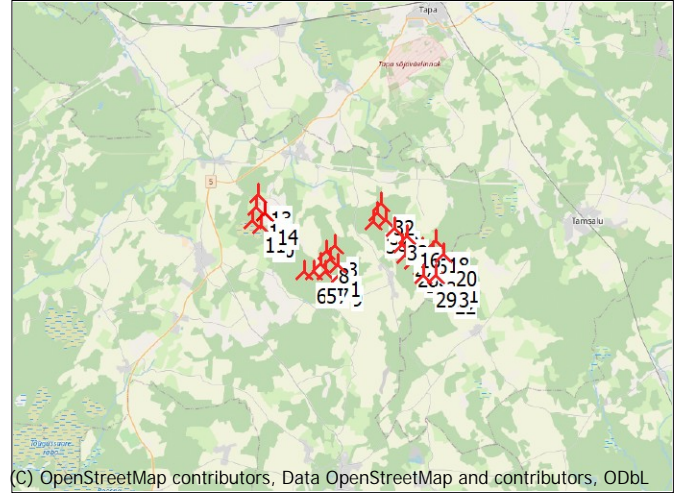
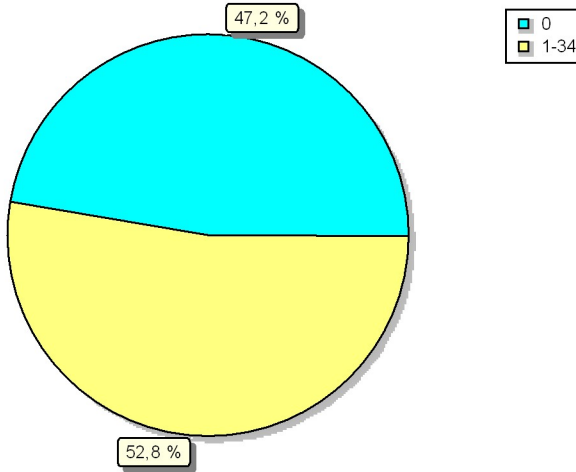


ZVI - Standard ZVI summary

Calculation: Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

Area with specific number of WTGs visible



Scale 1:400 000

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
 No area objects used in calculation
 Grid object(s) used in calculation
 New WTGs used in calculation
 Existing WTGs used in calculation

Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563
 19 485 m
 15 697 m
 25 m
 1,5 m
 30 058 ha
 Total height

Height Contours: CONTOURLINE_ONLINEDATA_0.wpo (13)

Elevation Grid Data Object: Järva_tuulikud_29012024_EMDGrid_0.wpg (116)
 34
 0

No maximum distance to WTG

ZVI Results

WTGs visible	Area [ha]	Area [%]
0	14 215	47,3
1	394	1,3
2	335	1,1
3	311	1,0
4	308	1,0
5	584	1,9
6	332	1,1
7	312	1,0
8	287	1,0
9	295	1,0
10	282	0,9
11	282	0,9
12	293	1,0
13	322	1,1
14	475	1,6
15	343	1,1
16	330	1,1
17	323	1,1
18	332	1,1
19	350	1,2
20	440	1,5
21	328	1,1
22	319	1,1
23	316	1,1
23-34	8 310	27,6

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	180,0	180,0	607 553	6 557 291	110,0
2	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 122	6 557 557	110,0
3	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 335	6 558 258	110,0
4	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 595	6 557 297	110,0
5	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 278	6 556 890	110,0
6	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	605 774	6 556 848	107,7
7	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 887	6 556 886	110,0
8	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 868	6 558 000	110,0
9	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 683	6 556 797	110,0
10	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 400	6 559 258	100,0
11	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	602 904	6 559 490	97,8
12	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 109	6 560 194	100,0
13	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 176	6 560 874	100,0
14	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 565	6 559 899	100,0
15	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 506	6 557 587	110,0
16	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 158	6 558 945	110,0
17	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 999	6 558 292	110,0
18	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 710	6 558 700	115,7
19	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 567	6 558 056	111,6
20	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 557 990	113,9
21	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 277	6 557 145	113,4
22	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 556 503	110,0
23	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 720	6 556 874	110,8
24	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 638	6 557 423	112,1
25	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 959	6 557 325	110,0

To be continued on next page...

