

4.5 Lifetime costs

Figure 9 shows a high-level estimate for lifetime costs for the various alternatives. We have indexed the cost estimates so that the *State MNO* alternative with high ambition level is set to 100. The high ambition level includes both a robustness and security uplift. For robustness, we have increased the spend per site by EUR 20 000 in the *State MNO* alternative and EUR 30 000 per site in the other alternatives. The difference stems from the fact that the State MNO alternative already has redundant access links due to the ring structure of the base station deployment.

The additional EUR 30 000 means that there will be in total EUR 40 000 available for added robustness on each commercial site. Based on interviews with experienced network managers, we believe it is possible to equip each site with redundant radio access and a 24 hour power backup system for EUR 40 000.

On security, we increase the security spend with EUR 5 million and 8 additional employees in every alternative except for *Equal RANs* where we spend and hire twice these numbers.

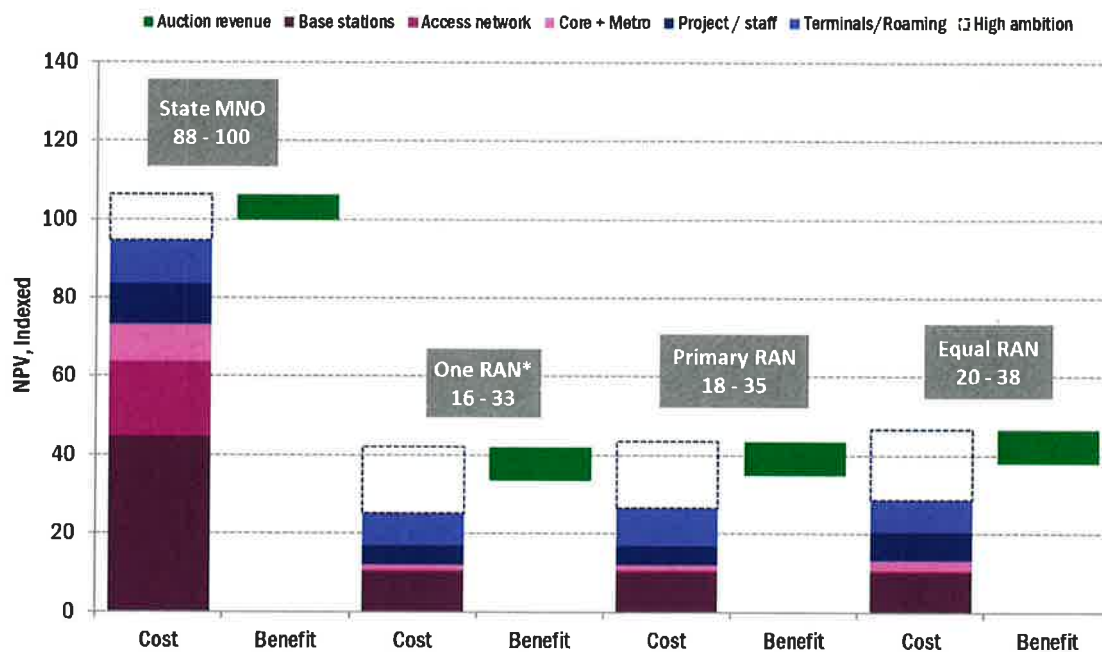


Figure 9. Indexed, high-level lifetime costs in alternatives. State MNO with high ambition = 100

As illustrated in Figure 9, the commercial alternatives are significantly less expensive than the *State MNO* alternative. When we exclude the “high ambition” costs, the lifetime cost of a *State MNO* alternative is almost five times higher than the commercial alternatives. When “high ambition” costs are included, the *State MNO* alternative is almost three times as expensive.

There are also differences between the commercial scenarios. The *One RAN* alternative is the least expensive one in our analysis but is marked with a star since this alternative does not include access to a fallback network and therefore no roaming costs. The *Primary RAN* alternative is a bit more expensive

since we have included roaming costs (and therefore access to a fallback network). The *Equal RANs* alternative is more expensive than the other commercial alternatives. The extra costs in the scenario are driven by a double set of core network elements and higher personnel requirements. Note that in the *Equal RANs* alternative, we assume that the RAN hardening can be coordinated between networks, so that costs for upgrading more than one network in the same geographical area can be avoided.