https://www.washingtonpost.com/national/health-science/some-places-flourished-in-the-little-ice-age-there-are-lessons-for-us-now/2018/02/16/455fb2d8-0c25-11e8-8b0d-891602206fb7\_story.html?from=timeline&utm\_term=.9833a59b9900

**Some places flourished in the Little Ice Age. There are lessons for us now.**

***by Dagomar Degroot February 19, 2018 on The Washington Post***

We are changing Earth’s climate with terrifying speed. In the past, natural forces provoked slower climate changes. We now know that they were still big and fast enough to shape the fates of past societies. Climate change then brought disaster to most societies, but a few prospered. Perhaps the most successful of all emerged in the coastal fringes of the Netherlands, and it has left us with lessons that may help us prepare for our warmer future.

Based on glacial ice samplings, stalagmites, ocean- and lake-bed sediments, tree rings and other assessments, it’s clear that sometime in the 13th century, Earth’s climate cooled. Huge volcanic eruptions lofted dust high into the stratosphere, blocking sunlight just as the sun slipped into a less-active phase, sending less energy to Earth. Sea ice expanded, wind patterns changed and ocean currents shifted. In many regions, torrential rains alternated with unprecedented droughts.

A period called the “Little Ice Age” had begun, reaching its coldest point in the 16th century.

The timing could not have been worse. In empire after empire, population growth had left millions dependent on crops cultivated in arid, unproductive farmland. When weather extremes interrupted growing seasons, harvests failed, time and again. Famine and starvation gripped the heartland of the Spanish Empire, the jungles of the Mutapa Kingdom in southern Africa, the steppes of the Grand Duchy of Moscow and the rice fields of the Ming Dynasty.

The worst was yet to come.

Changing weather patterns altered the range of insects that carried pathogens, bringing new and deadly ailments to the previously unexposed. Because malnourished bodies have weak immune systems, farmers and their livestock soon fell sick. Refugees from the famine-stricken countryside spread diseases to cities, where epidemic outbreaks often inflicted a fearsome toll.

In one empire after another, the sick and starving blamed governments for their misery. As a result, the coldest stretch of the Little Ice Age brought an unprecedented surge of revolts and civil wars. Rebel and state armies alike conscripted farm laborers who joined refugees in spreading disease. In the end, millions died.

Yet remarkably, inhabitants of the Dutch Republic — the precursor state to today’s Netherlands — enjoyed a golden age that perfectly coincided with the chilliest century of the Little Ice Age. Somehow, a country with a small population emerged as a great power, with a navy that went from victory to victory and a commercial fleet that dwarfed all others.

The Dutch Republic was an oddball in the 17th-century world.

A surge in urbanization

The overwhelming majority of people in most societies of the time toiled in rural fields, growing crops for local markets. Many Dutch farmers, by contrast, cultivated cash crops for distant consumers. The republic therefore depended on grain imports from farms scattered along the Baltic Sea, which rarely all suffered at the same time from cold snaps or precipitation extremes.

Over time, a growing share of Dutch citizens worked in commercial interests and industries in port cities protected by an extensive network of dikes and sluices. Urbanization was soon more common in the republic than just about anywhere else in Europe. Tens of thousands of sailors plied trade routes that reached into the Arctic, the Americas, Africa and Asia.

These sailing ships depended on two things: favorable winds and ice-free water. By changing currents and cooling temperatures in the atmosphere and oceans, the chilliest stretches of the Little Ice Age therefore affected sailing as much as farming. Yet the impact was very different. New wind patterns actually sped up ships that left the republic for Asia or America, shortening their journeys.

Seaworthy ships

In the waters off northern Europe, storms were unusually frequent in the coldest stretches of the Little Ice Age. The republic’s biggest merchant ships were more seaworthy than similar ships fielded by other European powers. Portuguese ships bound for Asia were four times as likely to sink as their Dutch counterparts, and English ships were twice as likely to go down.

