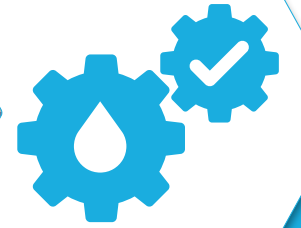




Food and Agriculture Organization
of the United Nations



ASSET MANAGEMENT: FINANCE

Eva Pek, Waqas Ahmad
Land and Water Division (NSL), FAO
Tunis, 13 December 2022



Regional gathering
Tunis, 12 – 16 December 2022



ITALIAN AGENCY
FOR DEVELOPMENT
COOPERATION

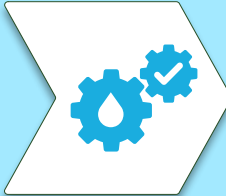
THE DILEMMA

Non-revenue infrastructure

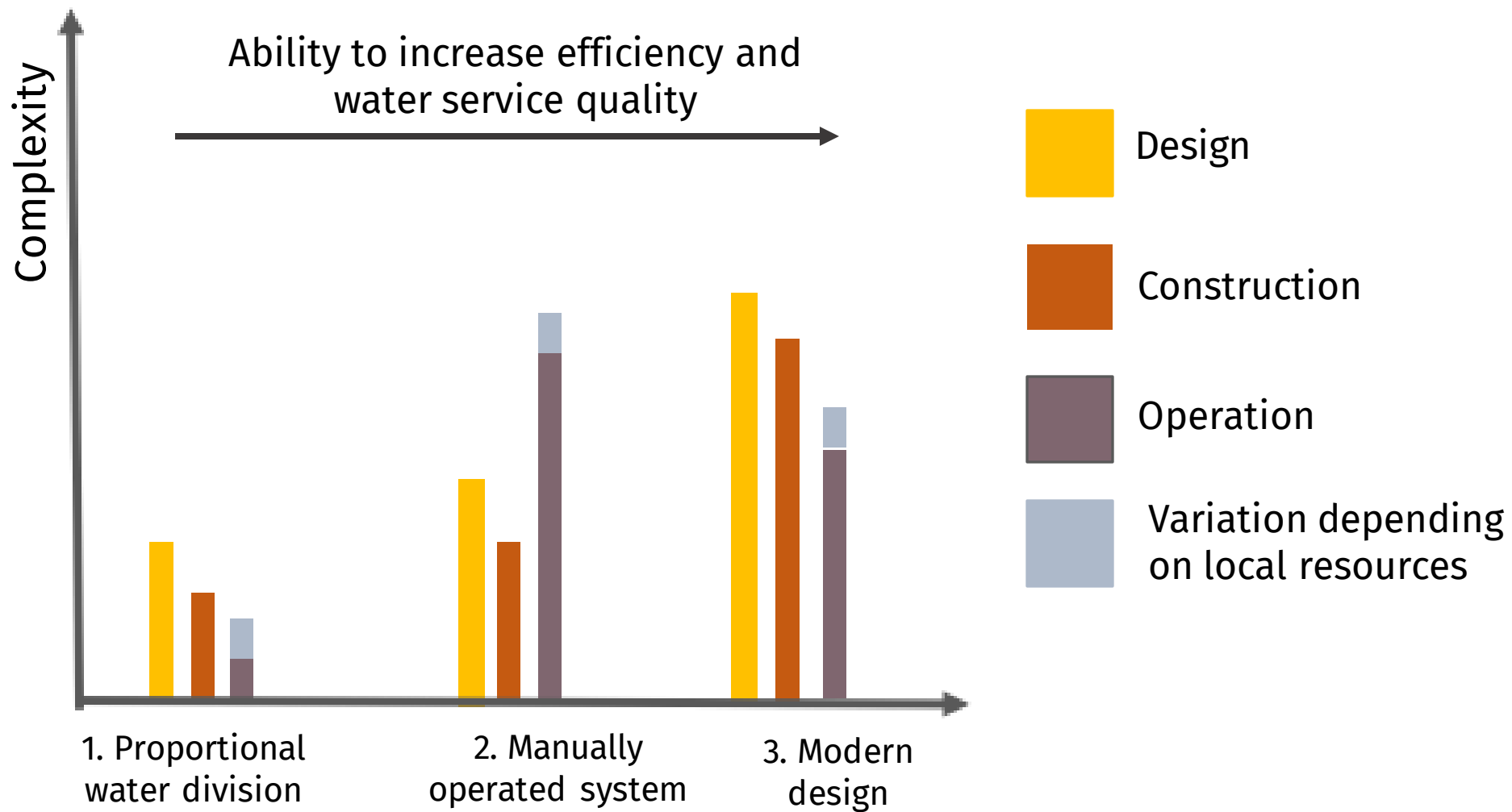
Necessary to enable planning

Associated costs



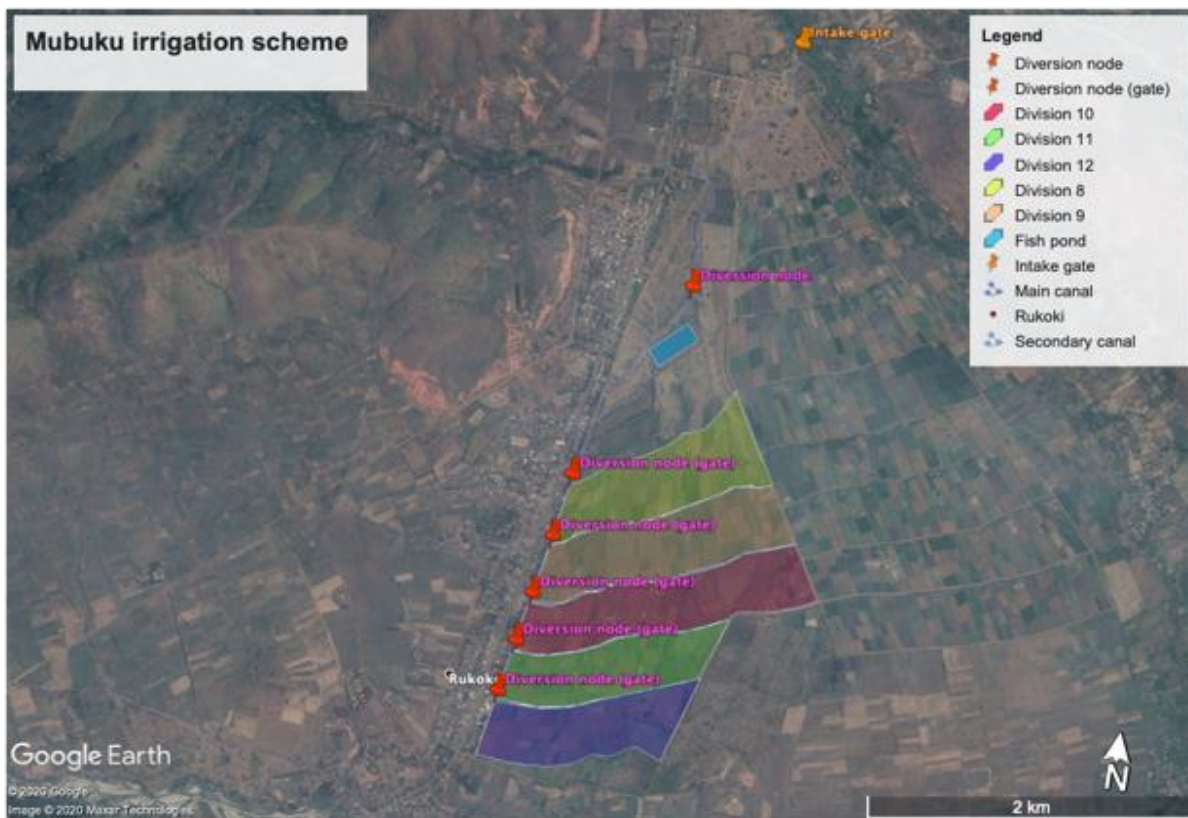


A RECAP



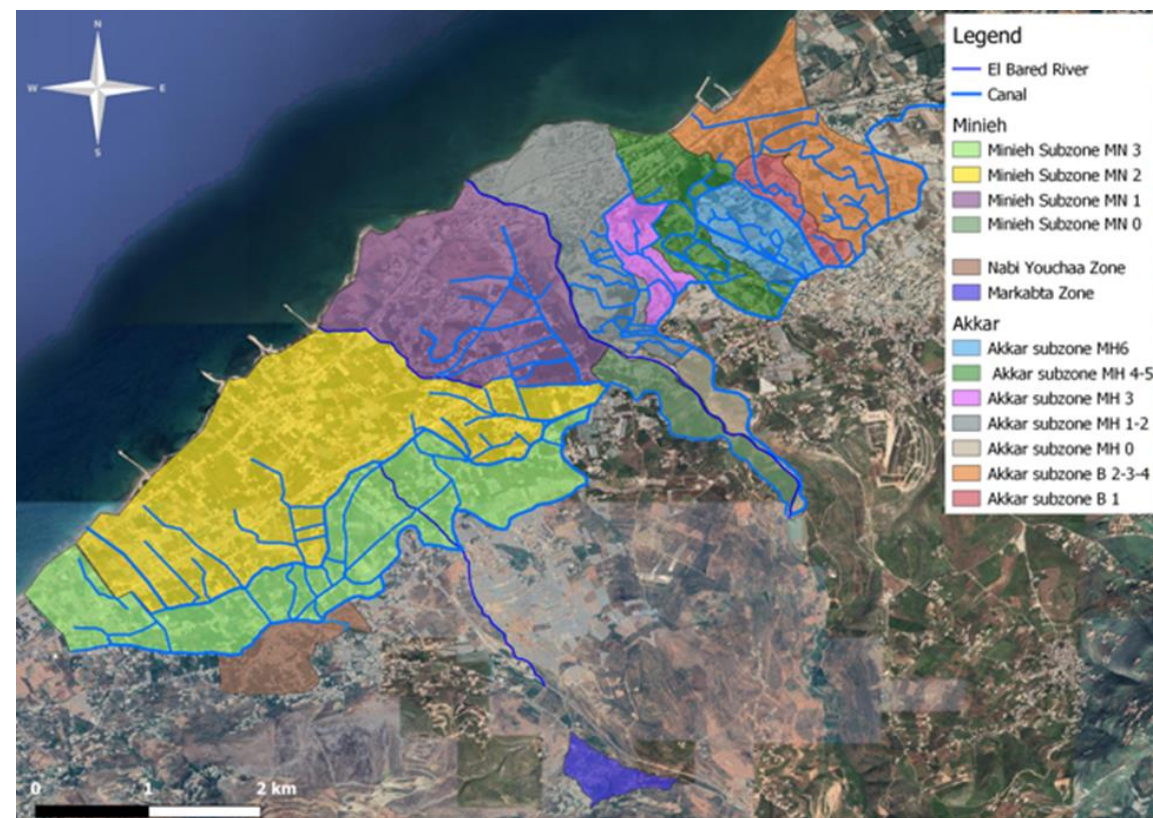


STARTS WITH THE DESIGN



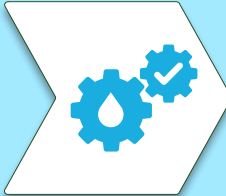
Weir network and crowdsourcing app

