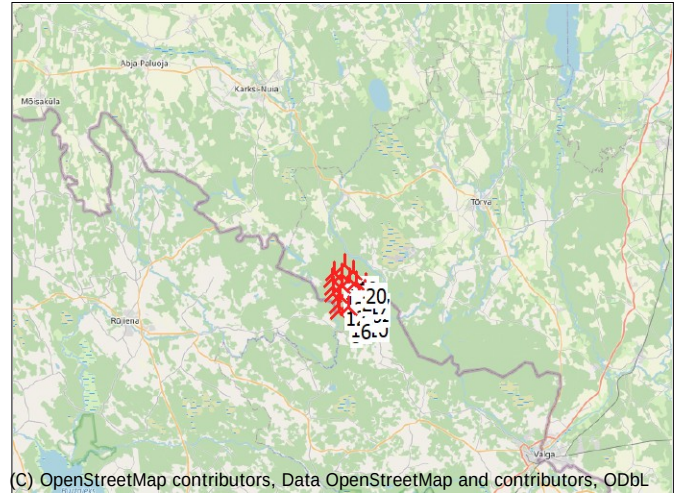
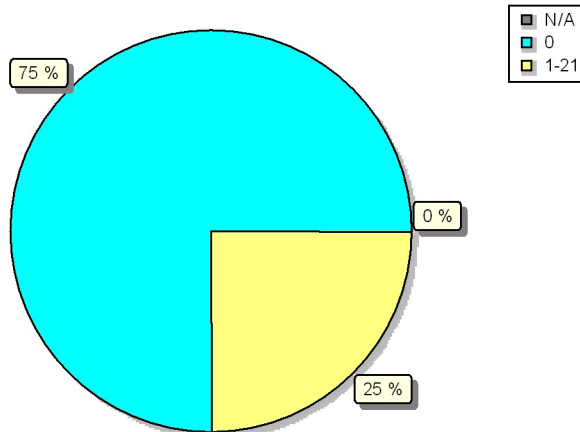


ZVI - Standard ZVI summary

Calculation: Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Area with specific number of WTGs visible



New WTG

Assumptions for ZVI calculation

Center for calculation
Width of calculation area
Height of calculation area
Calculation step
Eye height
Calculation area
WTG Calculation height
Obstacles not used in calculation
DHM object
Area object(s) used in calculation
Height of background area type
No grid objects used in calculation
New WTGs used in calculation
Existing WTGs used in calculation

Estonian Lambert L-EST97-EST97 (EE) East: 600 698 North: 6 426 373
40 000 m
40 000 m
25 m
1,5 m
156 779 ha
Total height

Height Contours: CONTOURLINE_Tõrva_1.wpo (12)
Area object (Roughness, Heights a.g.l. for e.g. Forest (ORA tool) or ZVI obstructions): REGIONS_Tõrva_2.w2r (2)
0,00 m

21
0

No maximum distance to WTG

ZVI Results

WTGs visible	Area [ha]	Area [%]
N/A	9	0,0
0	117 507	75,0
1	1 541	1,0
2	1 357	0,9
3	1 099	0,7
4	1 053	0,7
5	891	0,6
6	838	0,5
7	857	0,5
8	839	0,5
9	801	0,5
10	748	0,5
11	732	0,5
12	786	0,5
13	794	0,5
14	824	0,5
15	789	0,5
16	831	0,5
17	919	0,6
18	990	0,6
19	1 252	0,8
20	1 284	0,8
21	20 037	12,8

