



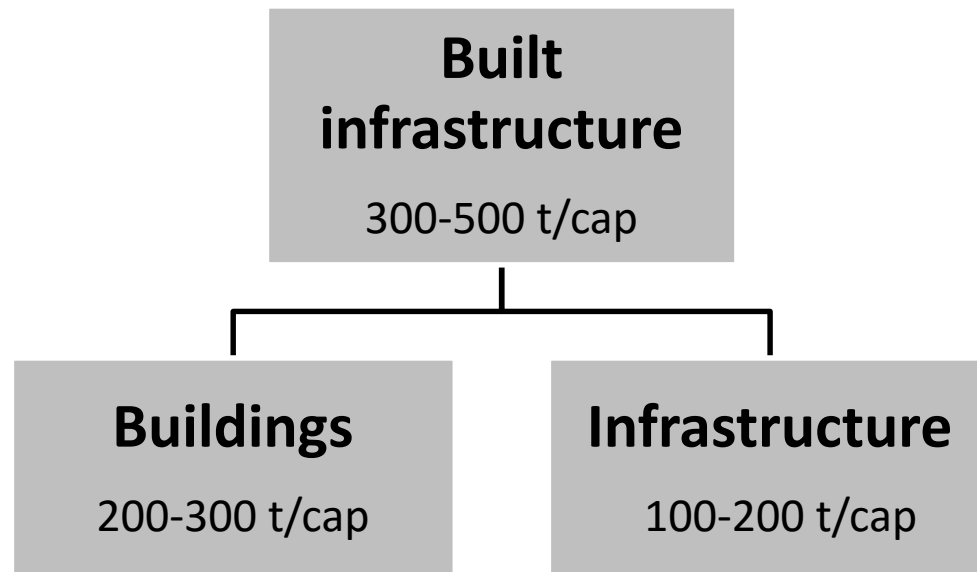
TECHNISCHE
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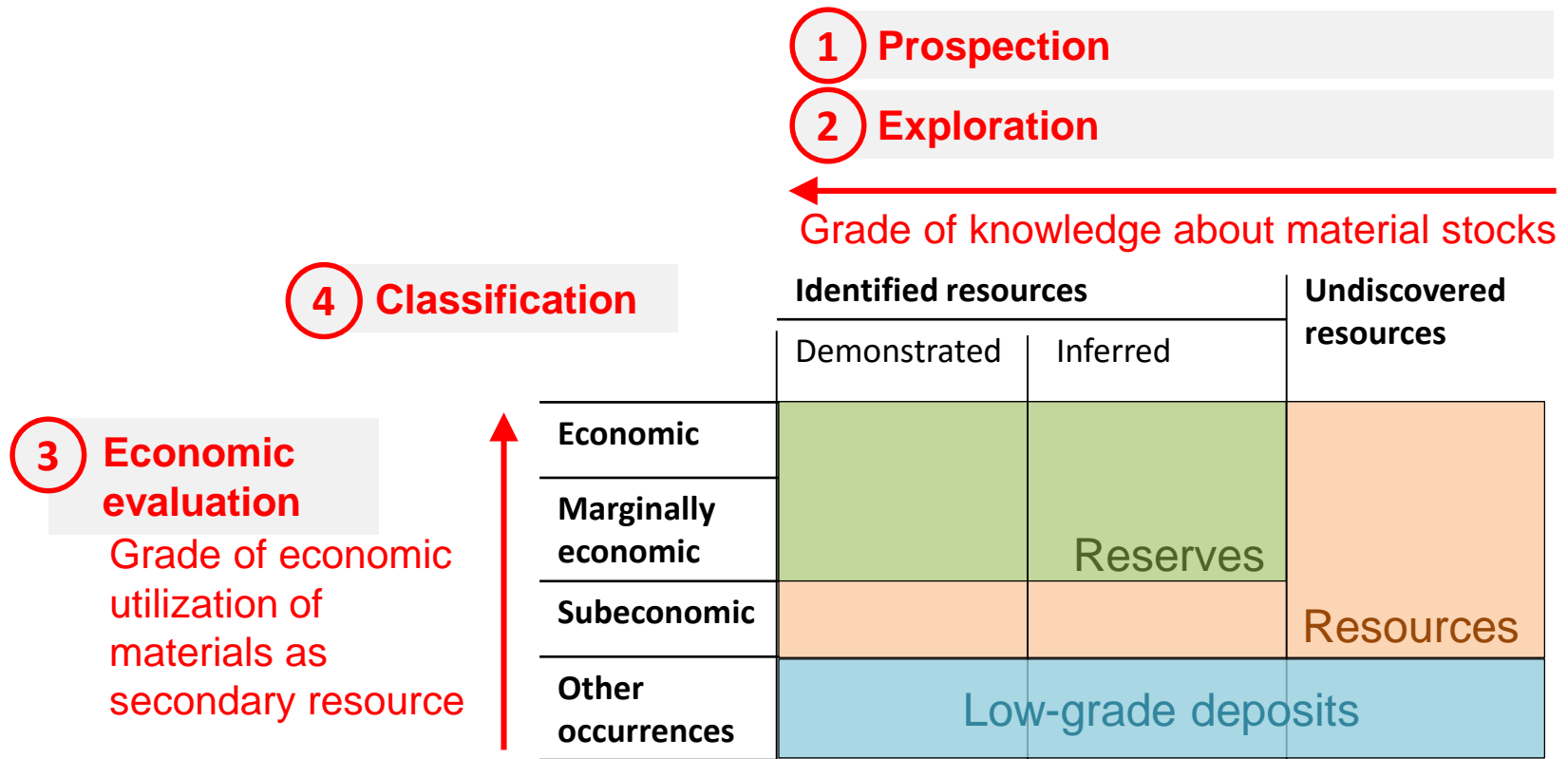
Resource potential of a Subway system & Supply and disposal networks

