Network accessibility (A.1.2.1a)

Definition:

Network accessibility[83] is indicated by the percentage of the total length of riverside segments classified into low, medium and high local integration (R500m), compared to local integration (R500m) of the road network of the whole city. Values: **[1] low**, when medium and high values of local integration are below city low values; **[2] medium**, when medium values are higher than city values, and high values are lower than city values; **[3] high**, when high values are higher than city values.

Input data:

- Corridor segment boundary
- River polygon (OSM: nature=water + waterway=riverbank)[84]
- Road network of the city (OSM: highway=*)
- Buffer distance[85]

Implementation:

1. Before performing the analysis on the road network on city scale, isolated components are excluded from the network and the OSM road centrelines are simplified using the ArcGIS tools for Topological Inconsistency and Line Simplification proposed by Kimon Krenz (2017).[86]
2. Space Syntax analysis of local integration R500m is performed for the city with the *SS toolkit* in QGIS.
3. The result of the analysis is classified in quantiles into [1] low; [2] medium; and [3] high values.
4. A buffer of 25m from the river polygon is used to isolate riverside paths from the classified network.[87]
5. Network accessibility in the corridor segment is evaluated as follows:

- If the total percentage of the total length of riverside paths classified as high is more than the percentage of all road segments of the city with high value, than the score is **[3] high**;
- Else if the total percentage of the total length of riverside paths classified as medium is more than the percentage of all road segments of the city with medium value, than the score is **[2] medium**;
- Else the score is **[1] low**.

Results for CS03:

- Percentage of road segments with high value: **8,68%** < city high value 15,50%
- Percentage of road segments with medium value: **43,63%** > city medium value 23,95%
- Percentage of road segments with low value: **47,69%** < city low value 60,56%
- Network accessibility: **2**

83 In Space Syntax theory integration is a measure of accessibility (e.g. Hillier, 2012).

84 If the river polygon is interrupted by bridges, the polygon needs to be completed before it can be used as an input.

85 In case of River Dâmbovița, a buffer distance of 25m was considered to be sufficient for the selection of riverside bike paths. A larger buffer might be needed in other cases, therefore it needs to be determined according to the specific configuration of the riverfront that is being assessed.

86 The workflow presented by Krenz (2017) includes two more steps: Dual Line Removal and Road Detail Removal. The algorithms used in those steps haven't given satisfying results and were excluded from this workflow. On the other hand, the algorithms addressing Topological Inconsistency and Line Simplification have reduced considerably the amount of road segments without altering the results of the analysis.

87 In case of River Dâmbovița, a buffer distance of 25m was considered to be sufficient. The buffer is case specific and needs to be determined according to the specific configuration of the riverfront that is being assessed.

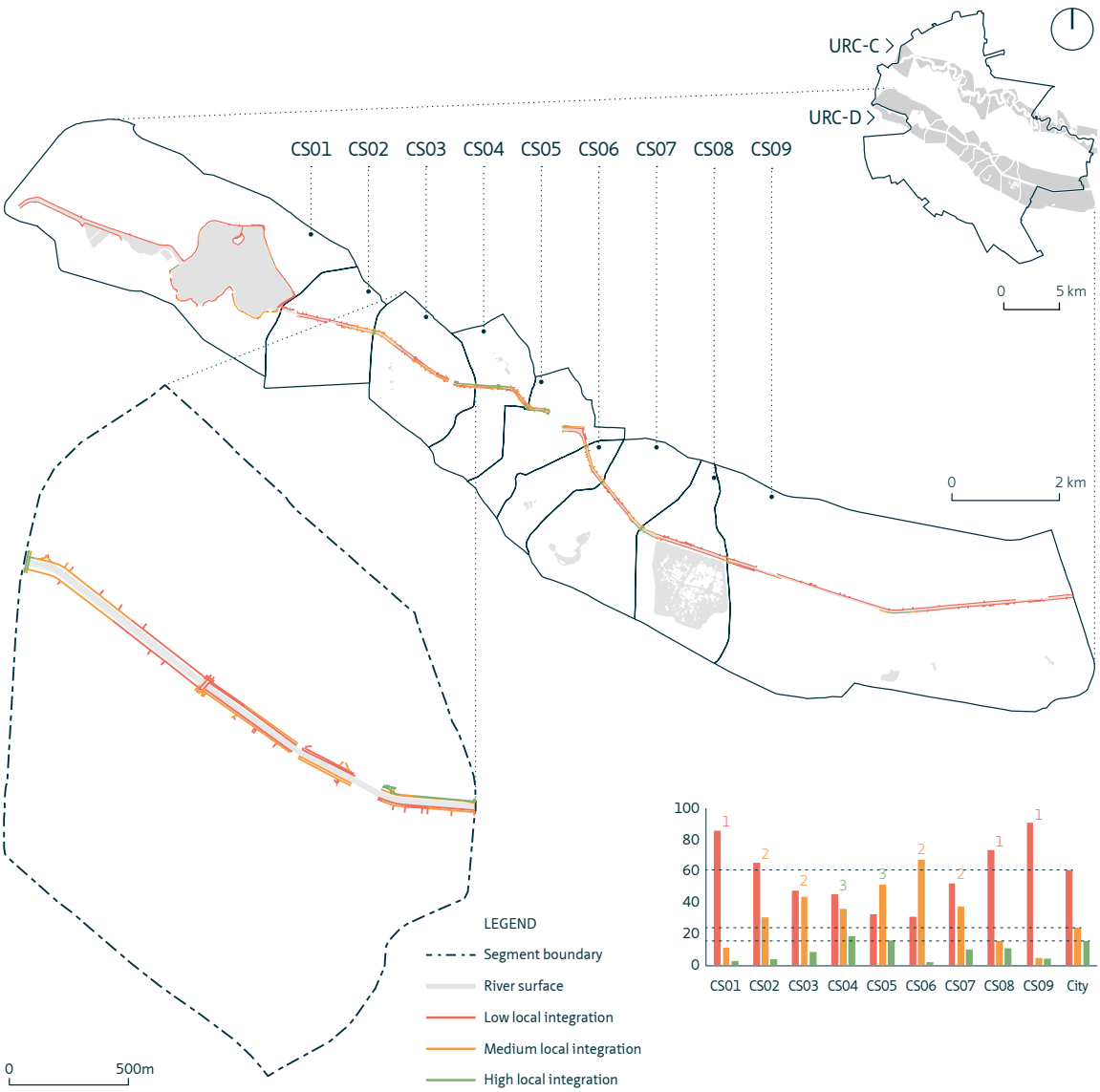

FIGURE APP.E.3 Network accessibility along URC Dâmbovița, with detail of CS03.

SEGMENT	PLEN1	PLEN2	PLEN3	INDEX
CS01	85.86%	11.39%	2.75%	1
CS02	65.36%	30.70%	3.94%	2
CS03	47.69%	43.63%	8.68%	2
CS04	45.31%	36.15%	18.54%	3
CS05	32.71%	51.46%	15.82%	3
CS06	30.90%	67.10%	2.00%	2
CS07	52.26%	37.51%	10.23%	2
CS08	73.54%	15.41%	11.05%	1
CS09	90.84%	4.72%	4.45%	1

TABLE APP.E.4 Results of indicator A.1.2.1a.

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