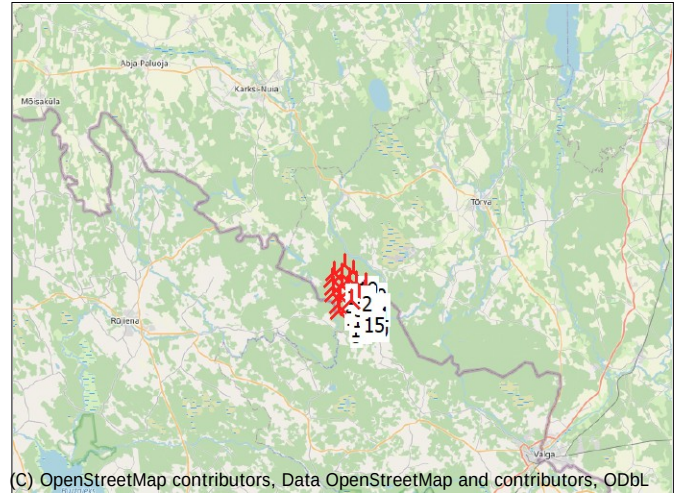
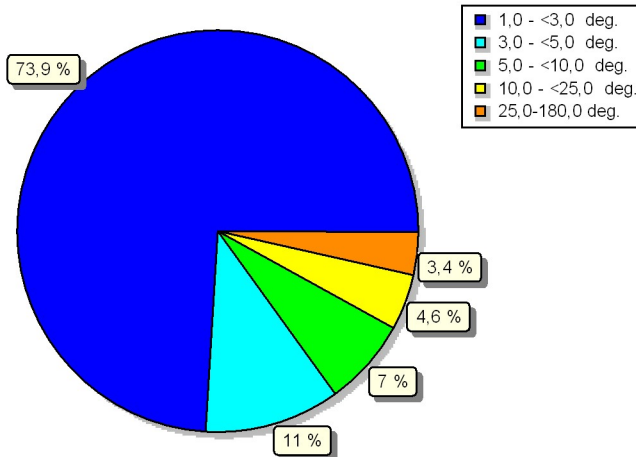
WTGs

Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z [m]
1 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 374	6 423 251	97,6
2 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 903	6 422 551	90,0
3 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 172	6 422 074	90,0
4 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 334	6 421 821	90,0
5 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 965	6 419 437	80,0
6 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 884	6 419 773	85,9
7 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 897	6 421 003	90,0
8 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 495	6 421 568	90,0
9 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 579	6 422 166	90,0
10 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 535	6 420 032	89,8
11 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 640	6 421 636	90,0
12 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 346	6 421 133	87,3
13 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 016	6 420 989	88,1
14 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 818	6 420 055	80,0
15 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 163	6 420 566	89,9
16 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 796	6 421 505	90,0
17 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 572	6 422 362	90,0
18 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 108	6 422 477	90,0
19 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 375	6 423 982	90,0
20 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 226	6 423 379	90,0
21 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 077	6 423 076	90,0

ZVI - Vertical subtended angle

Calculation: Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Area with specific vertical subtended angle



Scale 1:750 000

New WTG

Assumptions for ZVI calculation

Center for calculation
Width of calculation area
Height of calculation area
Calculation step
Eye height
Calculation area
WTG Calculation height
Obstacles not used in calculation
DHM object
Area object(s) used in calculation
Height of background area type
No grid objects used in calculation
New WTGs used in calculation
Existing WTGs used in calculation

Estonian Lambert L-EST97-EST97 (EE) East: 600 698 North: 6 426 373
40 000 m
40 000 m
25 m
1,5 m
160 200 ha
Total height

Height Contours: CONTOURLINE_Tõrva_1.wpo (12)
Area object (Roughness, Heights a.g.l. for e.g. Forest (ORA tool) or ZVI obstructions): REGIONS_Tõrva_2.w2r (2)
0,00 m

21
0

No maximum distance to WTG

ZVI Results

Vertical subtended angle [deg]	Area [ha]	Area [%]
1,0 - <3,0	7790	4,9
3,0 - <5,0	1154	0,7
5,0 - <10,0	742	0,5
10,0 - <25,0	489	0,3
25,0 - <=180,0	361	0,2

WTGs

Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z [m]
1 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 374	6 423 251	97,6
2 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 903	6 422 551	90,0
3 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 172	6 422 074	90,0
4 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 334	6 421 821	90,0
5 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 965	6 419 437	80,0
6 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 884	6 419 773	85,9
7 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 897	6 421 003	90,0
8 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 495	6 421 568	90,0
9 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 579	6 422 166	90,0
10 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 535	6 420 032	89,8
11 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 640	6 421 636	90,0
12 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 346	6 421 133	87,3
13 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 016	6 420 989	88,1
14 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 818	6 420 055	80,0
15 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 163	6 420 566	89,9
16 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 796	6 421 505	90,0
17 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 572	6 422 362	90,0
18 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 108	6 422 477	90,0
19 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 375	6 423 982	90,0
20 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 226	6 423 379	90,0
21 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 077	6 423 076	90,0