Source: Google Earth Pro v7.3.3.7786 (2020). Uganda. Cited 12 December 2022.

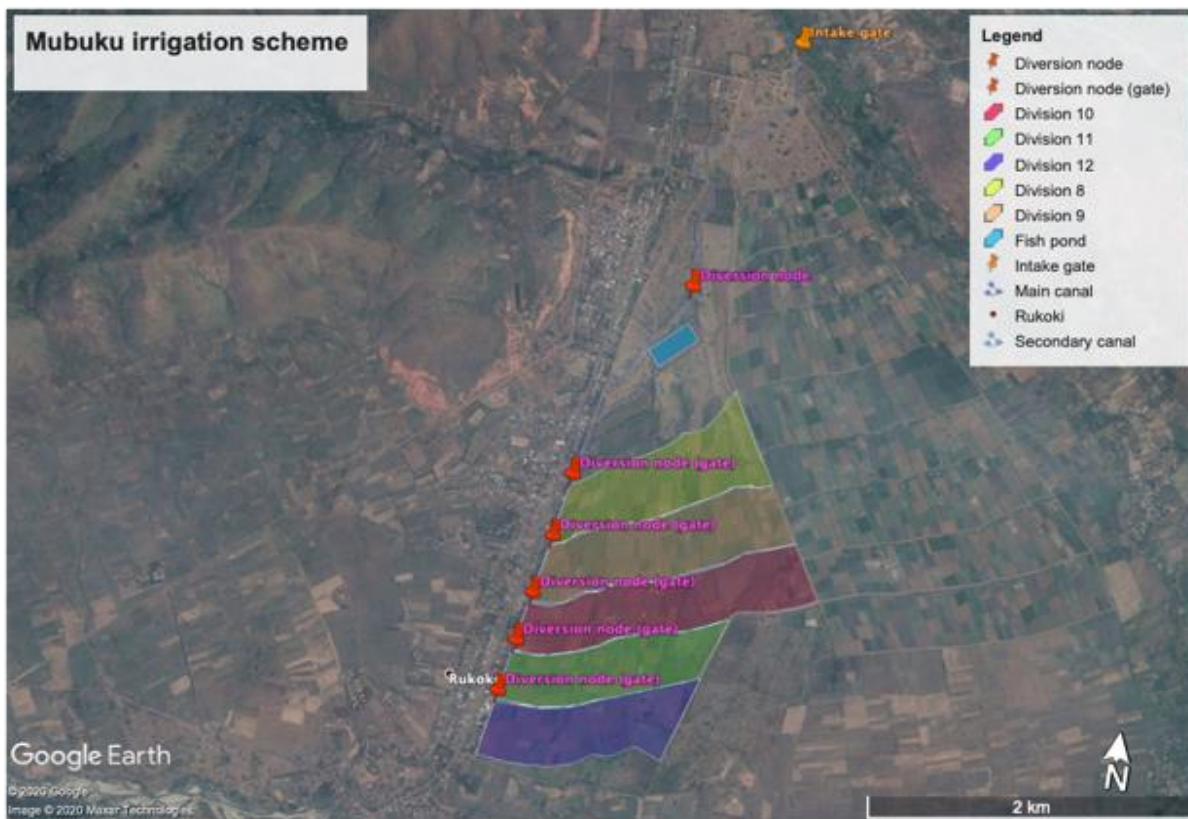


Datalogger network (centralized) and crowdsourcing app

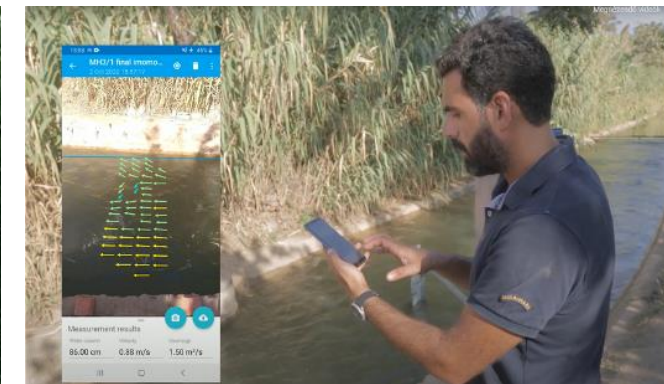
Source: Google Earth Pro v7.3.3.7786 (2020). Lebanon. 34°29'30 N, 35°58'33 E, elevation 40 m. Cited 12 December 2022.



