

# CONDENSED REPORT **REDUCING COSTS OF AIR TRAFFIC CONTROL**

How competition and technology  
can and cannot contribute to  
reducing costs of air traffic control

ACR  
26 March 2019

# How competition and technology can and cannot contribute to reducing costs of air traffic control

## Bringing change to air traffic control

Air traffic control is a concentrated industry with high costs. There is a strong political focus on bringing these costs down to preserve the competitiveness of smaller airports, and for some to ensure survival. In the political debate, the two most prominent tools to reduce costs are the further expansion of **competition between providers of air traffic control** and the potential future usage of advanced technologies as **remote tower concepts**.

- Competition on the market for air traffic control means that buyers of air traffic control are allowed to procure for the service and that any certified provider is allowed to present their bid. It is not a contradiction to remote tower concepts.
- The remote tower technology is a new way of providing air traffic control. Instead of having air traffic controllers at each airport, they will be located in a centralized remote tower centre where they, in principle, can control many airports from a distance thereby saving costs through economies of scale.

This is the *condensed* version of the report **Reducing costs of Air traffic control - How competition and technology can and cannot contribute to reducing costs of air traffic control.**

The full report can be found by clicking on the full report to the right. Copenhagen Economics has conducted the analysis based on publicly available data and all critical calculations are available in the appendix of the full report where you also find the reference list.



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# Main findings

Savings from remote towers are possible, but they will not materialize, and they will not be as large unless remote towers are provided on a competitive market, that is by allowing airports to choose air navigation service providers through competitive tendering processes.

Particularly, in the short run, **introducing competitive markets is the best guarantee for cost savings and they are also a precondition for the long run realization of the potential cost saving in remote towers.**

We argue that the introduction of competition should be prioritized over or on par with the introduction of remote air traffic control for **five** reasons.