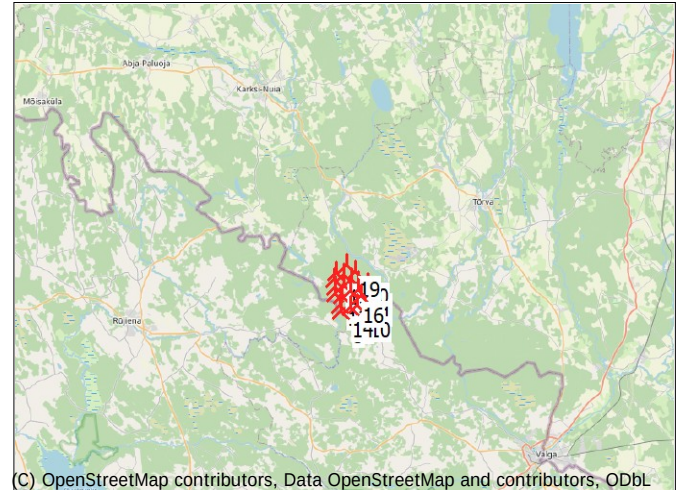
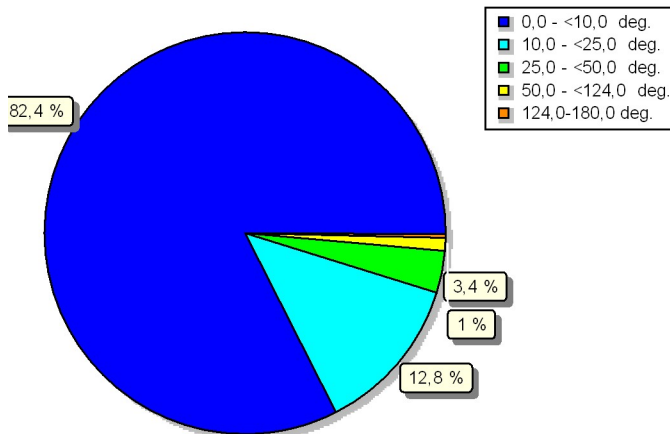
Project:
Tõrva

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
07.08.2024 11:19/4.0.547

ZVI - Horizontal subtended angle

Calculation: Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Area with specific horizontal subtended angle



Scale 1:750 000

New WTG

Assumptions for ZVI calculation

Center for calculation
Width of calculation area
Height of calculation area
Calculation step
Eye height
Calculation area
WTG Calculation height
Obstacles not used in calculation
DHM object
Area object(s) used in calculation
Height of background area type
No grid objects used in calculation
New WTGs used in calculation
Existing WTGs used in calculation

Estonian Lambert L-EST97-EST97 (EE) East: 600 698 North: 6 426 373
40 000 m
40 000 m
25 m
1,5 m
160 200 ha
Total height

Height Contours: CONTOURLINE_Tõrva_1.wpo (12)
Area object (Roughness, Heights a.g.l. for e.g. Forest (ORA tool) or ZVI obstructions): REGIONS_Tõrva_2.w2r (2)
0,00 m