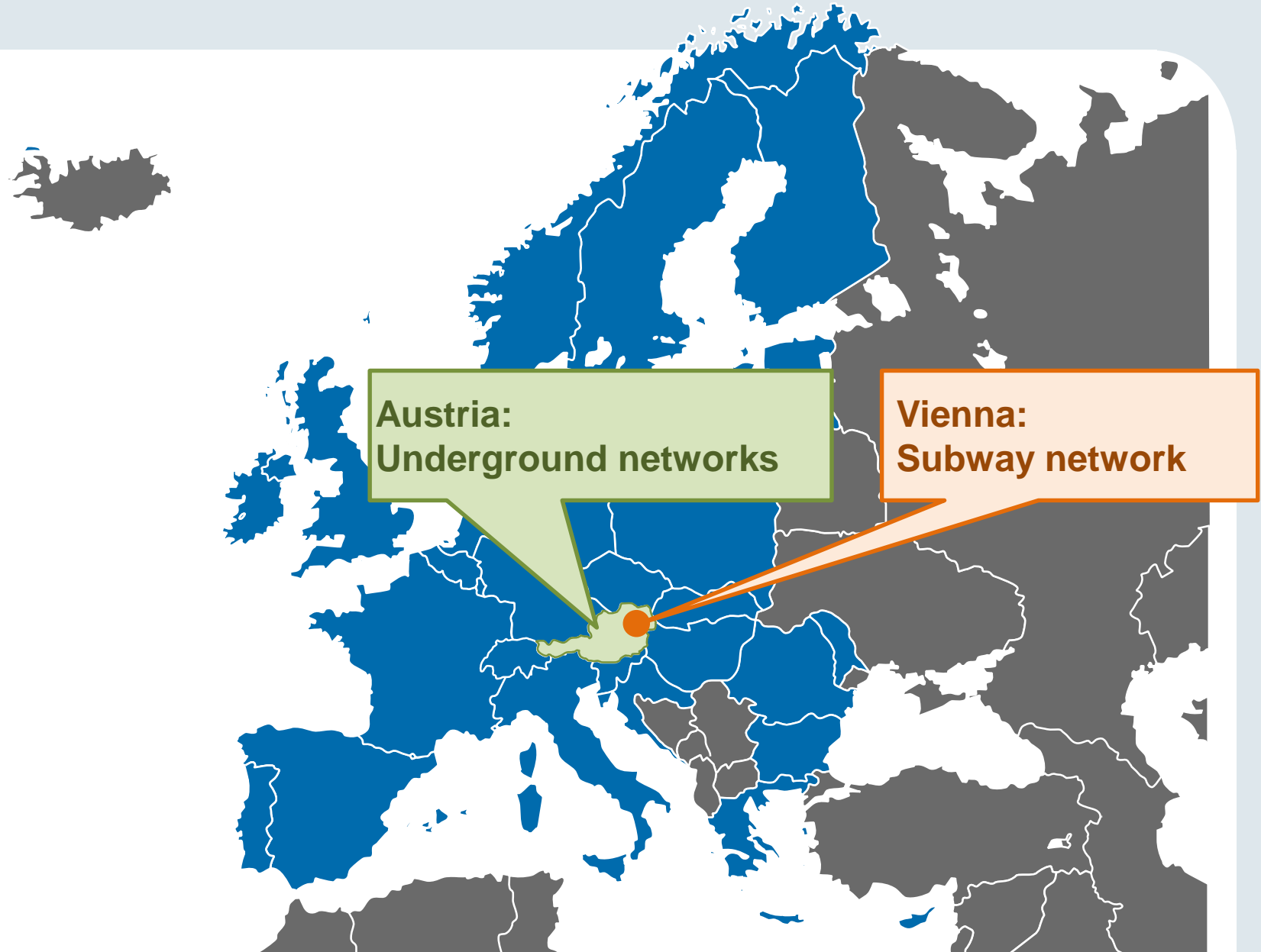
Ulrich KRAL

COST Workshop: „Characterizing the built environment stock“
11. August 2016, Odense

**The resource potential
of materials in built infrastructure
can't be assessed.**









**Is it possible to
inventory the material stocks
with acceptable efforts?**

Availability of GIS for sewer systems

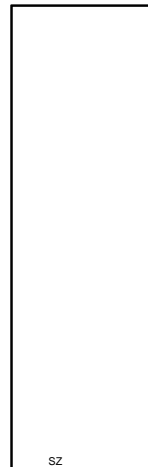
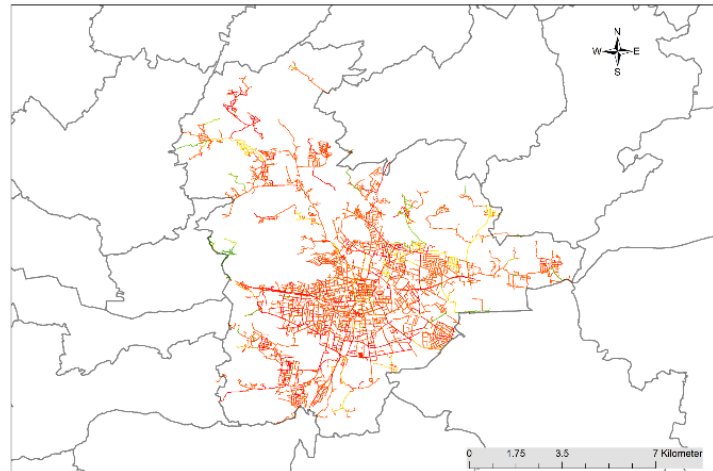
[% of network length is available in GIS]