1

**Competition is needed to guarantee that potential cost savings from remote towers benefit the airports**

2

**Competition can generate additional cost savings that remote towers cannot**

3

**Remote towers are unlikely to achieve savings of the same magnitude as competition**

4

**The business case for remote towers seems to be exaggerated**

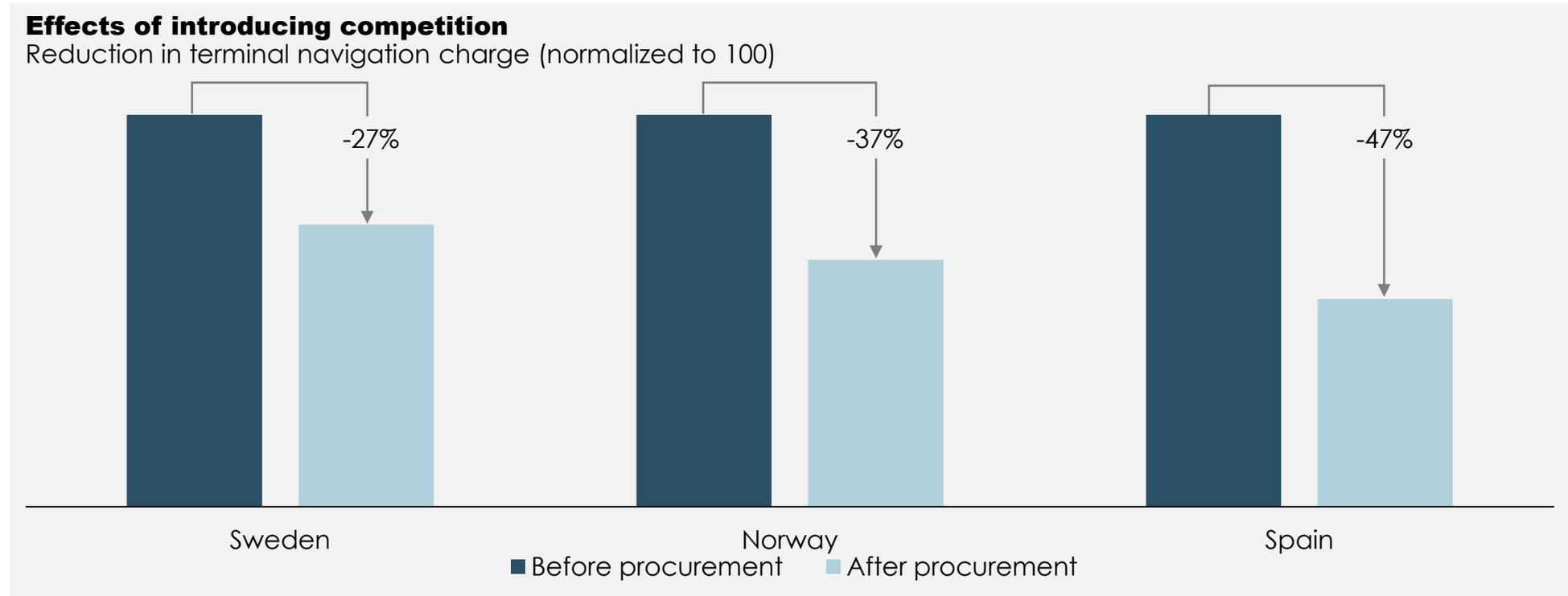
5

**The risk and associated costs of cyber and physical attacks on centralized remote towers is underestimated**

## Competition is needed

A number of countries around the world have **successfully introduced competition in selected part of their Air Navigation market in order to reduce costs**. If the new technology is controlled by monopolies there is no guarantee that potential cost savings will benefit airports. There is no reason to expect that regulation will be enough to control costs on a monopolistic market for remote towers when it was not enough for conventional towers.

Remote tower concepts are being developed by air navigation service providers in joint cooperation with technological companies. Due to high investment costs it is unlikely that several providers will invest in parallel to each other within the same geographical market due to the risk that their remote towers will not be used if they lose contracts. This will in fact lead a new type of monopoly.



## Competition is efficient

Remote towers enable air navigation service providers to save costs by potentially using air traffic controllers more efficiently. However, the costs of air traffic controllers only constitutes a **limited share of the total costs** of incumbent providers of air navigation services which puts high pressure on remote towers to decrease air traffic controller costs. In fact, we find that **air traffic controller costs must be reduced by 58-88 per cent for total savings to be on par with competition**, i.e. to reduce total costs by 37 per cent.

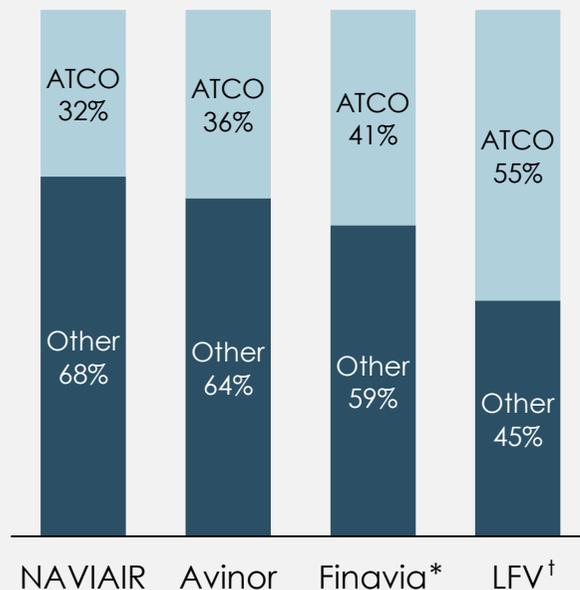
 Necessary ATCO savings to match savings from competition

 ATC assistants savings from remote towers

The inner part of the figures illustrates the original cost structure and the outer ring illustrates the savings necessary to obtain total cost savings of 37 per cent to match the savings from competition in Norway.