21
0

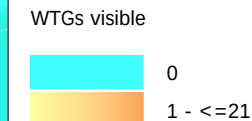
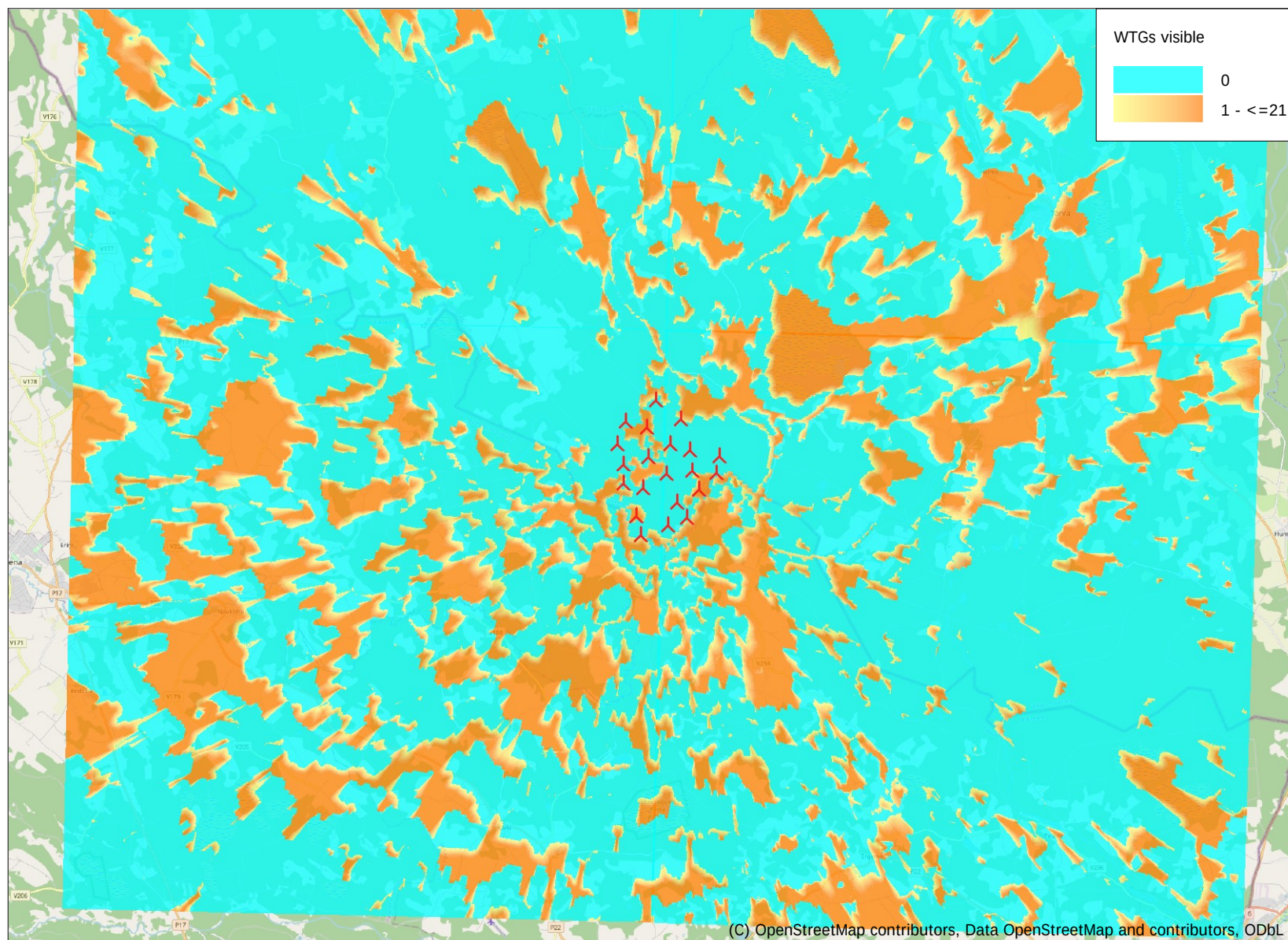
No maximum distance to WTG

ZVI Results

Horizontal subtended angle [deg]	Area [ha]	Area [%]
0,0 - <10,0	132068	82,4
10,0 - <25,0	20566	12,8
25,0 - <50,0	5501	3,4
50,0 - <124,0	1604	1,0
124,0 - <=180,0	462	0,3

WTGs

Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z [m]
1 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 374	6 423 251	97,6
2 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 903	6 422 551	90,0
3 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 172	6 422 074	90,0
4 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 334	6 421 821	90,0
5 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 965	6 419 437	80,0
6 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 884	6 419 773	85,9
7 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 897	6 421 003	90,0
8 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 495	6 421 568	90,0
9 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	602 579	6 422 166	90,0
10 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 535	6 420 032	89,8
11 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 640	6 421 636	90,0
12 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 346	6 421 133	87,3
13 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 016	6 420 989	88,1
14 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 818	6 420 055	80,0
15 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 163	6 420 566	89,9
16 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 796	6 421 505	90,0
17 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 572	6 422 362	90,0
18 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	599 108	6 422 477	90,0
19 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 375	6 423 982	90,0
20 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	601 226	6 423 379	90,0
21 Yes	VESTAS	V172-7.2-7 200	7 200	172,0	166,0	600 077	6 423 076	90,0



Project:
Tõrva

ZVI -
Map Standard ZVI summary
Calculation:
Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
07.08.2024 11:19/4.0.547