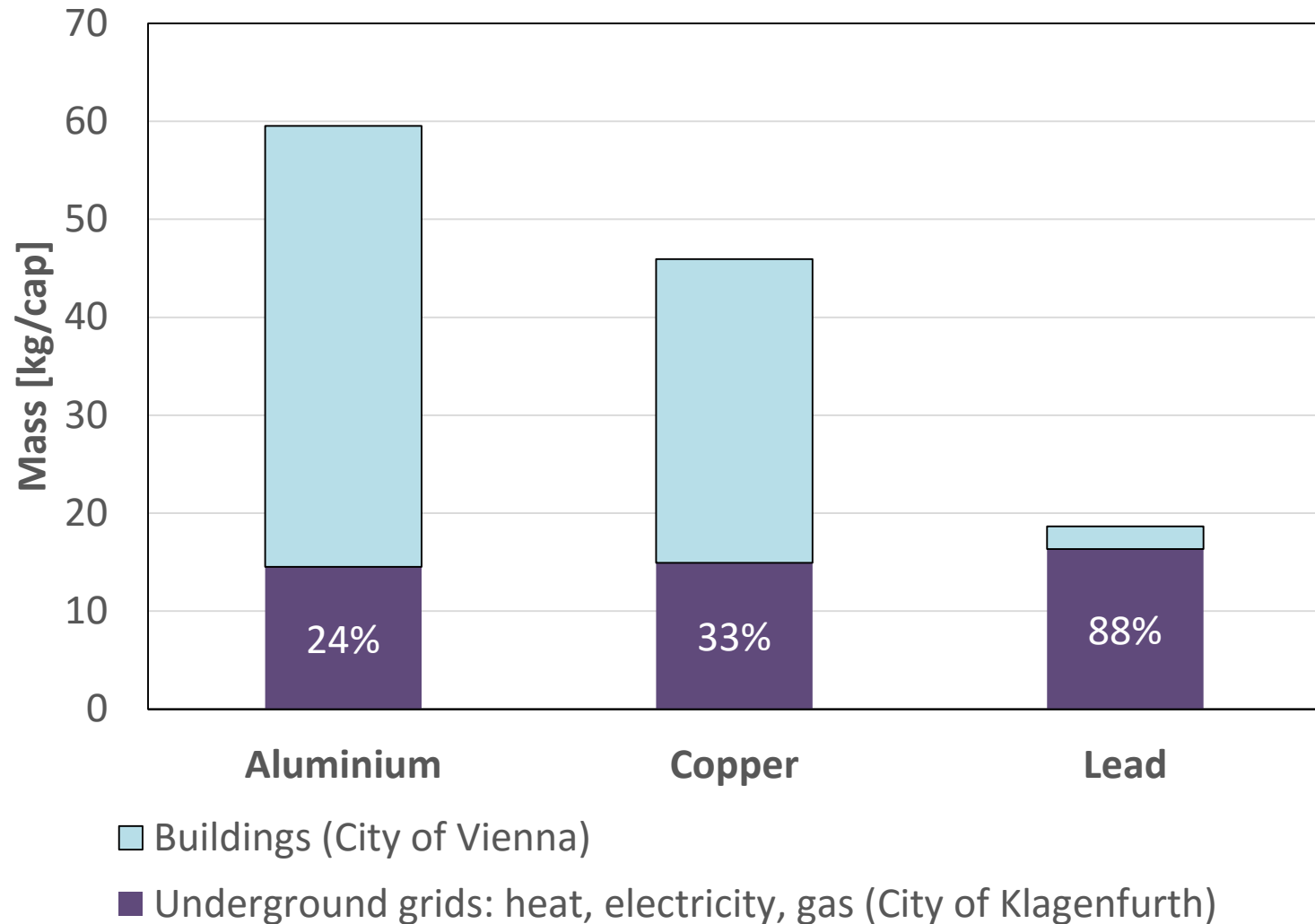
50,1% - 100%

Material inventory

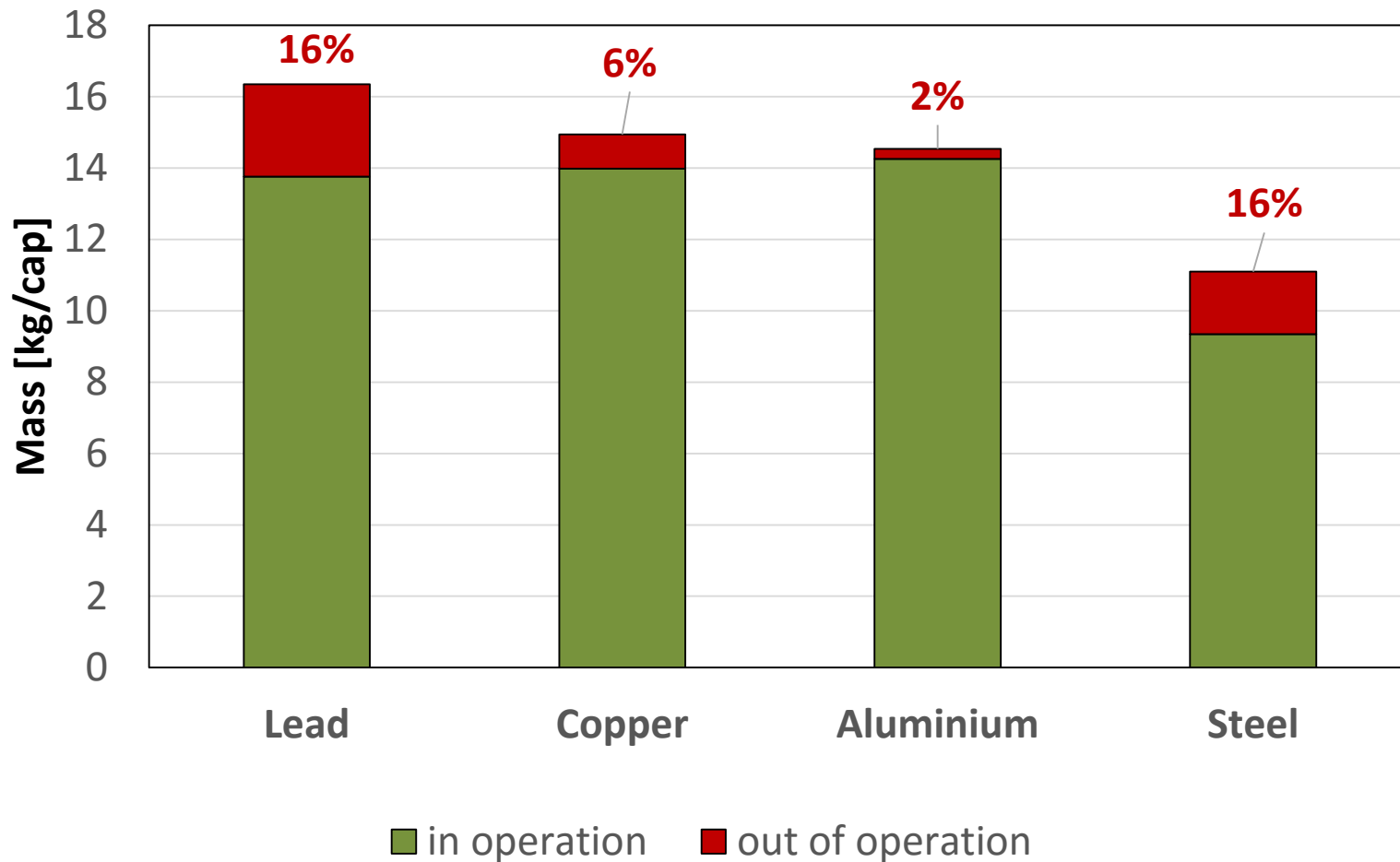
GIS for a urban sewer system



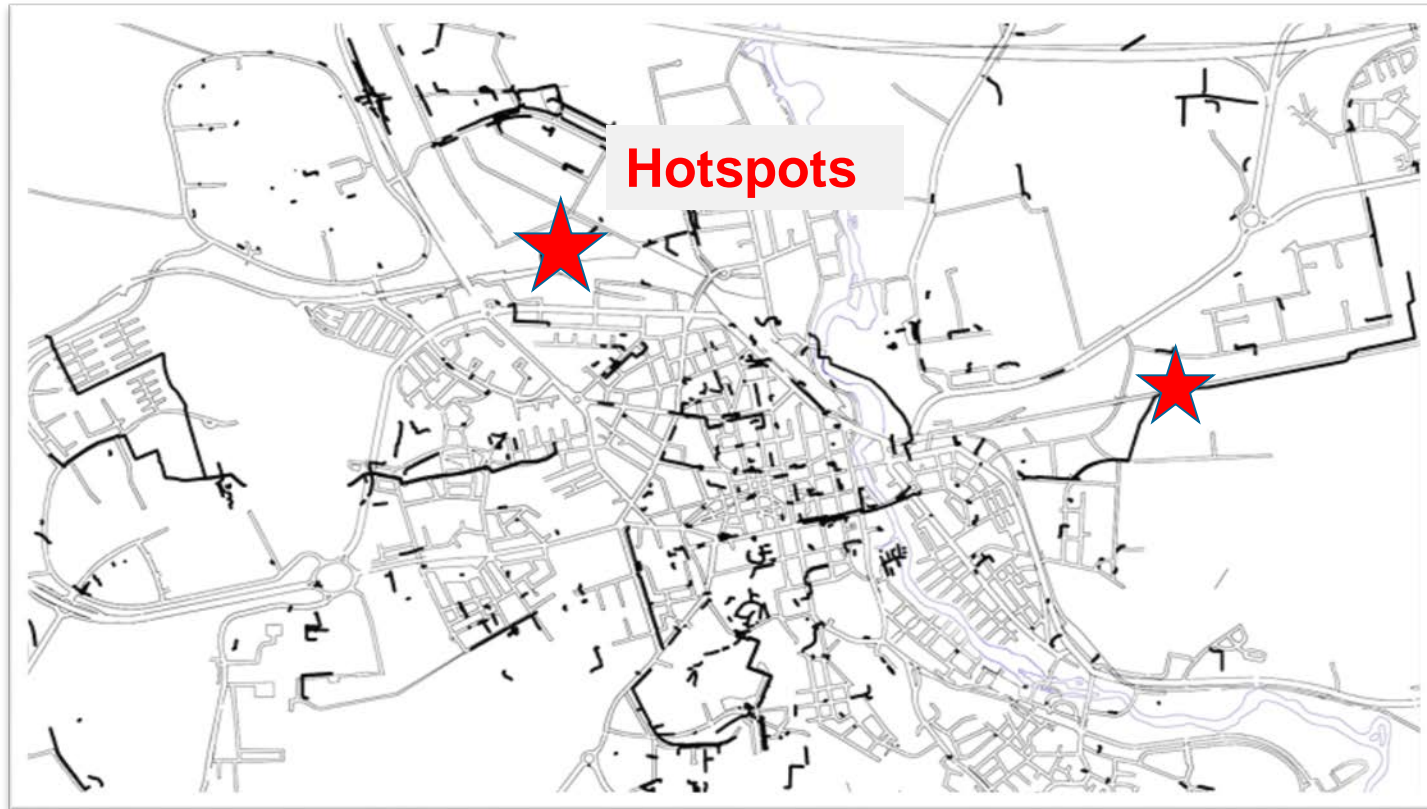
Buildings vs. Underground grids



Power cables „out of operation“

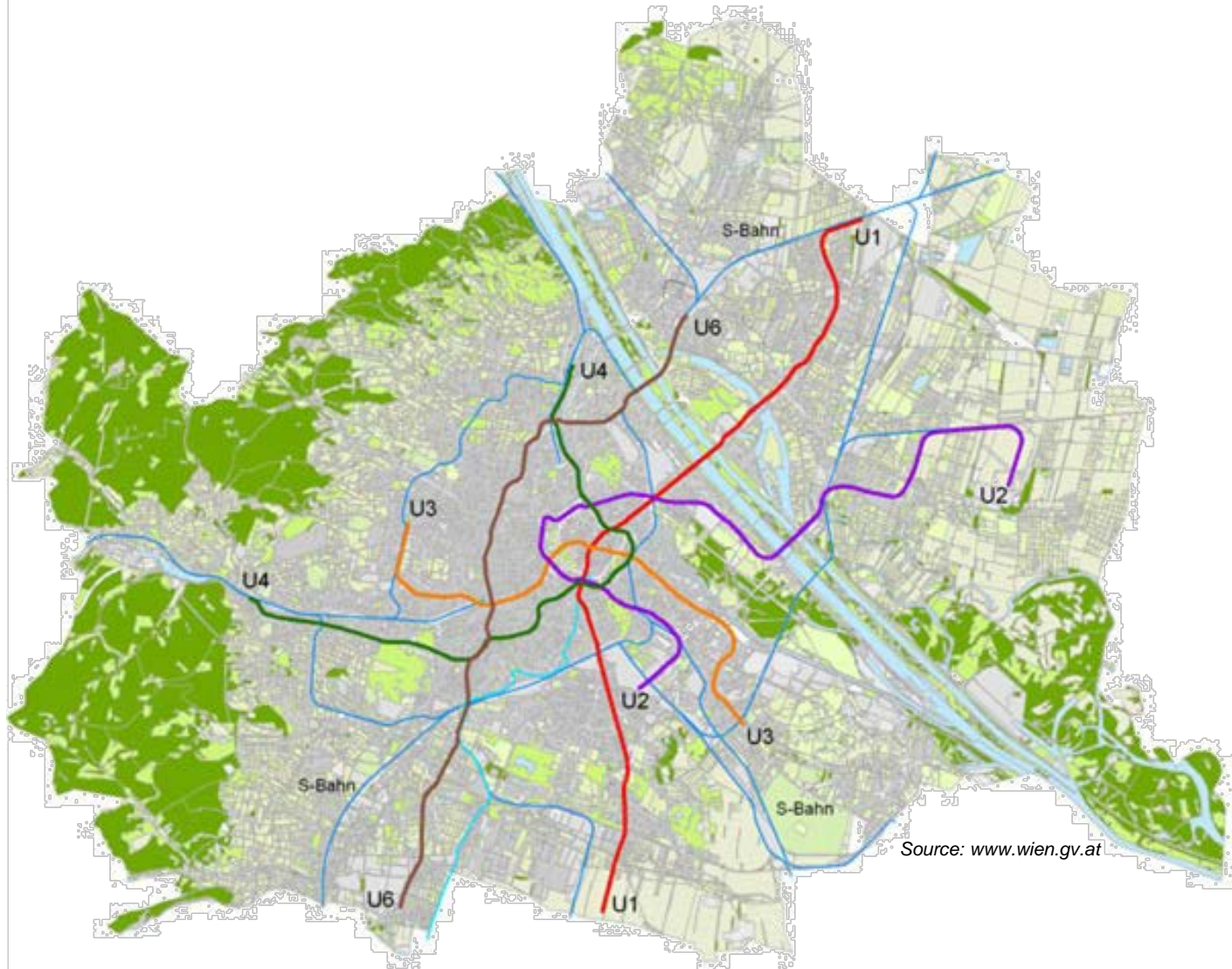


Economic cable recoverability



Krook, J, et. al (2011)

Viennese Subway System



Lederer, J., F. Kleemann, M. Ossberger, et al. (2016). Prospecting and Exploring Anthropogenic Resource Deposits: The Case Study of Vienna's Subway Network. *Journal of Industrial Ecology*. n/a-n/a.