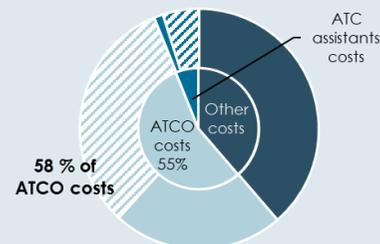
### ATCO cost is a limited share of total costs

Per cent of total TANS costs

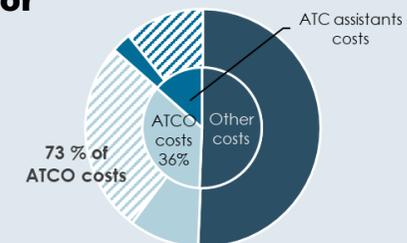


### ATCO costs must be reduced by 58-88 per cent for total savings to be on par with competition

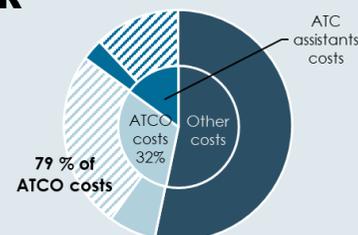
LFV†



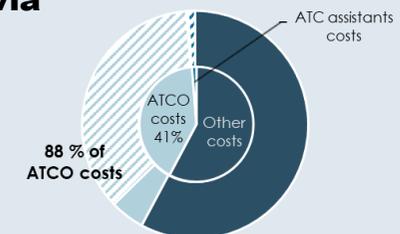
Avinor



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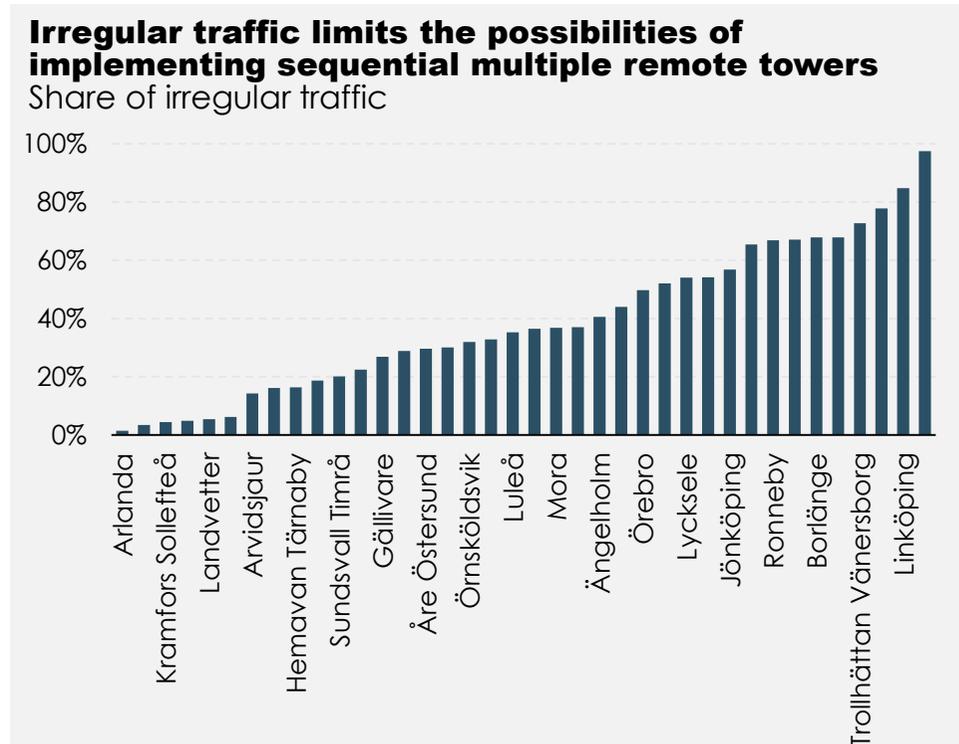
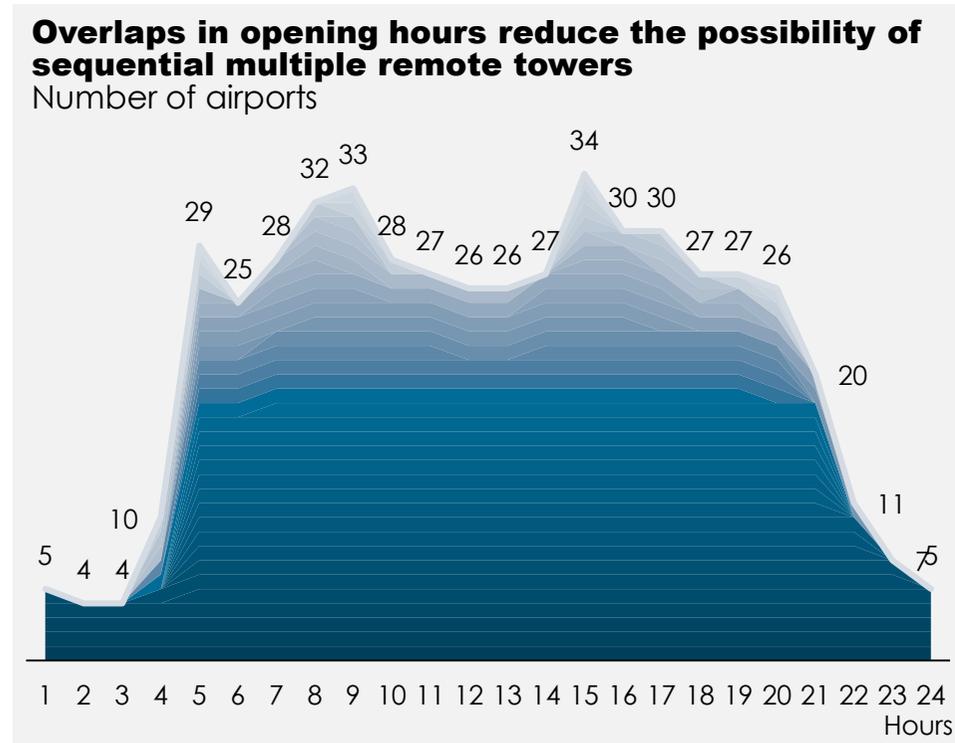
Finavia\*