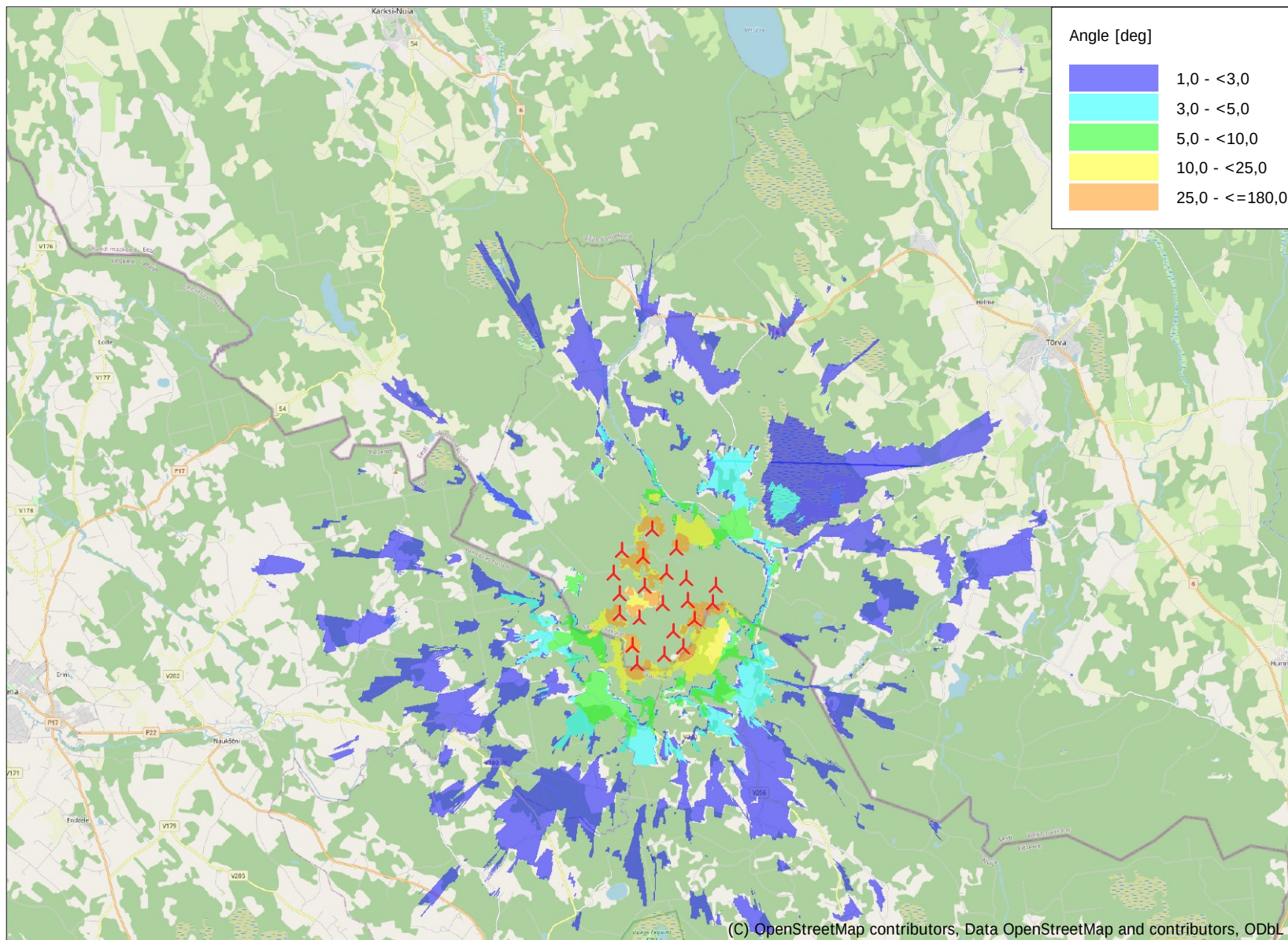
(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

0 2,5 5 7,5 10km

Map: EMD OpenStreetMap , Print scale 1:200 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 600 697 North: 6 421 971

Grid step: 25 m - Eye height: 1,5 m - Calculation height: Total height

New WTG



Angle [deg]

