



Photo: Ghazal Nemati

## RISE & Getting the most out of every drop of water in Iranian dairies

In a collaborative project, Nestlé Iran is developing practical solutions on the ground – recycling and improving water use

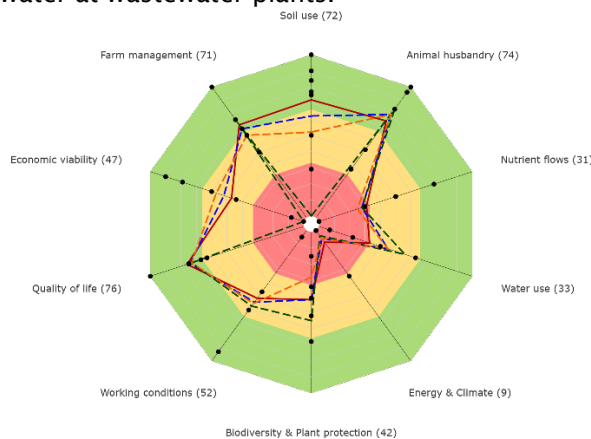
For food processing companies, a reliable supply of raw materials is critical for stable production. Nestlé Iran is therefore making significant efforts to promote sustainable and efficient agricultural practices. In this project, RISE sustainability assessments were conducted to establish a solid base for decision-making. In collaboration with Chaltasian Farm, tangible solutions for recycling and reducing water loss are being developed.



Good food, Good life

## What does sustainability mean for Iranian farmers?

Like other countries in the region, Iran is facing a huge and unprecedented water crisis due to poor water management, declining rainfall, rising temperatures, rapid population growth and inefficient farming practices. For Iranian dairy farms, this was first confirmed in 2015 in a sustainability assessment conducted by Nestlé in collaboration with Bern University of Applied Sciences (BFH). On five Iranian dairy farms, the applied RISE sustainability assessments showed that water and wastewater management, followed by problematic nutrient flows, were the main concerns. In order to improve sustainability practices, it was necessary “to get the most out of every drop of water in Iranian dairies. One of the most effective solutions identified to reduce water loss is to treat the water at wastewater plants.



*RISE sustainability polygon of five dairy farms in Iran in 2015.*

## Why RISE?

Nestlé works with universities of applied sciences in more than 25 countries around the world. The comprehensive RISE sustainability model has been applied to all Nestlé milk suppliers to understand where they stand and what our roadmap looks like for the next five years. It even helps us benchmark best practices against other Nestlé suppliers in other markets. Having identified ‘nutrient flow’ and ‘waste management’ as top priorities, we formed a team with one of the largest grain and dairy farms in Iran, Chaltasian Farm, to find new ways to address the country's growing water issues. We launched a three-year pilot project plan to reduce and optimise water use in agriculture and livestock. Based on the RISE study, we developed a roadmap and the team held weekly and monthly farm meetings for further coordination. We established key performance indicators to measure the results of our pilot project.

## Our approach

The wastewater produced by farms is heavily contaminated and has high biological oxygen demand (BOD) and chemical oxygen demand (COD), as well as nitrogen, phosphorus and suspended solids. If this highly contaminated water is disposed of untreated, it can lead to significant environmental degradation and further aggravate the water crisis. Due to the characteristics of this type of wastewater, its treatment to an acceptable level is critical.

To increase the efficiency and refinement of this wastewater, a wastewater treatment plant was built and inaugurated in May 2017. On average, the farm produces 450m<sup>3</sup> of wastewater per day. The wastewater is segregated into two groups: light and heavy wastewater.

- Light wastewater (COD < 2000 mg/lt): Milking parlour, CIP and calf-rearing water discharges account for 30% of total wastewater. This type of effluent can be easily isolated and treated in an aerobic wastewater treatment plant using activated sludge as biological process.
- Heavy wastewater (COD > 30,000 mg/lt): The effluents from the cleaning of the free-stall barn have a high content of organic matter. The slurry is passed through a separator to remove the solid components from the liquid phase. Due to its high nutrient content, the liquid phase is stored and used as fertiliser on the arable fields. In this way, the use of mineral fertilisers could be reduced and possibly even avoided altogether, and the organic matter of the soil is increased. The solid fraction is composted and used as bedding material for dairy cows, spread on the fields or sold as solid fertiliser.

## Results & benefits

According to Iranian standards, treated water with a COD value of less than 200 mg/lt and a BOD value of less than 100 mg/lt is considered suitable for agricultural irrigation. The wastewater project has achieved impressive results since the inauguration of the treatment plant:

- Wastewater from nurseries and milking parlours: 100% treated wastewater (50,000 m<sup>3</sup>).
- Wastewater from livestock farming: 61% reused as fertiliser and 39% treated (70,000 m<sup>3</sup> and 44,250 m<sup>3</sup> respectively).

This project was the first wastewater-fertiliser solution in Iran. The head of Iran's Ministry of Environment stated: "The steps taken by Chaltasian Farm and Nestlé Iran to use livestock manure on farms [...] will increase water efficiency and pave the necessary way towards a circular economy in the country, which is facing a serious and growing water crisis. The outcome of this great pilot project will benefit all farms across the country."

## Next Steps

- Cultivating canola on 100 ha to further increase biodiversity and improve fallow (cover crop to restore soil fertility) and drip irrigation.
- Constructing two additional lagoons for slurry and water storage.
- Equipping a sprayer with a special applicator to inject the fertiliser underground into the soil to avoid ammonia evaporation.

## "This project provided us with many benefits"

*"Chaltasian is proud to become the first professional dairy and arable farm in Iran's dairy industry to ever implement the wastewater management project. This project provided us with many benefits. Not only have we managed to reduce the amount of water consumed in various sectors of the farm through executing this project, but we have also significantly decreased the quantity of chemical fertilisers used in our arable land. The organic fertiliser accumulated by this system has also helped us increase the land's yield."*



Shahryar Saffari – Owner,  
Chaltasian Farm

## "In this project we have worked to ensure the sustainability of our jobs, our lands, and our futures"

*"Water, and its sustainable management and stewardship, are among Nestlé's global commitments, and one of Nestlé Iran's key focus areas. As the world's largest food and beverage company, one of our key focus areas is achieving water efficiency and sustainability across our agricultural supply chain. Through the RISE project, a collaboration between Nestlé, Bern University of Applied Science (BFH), Chaltasian Farm and the authorities, we have worked to ensure the sustainability of our jobs, our lands, and our futures."*



Zulfiqar Ali - Factory  
Manager, Nestlé Iran

## What is RISE

RISE is an acronym for Response-Inducing Sustainability Evaluation. RISE assesses ecological, economic and social sustainability performance across 10 themes captured by a total of 46 indicators. The results provide a 360-degree view of the farm and identify where there is potential for optimisation. RISE was developed at BFH-HAFL and has so far been used on more than 4,500 farms in 62 countries.

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