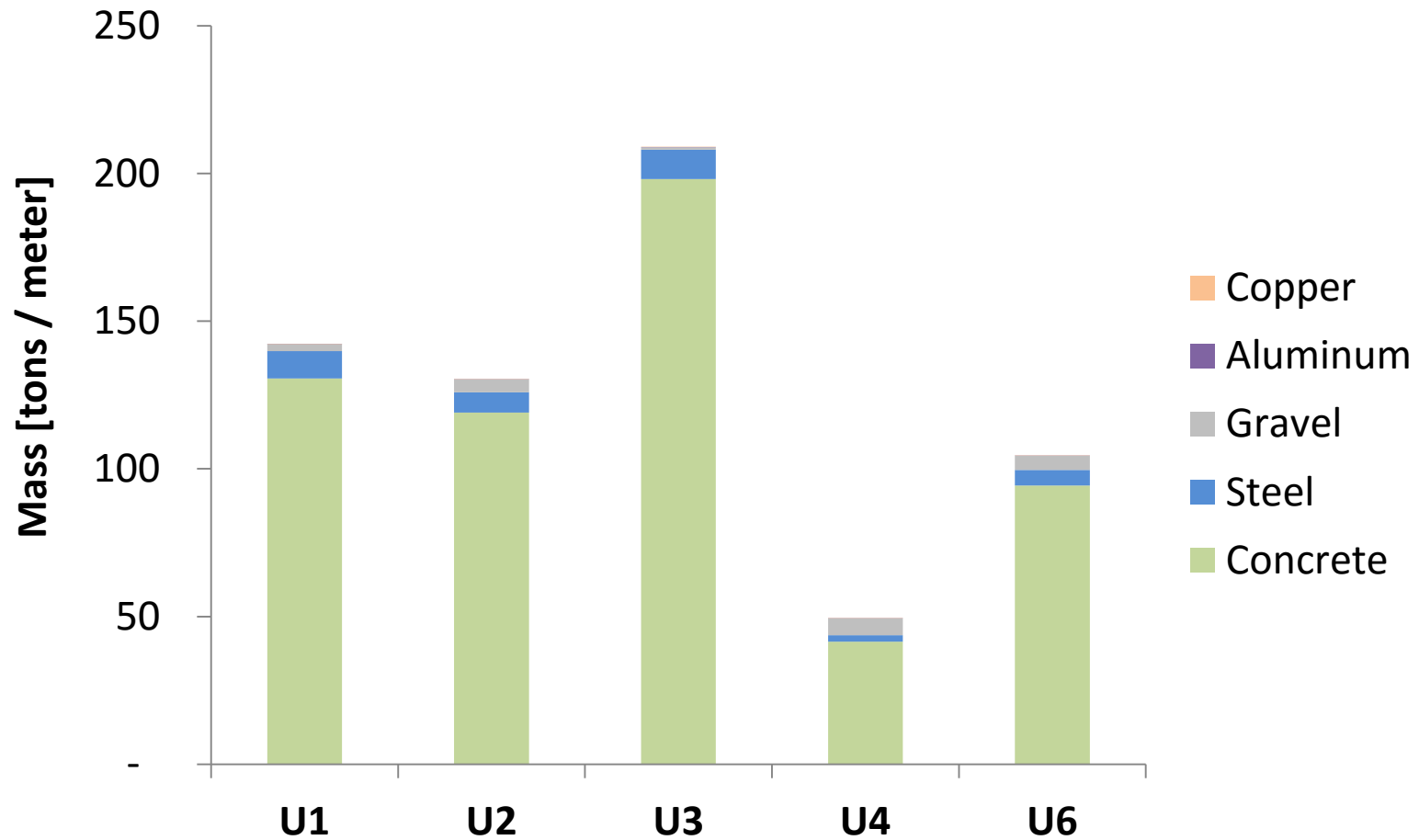
up-scaling

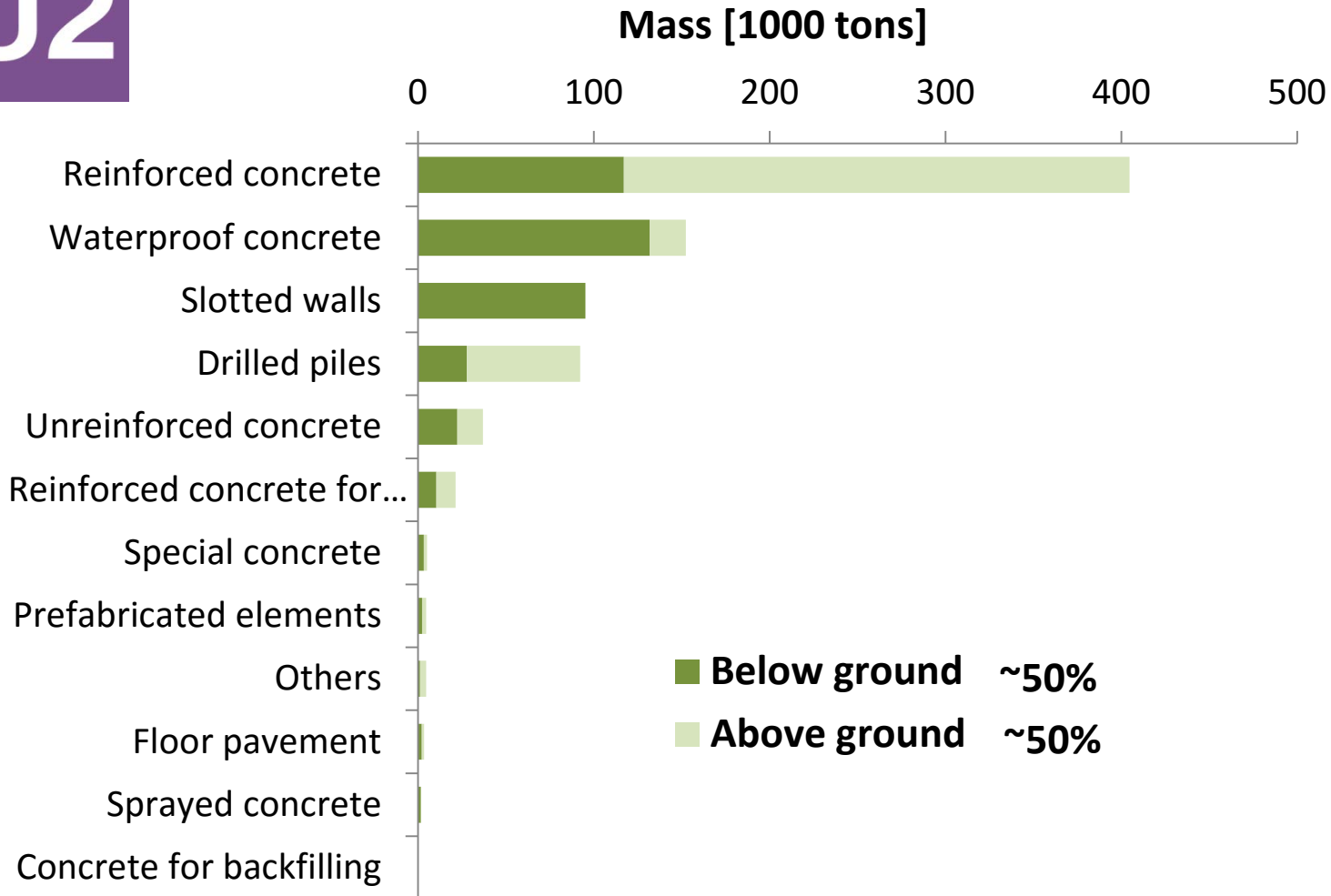
Network sections

Entire network