STARTS WITH THE DESIGN



Weir network



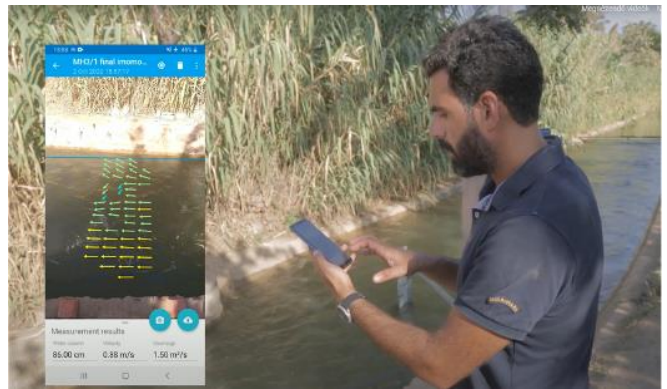
Crowdsourcing app



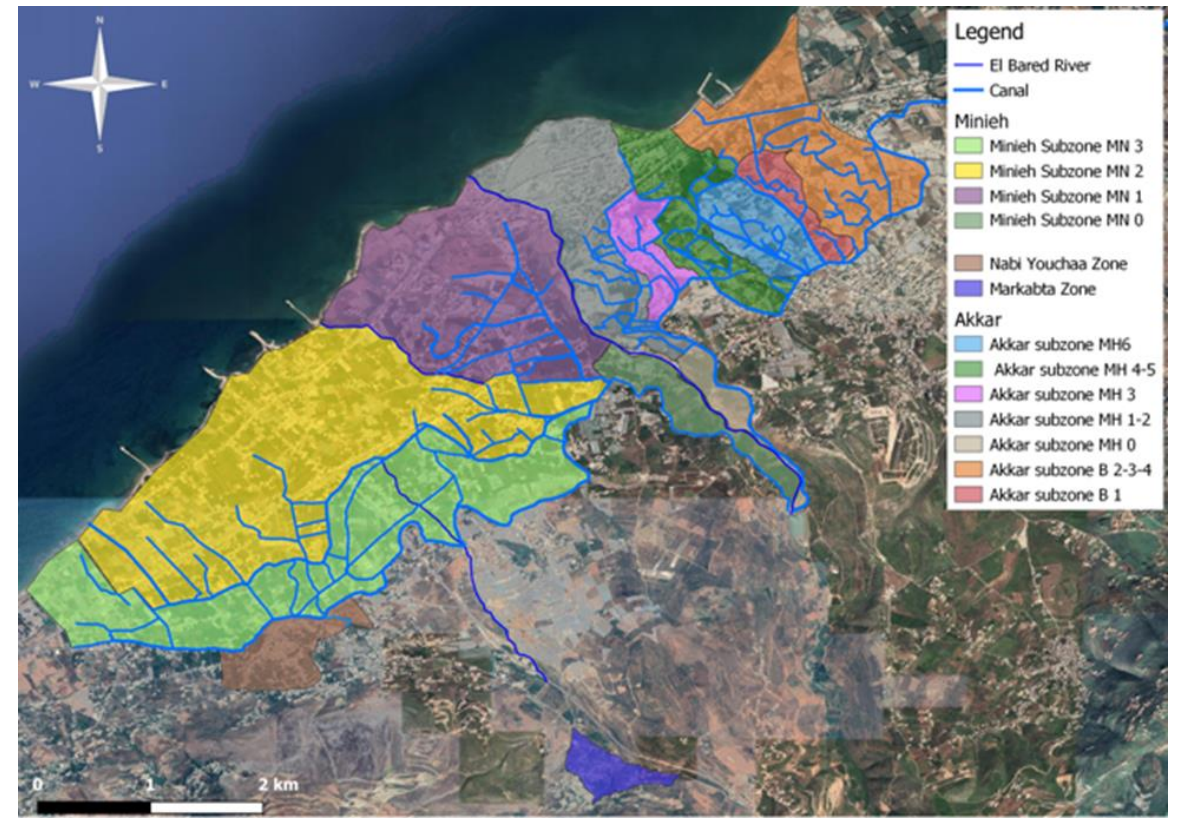
STARTS WITH THE DESIGN



Datalogger network (centralized)



