

# Water-sector firms: which ones will sink or swim?

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The United Nations estimates that more than half of the world's population will experience severe shortages of fresh water by 2025. In light of these fresh water forecasts and challenges, several Ryerson University researchers worked together to develop a financial evaluation process to identify which water-sector companies are likely to stay afloat and which ones are likely to sink in a worldwide financial crisis.

"The supply and distribution of [water](#) is vital everywhere. As a result it's important to identify in advance which water companies might experience financial trouble so that governments and industry can hopefully help salvage them in time" said Lyubomir Halachev, a recent graduate of the Ted Rogers School of Business Management and winner of the prize for best student paper at the International Congress on Environmental Modeling and Software in Ottawa, which beat out submissions by master's and PhD-level candidates.

Halachev based his research on the "triple bottom line" premise: companies should focus on people and the planet, as well as profits. The idea implies that changes in a company's economic viability may also affect social and environmental stability in the region where the [company](#) operates.

Halachev analyzed 140 publicly listed companies around the world. His goal was to determine which companies were likely to remain active in the sector and which ones were likely to "die" out (i.e. be delisted from the stock exchange). The study included a broad range of companies in

the water industry including, water-treatment, distribution and bottling, as well as those that operate in, or offer services to, the water industry such as information technology, engineering solutions, financing, and piping and irrigation equipment.

The research was conducted in three stages: first, Halachev used stock market databases to identify the companies and collect their stock data over the past 25 years. His co-author Yashodhan Athavale, an electrical and computer engineering graduate student from Ryerson's Faculty of Engineering, Architecture and Science, expanded upon a set of mathematical approaches initially developed at Ryerson's Research Lab for Advanced System Modelling, and then wrote a computer program to apply them. When Halachev applied these approaches to the stock market data from the water sector and used them to further classify the companies, the resulting information showed a definite visual and quantifiable distinction between the active companies and those likely to "die."

Professor Aziz Guergachi, founding director of the advanced system modelling lab at the Ted Rogers School of Information Technology Management, and Halachev's co-author and supervisor said the results of this research illustrate the importance of conducting interdisciplinary research.

"The solutions to modern-day problems lie at the intersection of disciplines, not in single disciplines. It's similar to a soccer game. Defensive and offensive players pass the ball to each other and when the best moment comes, one of those players will score. So, it is hard to state the role of individual players in scoring the goal."

Given the importance and potential scarcity of [fresh water](#), it is essential for governments to be able to identify water-sector companies that are on the brink of financial trouble while they can still be salvaged.

Through the interdisciplinary work and collaborative efforts of Halachev and his co-authors, their predictive model can provide much needed insight into the increasingly important, yet vulnerable water sector.

Provided by Ryerson University

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