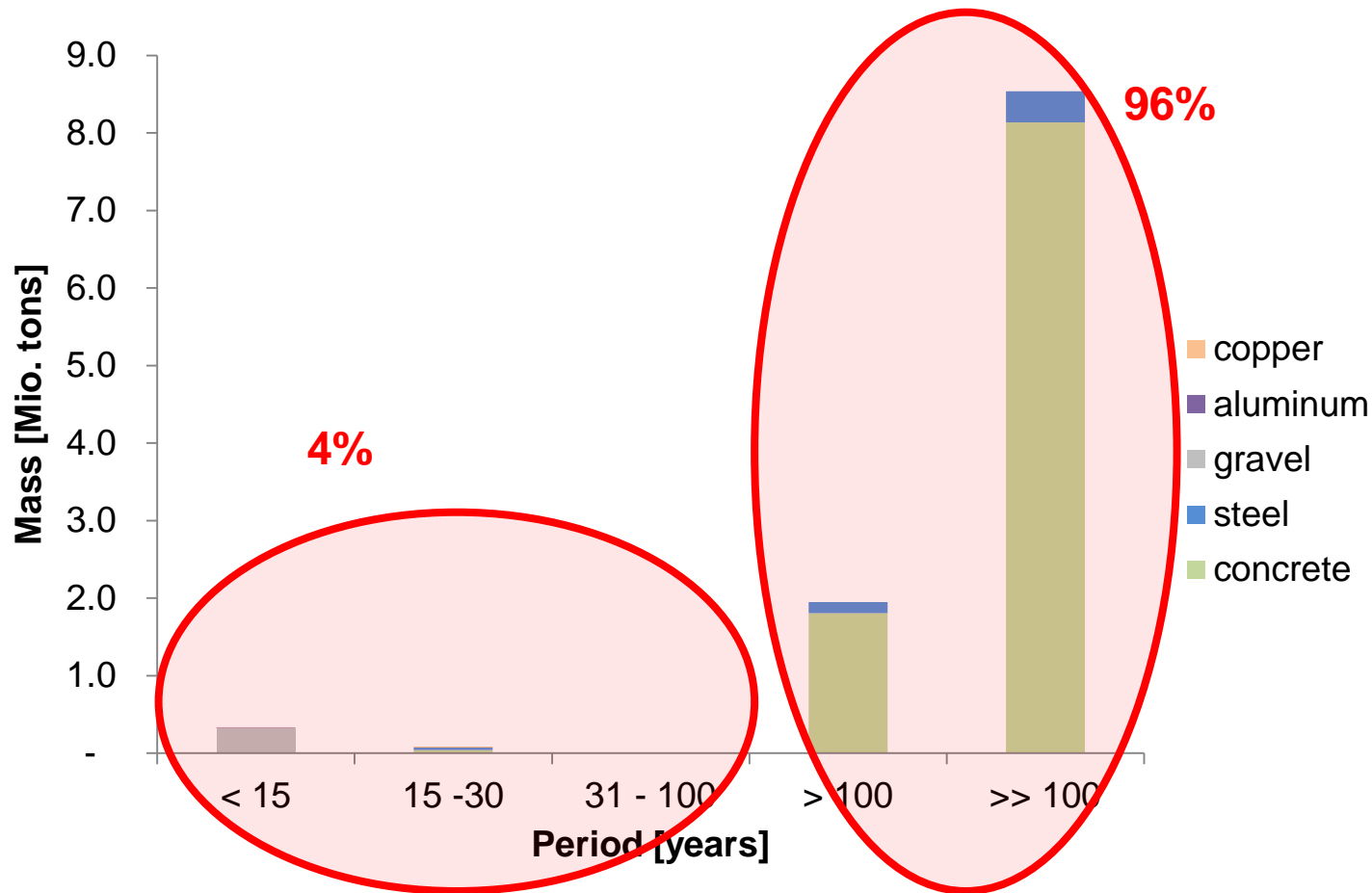


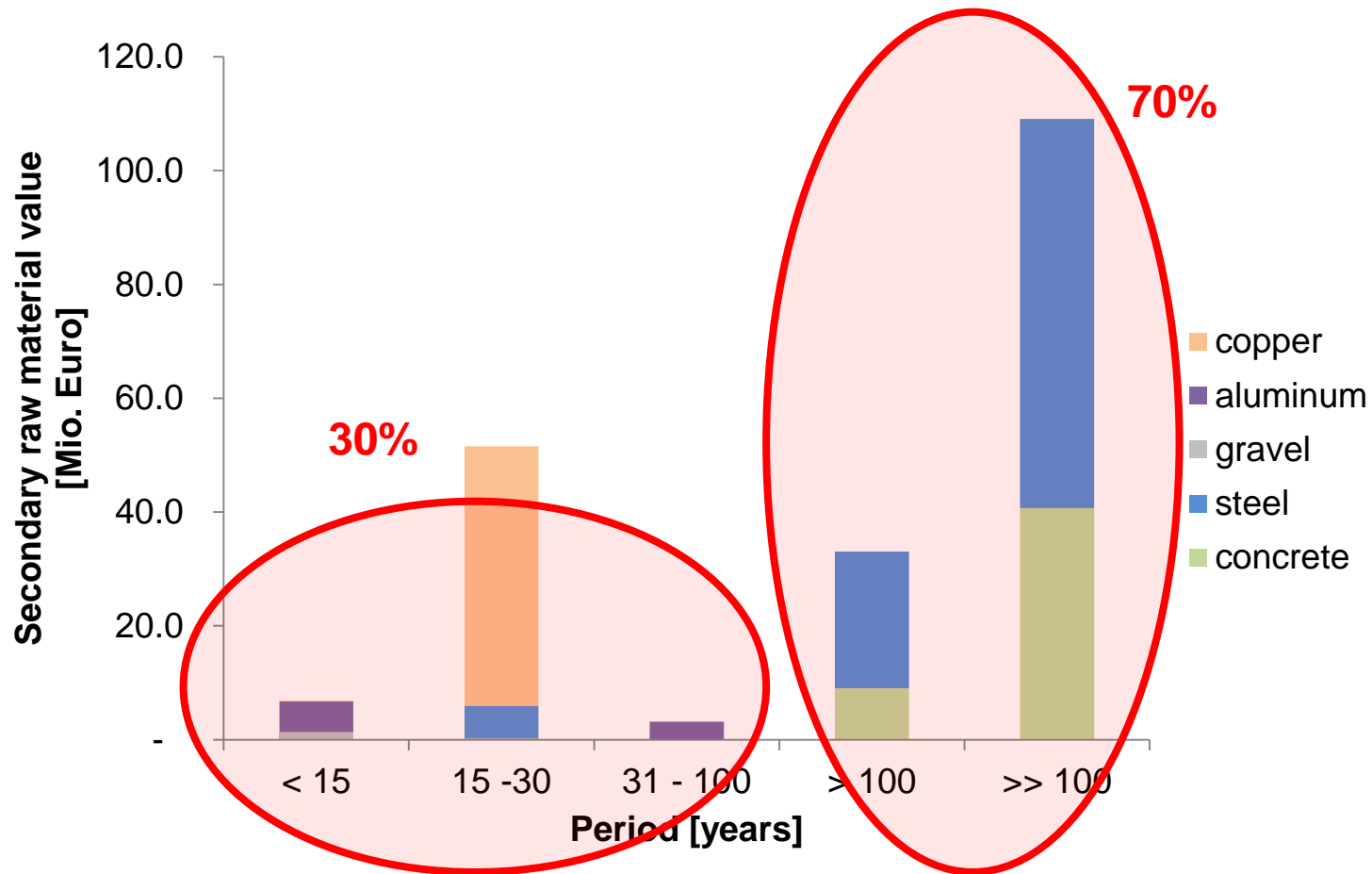
Resources: 11 Mio tons





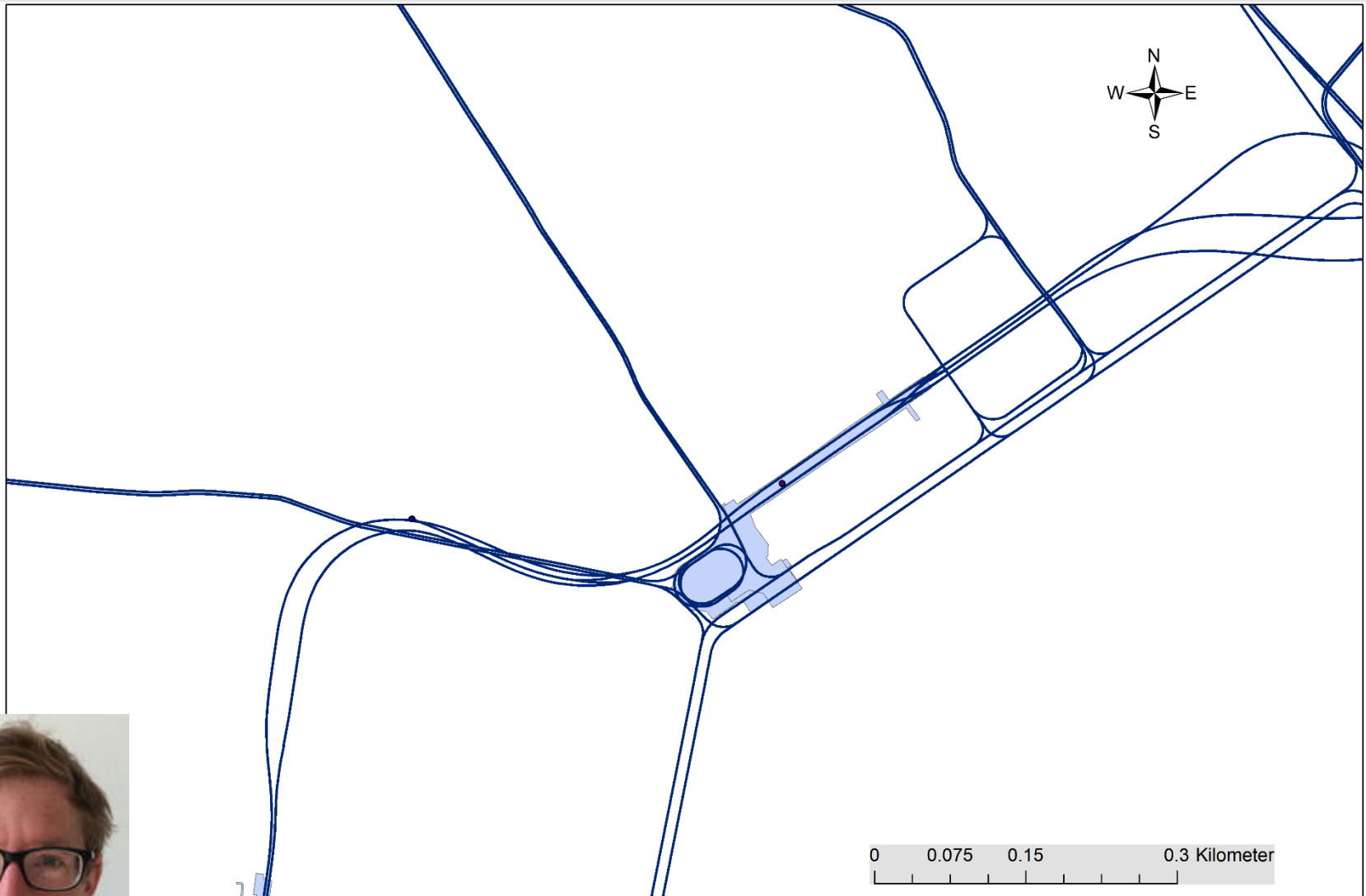