TANS = Terminal air navigation service / ATC assistants = Air traffic controller assistants / ATCO = Air traffic controller / \* The calculations are based on data from 2016, at that time Finavia was the relevant air navigation service provider in Finland. As of today ANS Finland is the provider. / † It is important to note that LFV, at the time for data collection, had already been active on a competitive market for quite some time. Due to this competitive pressure, the costs of LFV are likely to have become lower than the costs of its foreign counterparts. For completeness, we have chosen to include LFV in the analysis but we emphasize that the results for LFV should be treated with caution. The necessary savings for LFV to match cost savings from competition are lower than for the foreign providers because LFV has already made some of these savings.

## Remote towers are unlikely to be as efficient

Nordic providers would have to cut their air traffic controller costs in half to match cost savings from competition; we find that difficult for three reasons. **A** Due to recent/current requirements it is not possible for an air traffic controller to operate three or more units. Equally, operating two (or more) units simultaneously is also not foreseen in the regulatory framework. **B** The overlap in opening hours across airports reduce the possibility of sequential multiple mode. **C** Irregular traffic further restricts the possibility of sequential multiple mode.

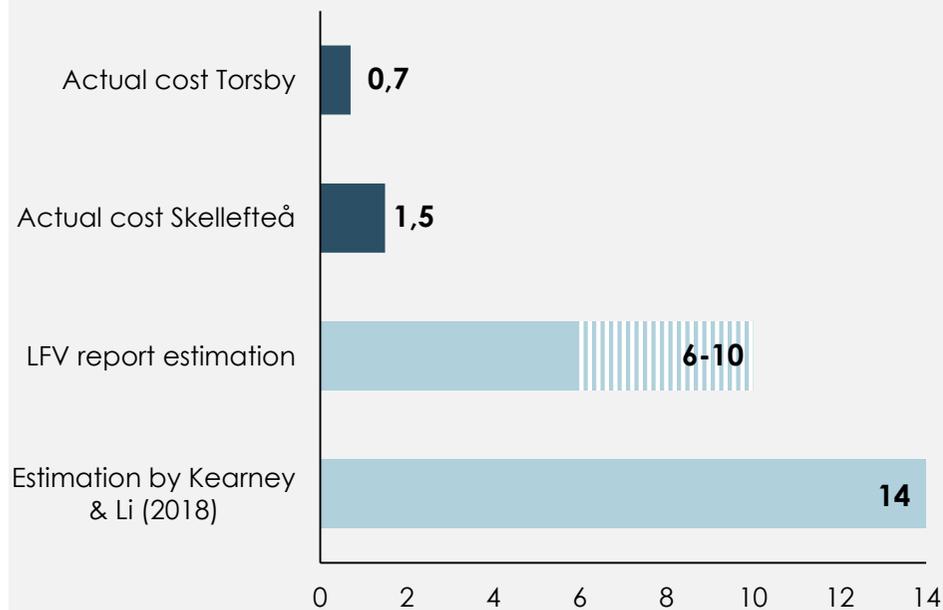


## The business case for remote towers seems to be exaggerated

The required investments to make remote towers operational are underestimated and **the comparable (counterfactual) investments in conventional towers seems to be overestimated.** In both cases, they make remote towers seem more cost-efficient.

### Costs for construction of conventional towers seems to be exaggerated

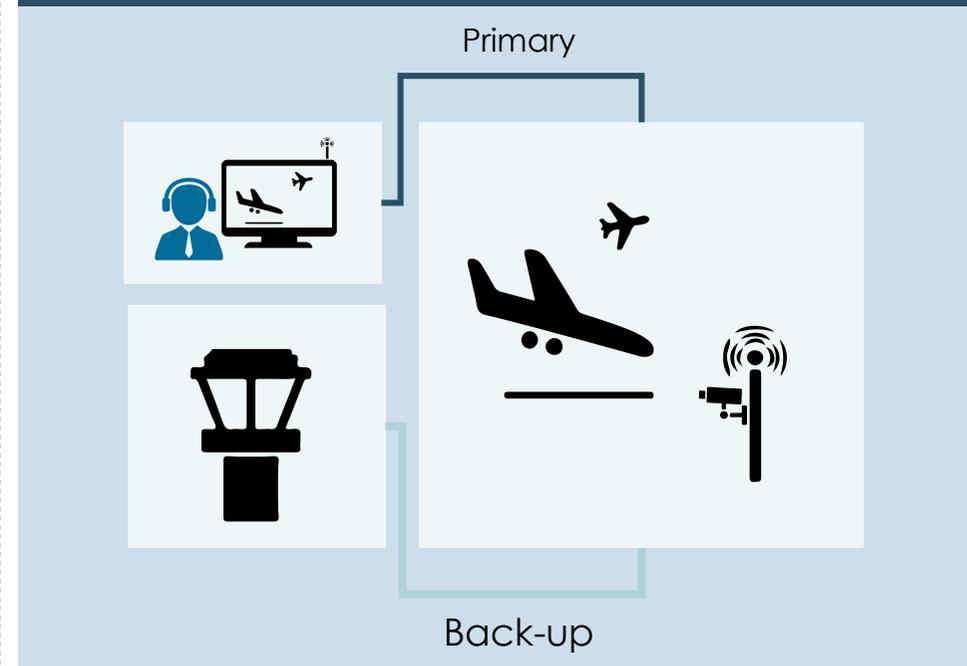
Million EUR



## The risk and associated costs is underestimated

A potentially increased risk implies larger security costs around the remote tower locations, and a **need to cover costs for fully functioning conventional back-up systems** (conventional towers) that can take over airport operation in case of a cyber or physical attack.

### Every primary system needs a back-up system



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