Even sea ice aided the Dutch, including in the Arctic. Expanding sea ice redirected Dutch voyages of northern exploration into bowhead whale feeding grounds off Norway’s Svalbard archipelago. Whalers from all over Europe eventually set up shop there was well. But for a long time, the edge of the Arctic pack ice lingered near Dutch whaling stations, and because whales gathered along the edge of the ice, the Dutch benefited.

The Dutch fought most of their wars on or around water, and climatic cooling helped their armies and fleets. They flooded their own farmland to thwart Spanish and French invasions. Some of these floods would not have succeeded without torrential rains that reflected new atmospheric realities. Shifting wind patterns, shaped by the cooling climate, gave Dutch sailors the benefit of favorable winds in naval wars with England and France.

Climate change did not always aid the Dutch. In the Arctic, sea ice crushed ships, drowned sailors and screened whales from whalers. Small ships that carried grain and timber from the Baltic Sea endured deadly storms and confronted thick sea ice. Cold snaps in the Baltics occasionally led to harvest failures that imperiled the republic’s grain imports. Ice repeatedly choked the waterways of the republic, halting ferry services between cities.

Time and again, the Dutch responded creatively. Shipmakers fortified the hulls of whaling ships and greased them until they slid off ice. Guilds and city governments bought icebreakers that not only kept waterways open but also produced ice blocks for wine cellars. When the ice was too thick to break, the Dutch used skates and sleds to turn frozen canals into busy thoroughfares. To manage the risk of mishaps, merchants divided their goods among ships and invested in marine insurance. They stockpiled Baltic grain in good years and sold it for healthy profits when food shortages plagued Europe.

The Dutch, in short, were lucky to benefit from environmental changes that favored their unusual economy. But they also made their own luck. The society they built ended up being remarkably resilient in the face of new weather patterns that spelled disaster elsewhere in Europe.

In fact, they may have consciously adapted their technologies and policies to exploit the Little Ice Age. Their long history of draining and damming the Low Countries, which helped them deal with weather well before the coldest stretch of the Little Ice Age, probably helped them recognize that environments can change and that societies can either adapt or succumb.

What, then, can the history of the republic’s golden age teach us today?

First and perhaps most important, it shows us that even relatively small changes in Earth’s average temperature can have enormous social consequences. The world has already warmed more, relative to average temperatures in the 20th century, than it cooled in the chilliest stretches of the Little Ice Age, and there is far more warming on the horizon. Histories of the Little Ice Age, therefore, are an urgent call to arms. We have technologies that our ancestors could not have imagined. But there are far more of us, consuming unimaginably more plants and animals, metals and fuels. And we, too, depend on a huge network of fields and fisheries that may not survive drastic changes in temperature and precipitation.

Unequal consequences

That leads us to our second lesson: Climate change has had, and probably will have, very unequal consequences for different societies, communities and individuals. Many assume that rich societies cope best with climate change. Yet some of the wealthiest 17th-century empires — from Ming China to the Ottoman sultanate — actually fared worst in the coldest decades of the Little Ice Age.

The Dutch prospered not because their republic was rich but because much of its wealth derived from activities that benefited from climate change. Today, we can learn from the republic by strengthening social safety nets, by investing in technologies that exploit or reduce climate change and, more broadly, by thinking proactively about how we will adapt to the warmer planet of our future.

Ultimately, the lessons of the past come to us in the form of parables, stories that hint at deeper truths but do not tell us exactly what to do. That does not make them any less valuable. We now know that we cannot ignore our changing climate, that it will shape our fortunes in the decades to come.

Degroot is a professor of environmental history at Georgetown University and author of the book “[The Frigid Golden Age. Climate Change, the Little Ice Age, and the Dutch Republic, 1560-1720.](https://www.amazon.com/gp/product/1108419313?ie=UTF8&tag=washpost-20&camp=1789&linkCode=xm2&creativeASIN=1108419313)” He is the co-founder of the Climate History Network.