption: approximately 41%,
- estimated cost of full modernisation of the oldest sections of the network: PLN 18 million,
- cost of building a new water treatment plant: PLN 9 million,

- cost of a grant program for residents for retention tanks and rainwater harvesting: PLN 1.8 million,
- external funding potentially available: up to 65% of eligible costs, but only provided that complete documentation and local co-financing are secured.

The report also contained a troubling diagnosis: if similar climatic conditions and the current model of water use continue, the municipality may enter a state of permanent water deficit during the summer months within 5–7 years. In practice, the local government was faced with a choice between several strategies, none of which was free of costs.

Option 1: Rapid technical intervention: this would involve ad hoc repairs to the network, the purchase of water tankers, temporary restrictions on water use for garden watering and filling swimming pools, and the implementation of emergency water quality monitoring. This option was politically the easiest to communicate, but it did not address the root causes of the problem.

Option 2: Priority for residents and public services. This option assumed the introduction of limits for large consumers, including partial restrictions on water abstraction for the 'FreshFood' plant and farms using intensive irrigation. From the residents' point of view, this solution appeared fair, but it risked conflict with businesses and farmers.

Option 3: Investment strategy. This would consist of a comprehensive modernisation of the water supply infrastructure, construction of a new water treatment plant, expansion of the sewage network, increased water retention, and public education. It was the most rational long-term solution, but it required time, money, project management capacity, and cooperation among many stakeholders.

Option 4: Public-private partnership. The municipality also considered involving private capital in the modernisation of part of the infrastructure. However, this solution was controversial, as some councillors and residents feared an increase in water prices and excessive influence of a private investor over strategic public resource.

During the public consultations, it became clear that the water crisis also had a strong dimension of inequality. Those most affected were elderly people living alone, low-income families who could not afford to buy bottled water in larger quantities, residents of villages located far from the municipal centre, where infrastructure was weakest, women, who often bore a greater share of household and caregiving responsibilities, and small farms that lacked the capital to invest in modern, water-efficient irrigation systems.

In the public debate, the question increasingly arose as to whether access to water was, in practice, becoming a good differentiated by place of residence, income level, and economic position.

Experts invited by the municipality pointed out that the problem could not be analysed solely through the prism of infrastructure. They noted that land drainage systems from previous decades had accelerated the outflow of water from the landscape, natural retention had been reduced, some wetlands had been drained, the river's flow was lower than in the past, and intensive agriculture increased the risk of water pollution by nitrates and plant protection products.

This meant that expanding the network alone would not be sufficient. What was needed was integrated water resources management, combining investment, spatial, environmental, and social policies.

After several weeks of tension, the mayor convened a strategic meeting attended by:

- the municipal council,
- the management of the municipal utility company,
- representatives of farmers,
- the management board of 'FreshFood',
- directors of schools and the health centre,
- the sanitary inspectorate,
- community organisations,
- water management experts.

Three key questions were put on the table:

1. How can water security for residents be ensured in the immediate term?
2. How should the costs of the water transition be shared among the municipality, residents, businesses, and farmers?
3. How can a situation be avoided in which short-term measures delay systemic solutions?

During the meeting, it became clear that no group wanted to bear the main costs of the changes. Residents expected the authorities to invest while keeping prices low. Farmers demanded support rather than restrictions. 'FreshFood' declared its willingness to engage in discussions but rejected responsibility for the problem as a whole. The councillors were divided: some wanted quick decisions, while others feared increasing the municipality's debt. The experts developed a draft programme entitled 'Water 2030 for Nowa Dolina', built around seven pillars:

Pillar 1. Sanitary safety

- modernisation of the most vulnerable water intakes,
- more frequent water quality testing,
- a rapid warning system for residents,
- emergency procedures for schools, kindergartens, and the health centre.

Pillar 2. Reduction of water losses

- phased replacement of the oldest sections of the network,
- monitoring of pressure and leakages,
- digitisation of water supply management.

Pillar 3. Fair tariff policy

- protection of basic household water consumption,
- higher rates for excessive and unjustified use,
- support mechanisms for low-income families.

Pillar 4. Partnership with farmers

- subsidies for water-efficient irrigation systems,
- training in soil water retention,
- support for small-scale retention measures on farms.

Pillar 5. Business responsibility

- water audits of the largest enterprises,
- incentives to recirculate process water,
- negotiations on co-financing part of the investments.

Pillar 6. Retention and the environment

- restoration of ponds and wetlands,
- a rainwater management programme,
- greening of public spaces,
- changes in spatial planning.

Pillar 7. Education and communication

- the ‘Every Drop Matters’ social campaign,
- an educational programme in schools,
- regular reports for residents on the state of water resources and the progress of investments.

Although the programme was assessed as substantively sound, its implementation proved problematic. The municipality had a limited budget, and some measures required long-term planning. The mayor had to decide:

- whether to begin with the costly modernisation of the network,
- whether first to build public support through a conservation and education programme,
- whether to introduce restrictions for the largest users,
- whether to raise water tariffs,
- whether to risk taking out loans and significantly increasing municipal debt,
- whether to negotiate co-financing with businesses.

In the background remained the question of political responsibility. Local government elections were approaching in a dozen or so months. Any decision could provoke dissatisfaction among one of the groups.

Questions

1. What are the main causes of the water crisis in the Municipality of Nowa Dolina? Please distinguish between direct and structural factors.
2. Which stakeholder groups have the greatest influence on the decision-making process in this situation, and which bear the greatest costs of the crisis?
3. What is the nature of the conflict between the social, economic, and environmental objectives in the case presented?
4. Does the municipality's problem stem more from resource scarcity or from poor management? Justify your answer.
5. In what way does this case illustrate the importance of Goal 6 of the 2030 Agenda?
6. Should the 'FreshFood' company co-finance water-related investments in the municipality? Please justify your answer from both an economic and an ethical perspective.

Author: Adrian Chojan
adrian.chojan@lazarski.edu.pl