Crowdsourcing app

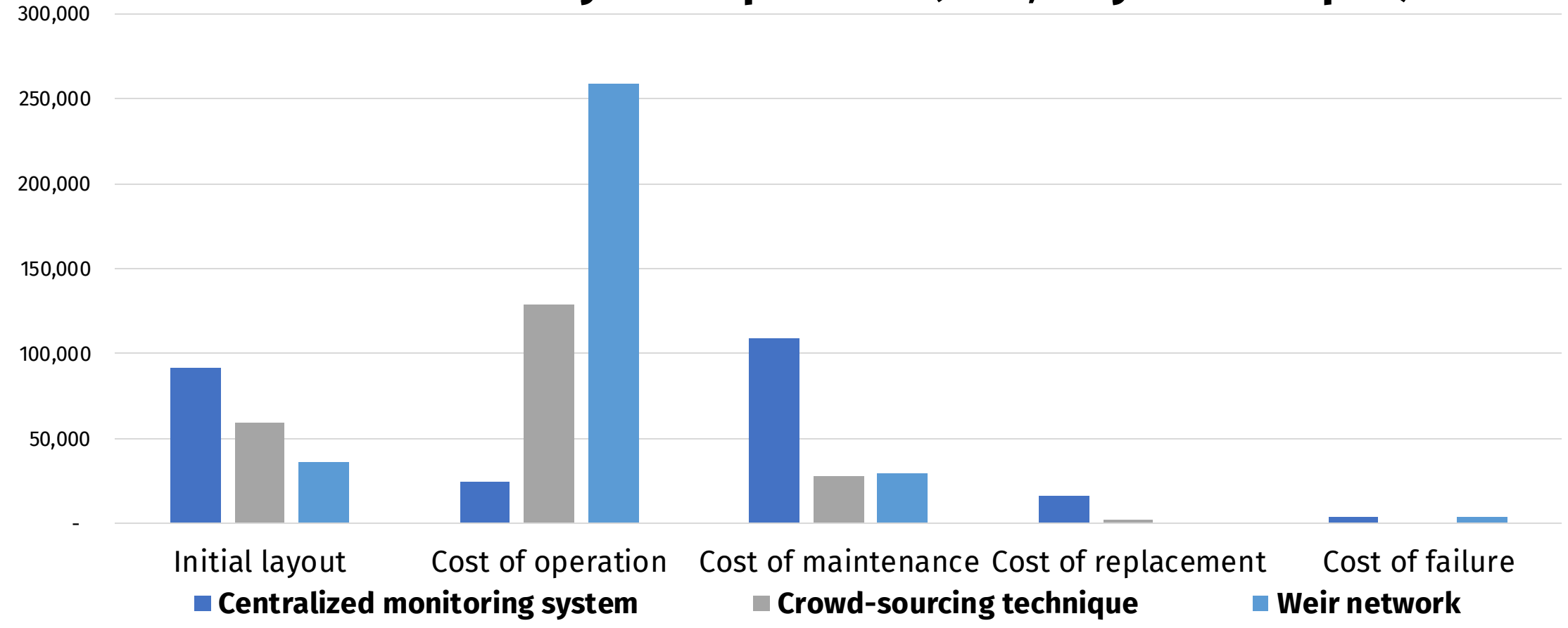


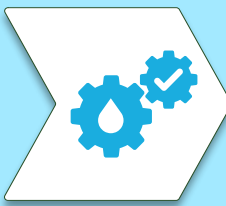
Source: Google Earth Pro v7.3.3.7786 (2020). Lebanon. 34°29'30 N, 35°58'33 E, elevation 40 m. Cited 12 December 2022.



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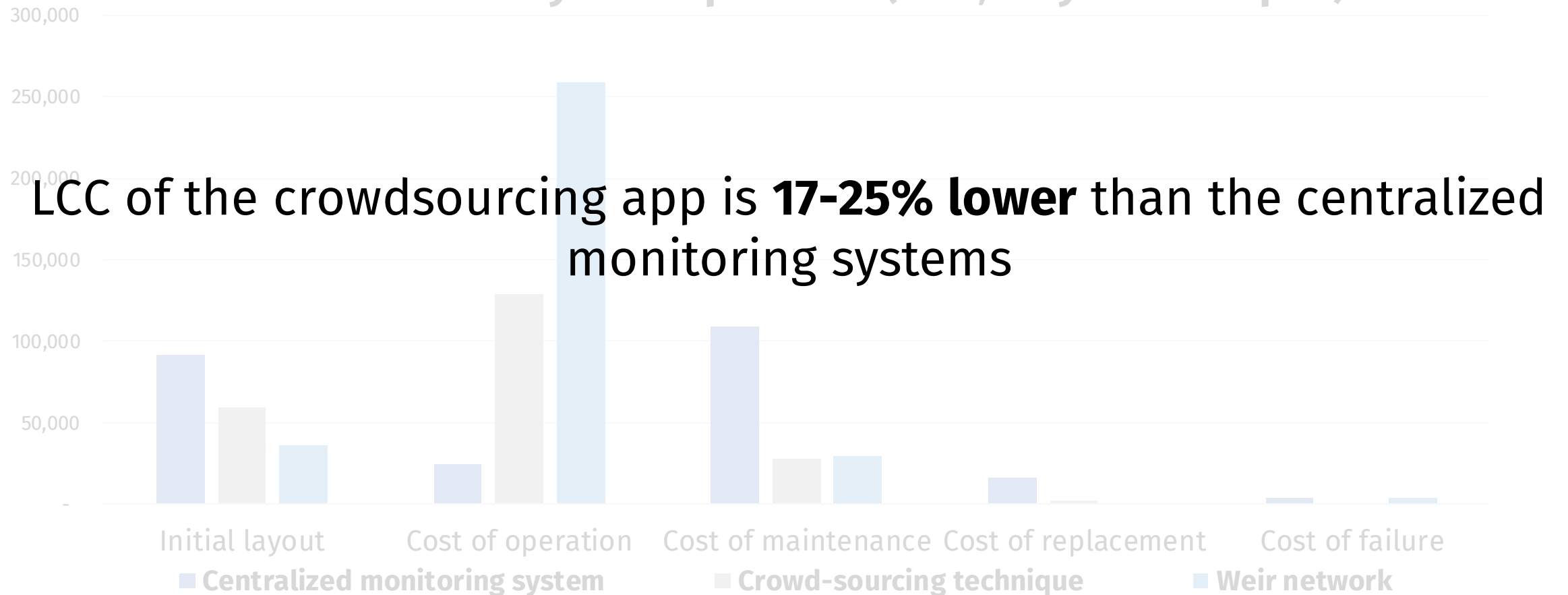
Nominal cost of system operation (USD, 20 years lifespan)





