# CASE STUDY 1

## GETTING A GRIP WITH SALT

### The supply chain of rock salt

#### Introduction

The demand for rock salt, used on roads in the Netherlands during winter times, is very seasonal and difficult to forecast. Product is mainly sourced from outside Europe and supplied in bulk with a long lead time. It is a basic and relatively simple supply chain with strategic storage locations and regional depots for local use. There are a limited number of suppliers and the main salt customers are the national road association and local municipalities. Demand is mostly on a spot basis as the municipalities are usually not willing to commit to any contracts. This, in combination with the seasonality of demand, generates considerable uncertainty.

#### Opportunity

The main challenge is to find the optimal balance between inventory cost and service. In case of cold weather, actions need to be preventative and taken quickly. Lack of stock during a harsh winter can have a big impact (accidents etc.) and involves the whole community. In addition, demand can be unpredictable as the municipalities are all locally organized and have their own specific ordering policies. Coordinated planning and effective mitigation strategies are vital to avoid shortages.

#### The Solution

The obvious mitigation strategy is to better manage uncertainty by increasing inventory levels. In recent years, problems with icy roads and sharp price increases during periods of shortage have made extra stockholding more acceptable. The cost of stock-out outweighs the additional inventory cost for this relatively low value product with its basic storage requirements.

The Dutch government has also set up its own strategic storage (National Rock Salt Bank) in order to become more independent from the commercial market. In addition, quick-source substitutes like sea-sand are promoted.

Uncertainty has also been reduced by improving demand predictability: long-term weather forecasting helps to determine optimal inventory levels and the need to source additional national supply, while short-term local weather data helps in scheduling local supply.

Finally, municipalities are prompted to cooperate. Emergency protocols and priorities have been developed on the basis of central planning. For example, main roads are prioritized over small local roads. Cooperation is also required in the use of the spreading equipment and multi-skilled personnel are available to optimize the available capacities.

Despite increased stock levels and supply chain improvements, shortages may still happen. To ensure smooth operations, communication between distributors, the government and the local community is of high importance.

#### The Value

Given the long rock salt supply chain, past winter shortages have been costly and have also had a big impact on society. Mitigation against uncertainty increases the sustainability of this supply chain. Since accurate weather forecasting remains difficult, rock salt supply chain uncertainty will persist. Therefore, collaboration and communication remain key areas for attention.