When will the resources become available?



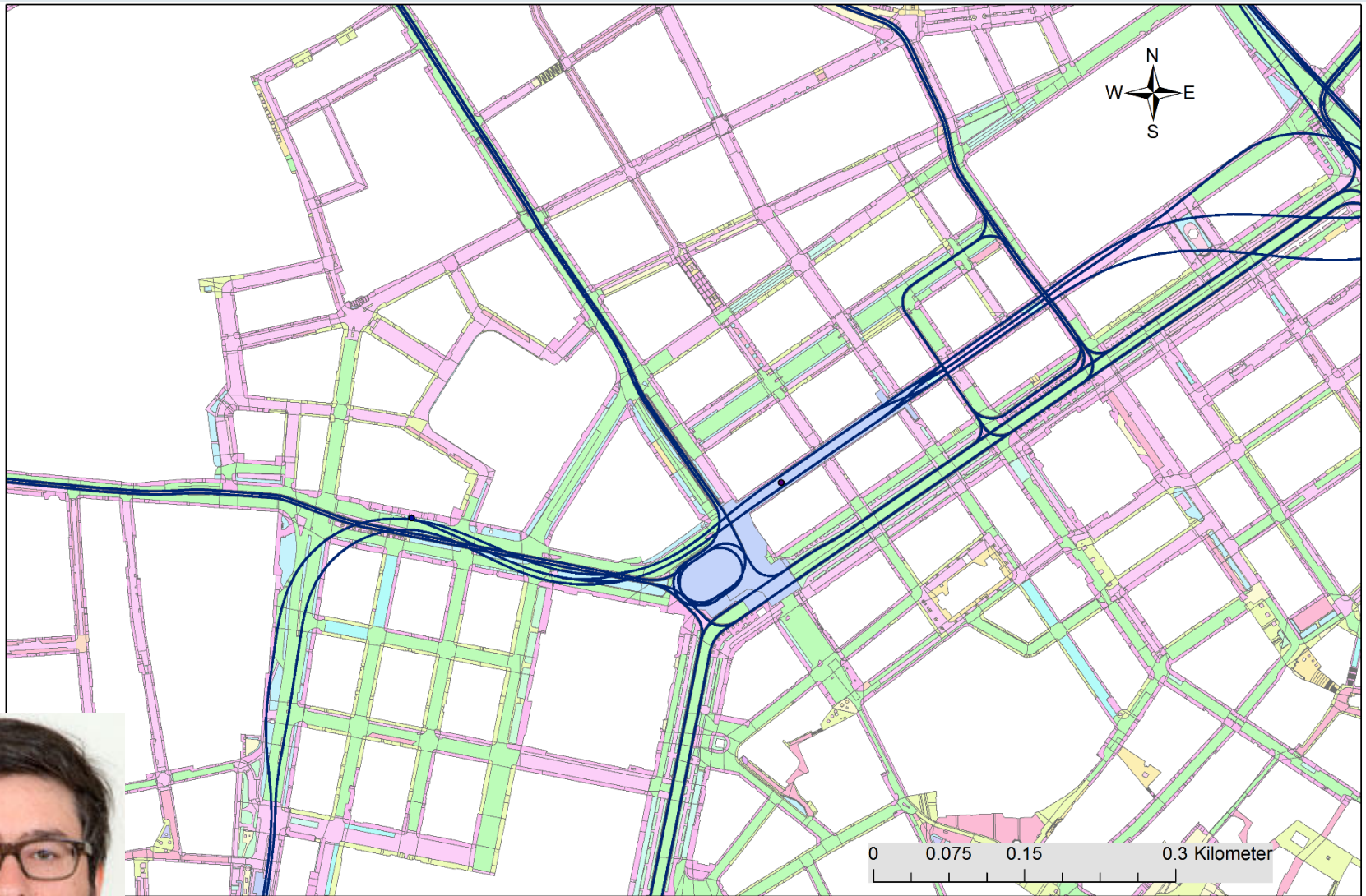


Resource cadaster for the City of Vienna

- Material inventory
- Prediction of future waste flows



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