STARTS WITH THE DESIGN

Nominal cost of system operation (USD, 20 years lifespan)





CRITERIA FOR LEBANON

High staff turnover

High salary levels

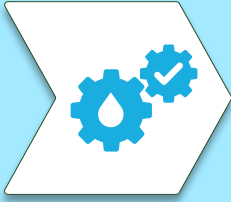
Farmers not organized in communities

Weak interaction amongst different levels of the water authority

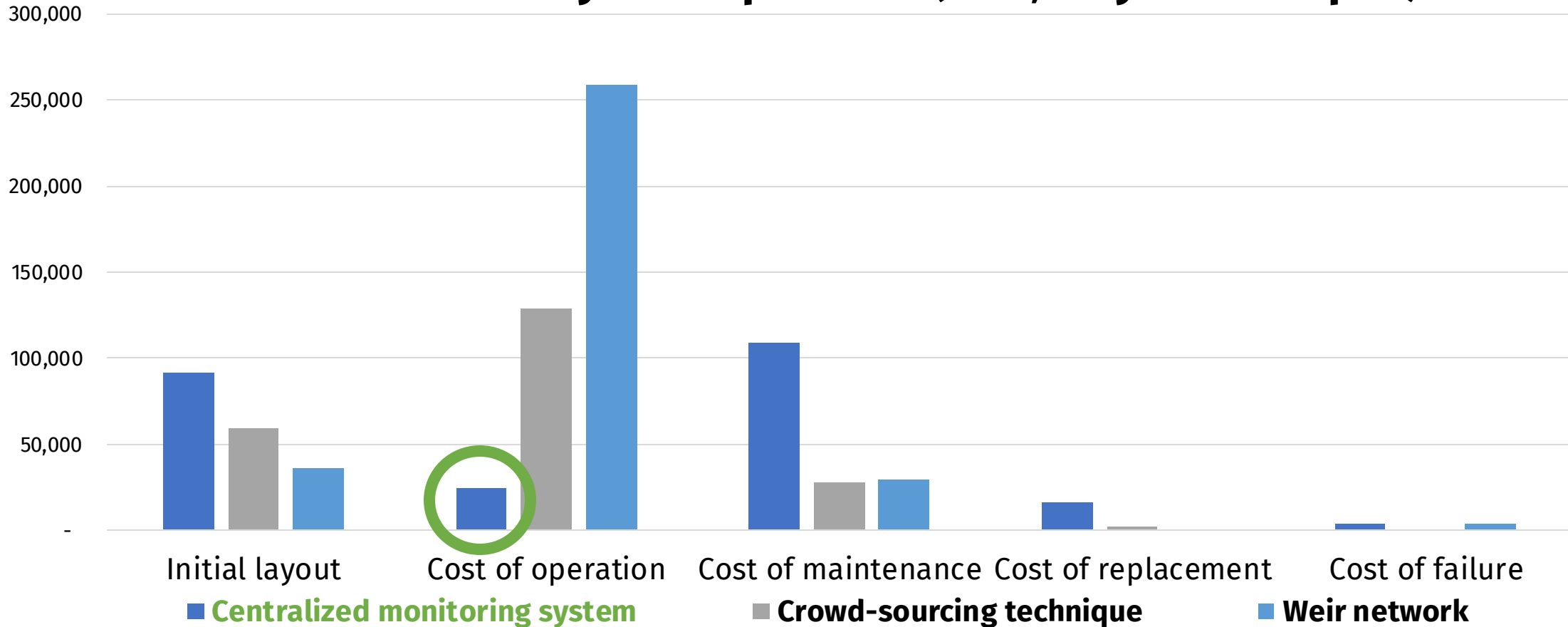


CRITERIA FOR LEBANON

Monitoring technology with the
lowest operation cost



Nominal cost of system operation (USD, 20 years lifespan)

