

National roaming can increase resilience of Dutch mobile networks

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Within the Netherlands, your mobile phone only uses the masts of your own provider. Other providers' masts can only be used to reach emergency services. As soon as you cross the border, you can switch on

roaming to use other masts. This way, roaming enables you to call and text or use the internet while abroad.

At the national level, we still make little use of roaming. In fact, according to Weedage, it also carries a number of risks. "A lot of things have to be arranged in the providers' organizations. In order to bill fairly, it must be exactly clear which customer uses which [mast](#). And of course, the coverage of their network is something providers can compete on. With national roaming, every provider essentially offers the same [internet network](#)," Weedage says.

Therefore, she analyzed the Dutch mobile network infrastructure. In a model, she combined data from national agencies on infrastructure, population distribution, and urbanization level. In this way, she created a simulation of the mobile network in the Netherlands. In that simulation, national roaming provides 13% more coverage in some areas of the Netherlands and also increases the number of people with a good connection by up to 55%.

To improve the Dutch network, national roaming does not even need to be fully implemented. Even if only a few networks shared their transmission masts or only in [rural areas](#), it is possible to achieve similar percentages. "Actually, the three Dutch mobile network operators should cooperate more to give everyone in the Netherlands a better and faster connection," says Weedage.

Alongside her research, Weedage built an [interactive map](#) that shows exactly how good the mobile internet is in all places in the Netherlands. On the map, you can see exactly how well the three Dutch mobile network operators (Odido, KPN and Vodafone) are doing per province, municipality and postal code. You can also see how the network improves if national roaming is allowed. [The map can be found on her website.](#)

The work is [published](#) in the journal *IEEE Transactions on Network and Service Management*.

More information: Lotte Weedage et al, On the Resilience of Cellular Networks: How Can National Roaming Help?, *IEEE Transactions on Network and Service Management* (2024). [DOI: 10.1109/TNSM.2024.3352168](#)

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