

Down the drain

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Ehud Zion Waldoks , THE JERUSALEM POST

At least 30 million cubic meters of fresh water per year could be saved if local authorities invested in upgrading pipes and monitoring systems, a new report released this week concluded. That's the same amount of water per year produced by the Palmahim desalination plant.

The report, "Increasing Israel's water supply by reducing water loss and preventing sewage leakage," was submitted this week to the National Investigation Committee Regarding the Water Crisis in Israel. The committee commissioned the Technion's **Samuel Neaman Institute** for Advanced Studies in Science and Technology Senior Research Fellow and Environmental Projects Coordinator Dr. Ofira Ayalon to undertake the study.

According to Ayalon's calculations, 64 million cu.m. of fresh water become what is termed "Non Revenue Water," or lost water, each year. Non Revenue Water includes water that has become unaccounted for in several ways: Water used for watering public gardens, putting out fires, in public buildings, water that was stolen, imprecise measurements from water meters, reporting errors by the relevant parties and leaks and burst pipes.

Upgrading the pipes and putting in remote sensor systems would reduce water loss very significantly, Ayalon found. At least half the total quantity lost, or more than 30 million cu.m. per year, could be saved, she estimated.

Ayalon studied seven municipalities and regional councils and analyzed their water output over the last decade. Given a \$0.50 cost per cubic meter of water, the upgrade would pay for itself in water savings within 10 years, Ayalon found.

Acceptable water loss in Israel has been set at 12% of the total input per local authority. That number is much too high in drought-stricken Israel, according to the report. Ayalon recommended reducing the figure to 5-8% and fining local authorities which failed to meet that target.

There was also a wide discrepancy between municipality water loss rates. Fourteen had reduced the rate to 5%, 85 had gotten it to between 5-10% and 50 were right around the 12% mark, but 42 local authorities were over 15%.

After comparing the amount of water urban municipalities paid for with the amount of sewage water which went to treatment plants, Ayalon concluded that there was a gap of at least 100 million cu.m. per year. She noted in her report that the local authorities had a vested interest in "losing" sewage along the way, since they have to pay for every cubic meter treated. Ayalon termed it a "double loss" since the sewage was almost certainly contaminating groundwater and land, and could not be treated and then used for agriculture.

There also seemed to be room for industry to improve the quantity of water treated - there were discrepancies of 10-44% between input and output in the companies she and her staff looked at. This was only a preliminary assessment, and Ayalon recommended an in-depth study of industry be undertaken.

Readily available remote sensors would both provide up-to-date data to effectively manage the water and sewage infrastructure over time and enable municipalities to track their water usage much more closely, she wrote. Burst pipes and leaks were identified much more quickly in cities like Raanana which had installed such systems. If any individual or company was stealing water, the authorities would become aware of it that much quicker, she added.

Regional corporations set up specifically to handle the water and sewage systems seemed to have more success making major changes, she found. Netanyahu's new corporation cut water loss by 50% in 2008 as compared to 2006 after installing a new monitoring system.

However, few such corporations were being formed despite a 2001 law which mandated all local authorities do so. Smaller municipalities did not have the money needed to join a regional corporation, while larger local authorities were loath to surrender control of resources by turning over the water infrastructure to a corporation.

Ayalon found that many cash-strapped municipalities would often shift money earmarked for pipe upgrades and maintenance to other projects until they ran into a real problem. As a result, many of the pipes were old and had not been repaired or replaced in years. Ayalon's study focused on urban areas and did not address water use in rural areas.