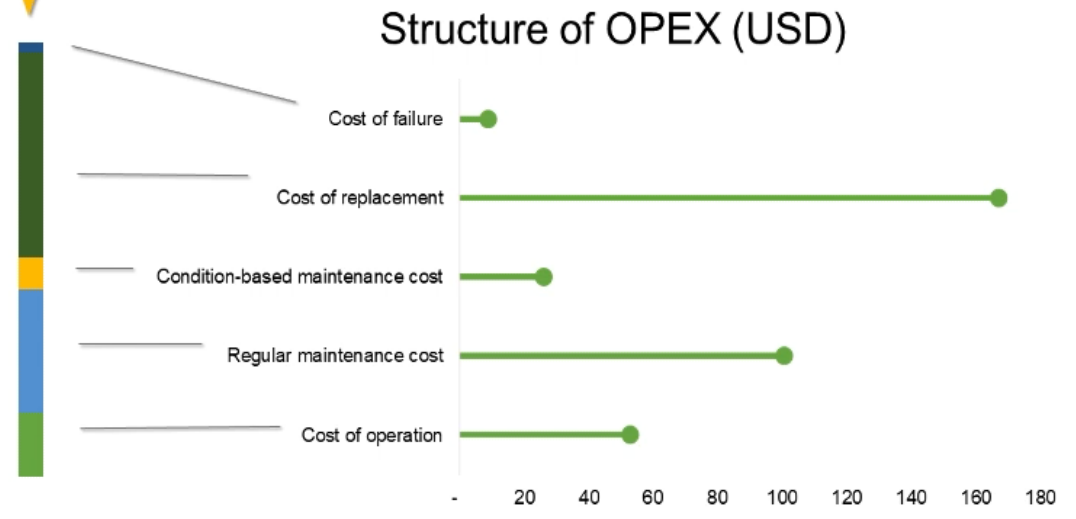
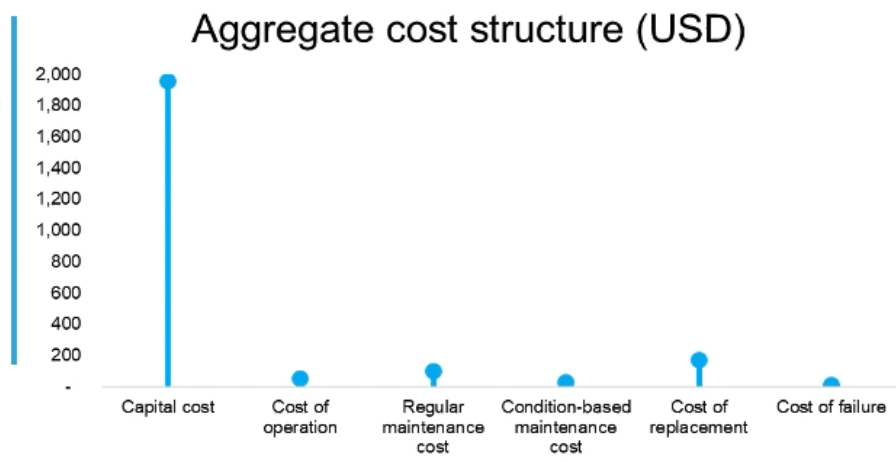


Question

What if maintenance is not under control.....

OPERATION DASHBOARD - single asset

Annual cost structure

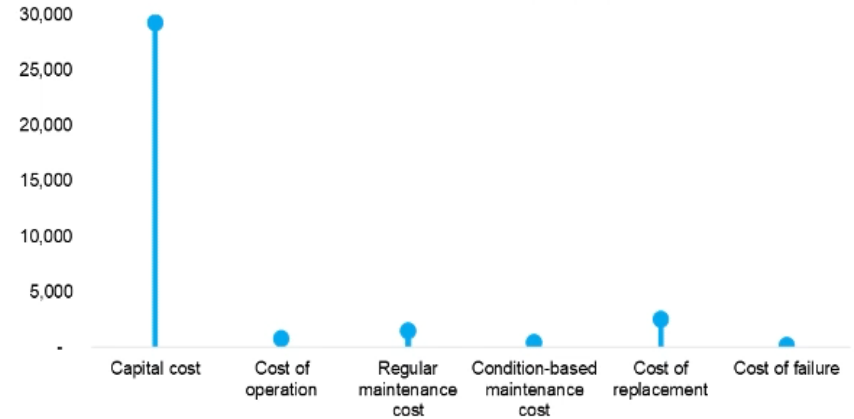


OPERATION DASHBOARD - network (15)

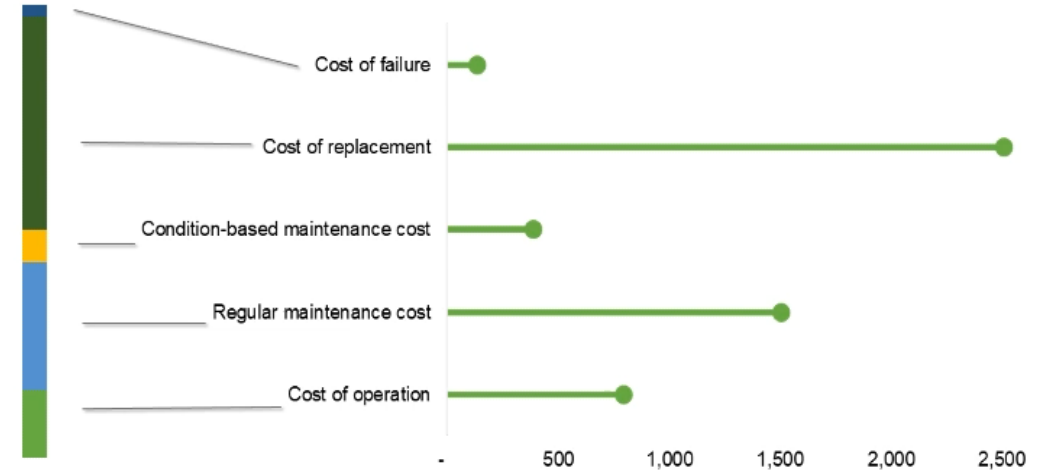
Annual cost structure



Aggregate cost structure (USD)