1,0 - <3,0
3,0 - <5,0
5,0 - <10,0
10,0 - <25,0
25,0 - <=180,0

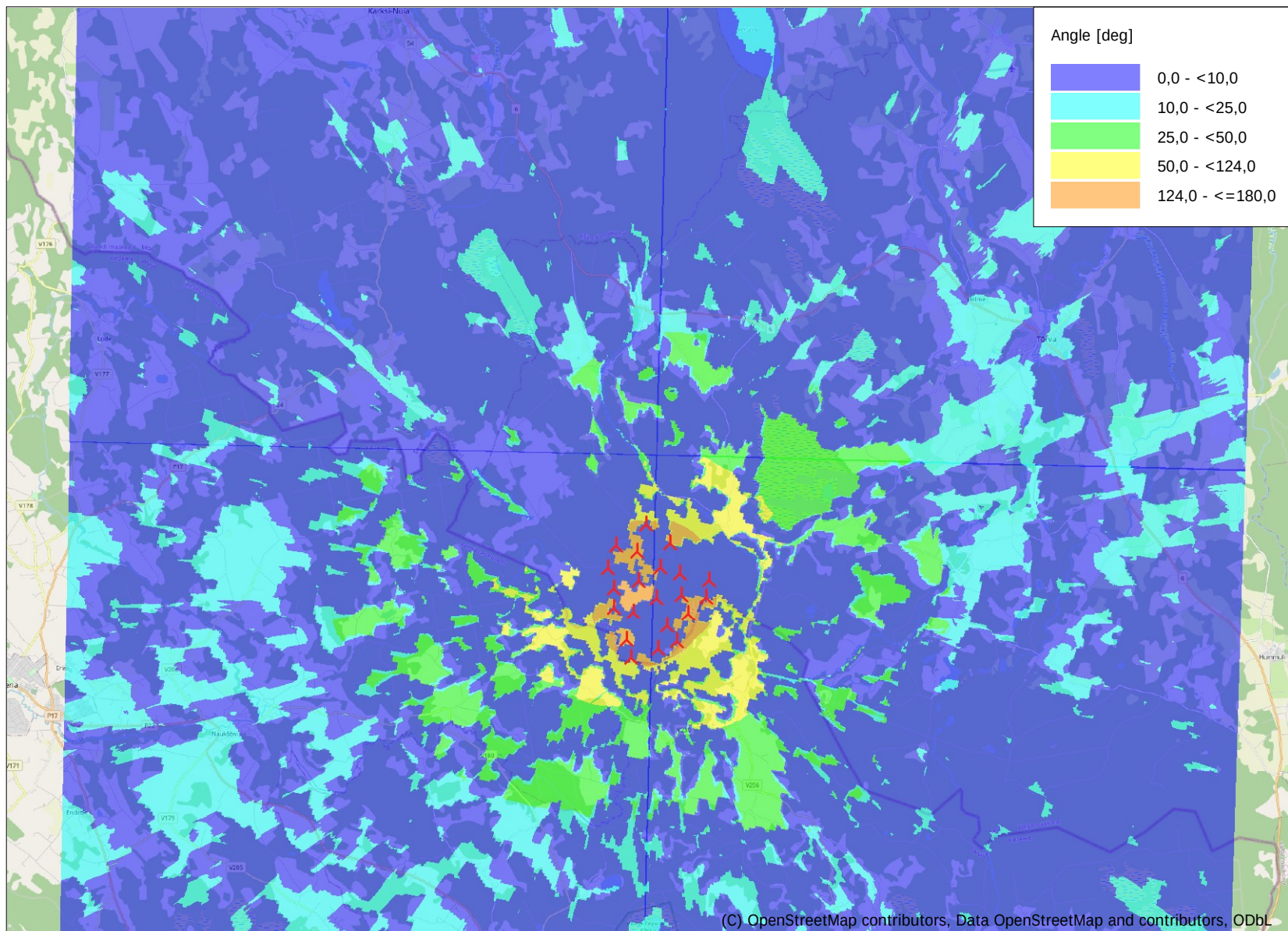
Project:
Tõrva

ZVI -
Map Vertical subtended angle
Calculation:
Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
07.08.2024 11:19/4.0.547

New WTG

Map: EMD OpenStreetMap , Print scale 1:200 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 600 698 North: 6 426 373



Project:
Tõrva

ZVI -
Map Horizontal subtended angle
Calculation:
Nähtavus_Corine_landcover_ZVI_väiksem_tuulik_07082024

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
07.08.2024 11:19/4.0.547

New WTG

Map: EMD OpenStreetMap , Print scale 1:200 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 600 698 North: 6 426 373