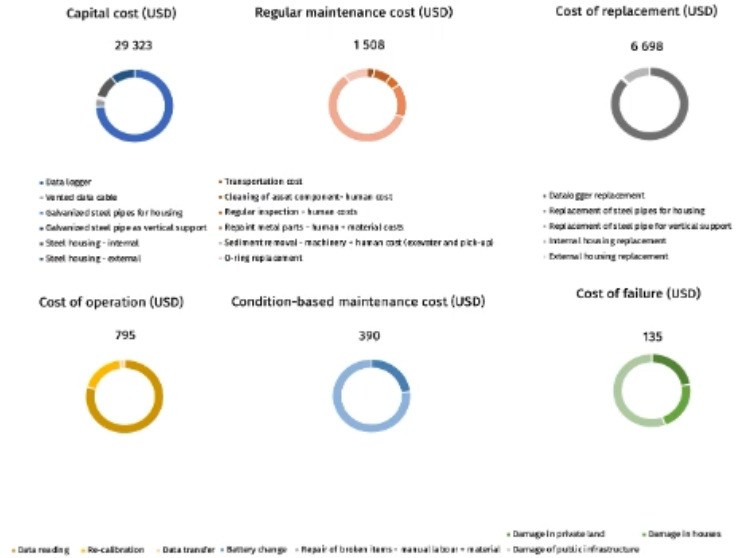


Structure of OPEX (USD)

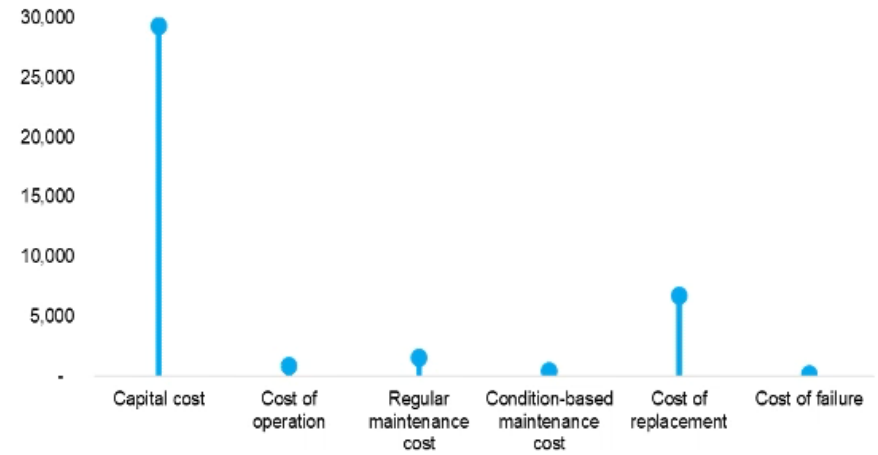


OPERATION DASHBOARD - network (15)

Annual cost structure

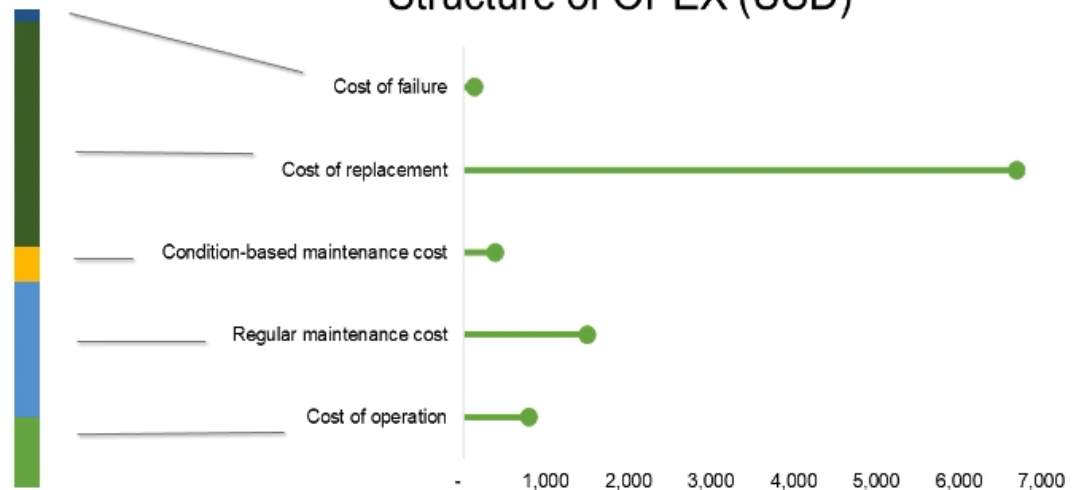


Aggregate cost structure (USD)



4 dataloggers replaced in first year (out of warranty)

Structure of OPEX (USD)



DISCUSSION

The image features a solid blue background with several white chevron shapes pointing to the right. The word "DISCUSSION" is centered in a white, bold, sans-serif font with a thin black outline. The chevrons are arranged in a staggered, overlapping pattern, creating a sense of movement and depth.