Project: Järva_tuulikud
Description: 25m arvutusvõrk

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
28.02.2024 11:57/4.0.531

ZVI - Standard ZVI summary

Calculation: Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

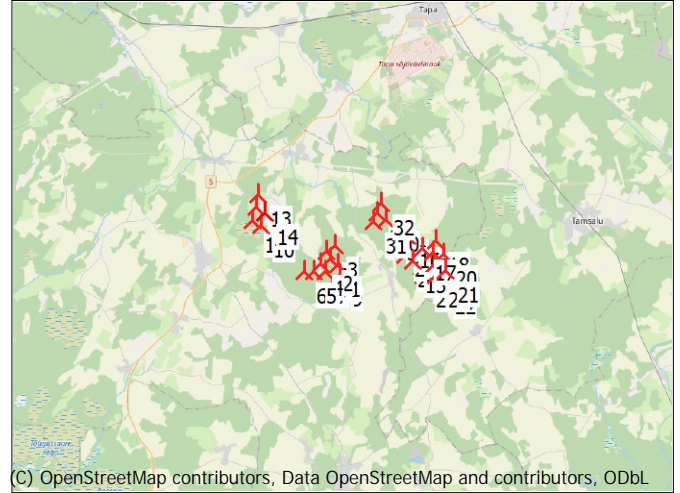
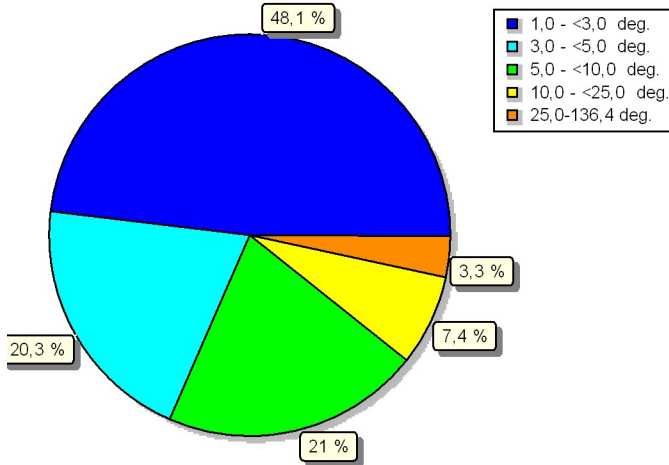
...continued from previous page

	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z
26	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 534	6 558 574	110,0
27	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 928	6 558 436	110,0
28	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 090	6 557 923	110,0
29	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	612 128	6 556 841	110,2
30	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 017	6 559 767	110,0
31	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 341	6 559 619	110,0
32	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 739	6 560 628	110,0
33	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 488	6 559 323	110,0
34	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 542	6 560 074	110,0

ZVI - Vertical subtended angle

Calculation: Nähtavus_Eesti_taimkatte_kõrgusmodeliga_28022024

Area with specific vertical subtended angle



Scale 1:400 000

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
- No area objects used in calculation
- Grid object(s) used in calculation
- New WTGs used in calculation
- Existing WTGs used in calculation

- Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563
- 19 485 m
- 15 697 m
- 25 m
- 1,5 m
- 30 703 ha
- Total height

Height Contours: CONTOURLINE_ONLINEDATA_0.wpo (13)

Elevation Grid Data Object: Järva_tuulikud_29012024_EMDGrid_0.wpg (116)
 34
 0

No maximum distance to WTG

ZVI Results

Vertical subtended angle [deg]	Area [ha]	Area [%]
1,0 - <3,0	7076	23,0
3,0 - <5,0	2988	9,7
5,0 - <10,0	3085	10,0
10,0 - <25,0	1086	3,5
25,0 - <=136,4	481	1,6

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	180,0	180,0	607 553	6 557 291	110,0
2	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 122	6 557 557	110,0
3	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 335	6 558 258	110,0
4	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 595	6 557 297	110,0
5	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 278	6 556 890	110,0
6	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	605 774	6 556 848	107,7
7	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 887	6 556 886	110,0
8	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 868	6 558 000	110,0
9	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 683	6 556 797	110,0
10	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 400	6 559 258	100,0
11	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	602 904	6 559 490	97,8
12	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 109	6 560 194	100,0
13	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 176	6 560 874	100,0
14	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 565	6 559 899	100,0
15	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 506	6 557 587	110,0
16	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 158	6 558 945	110,0
17	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 999	6 558 292	110,0
18	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 710	6 558 700	115,7
19	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 567	6 558 056	111,6
20	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 557 990	113,9
21	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 277	6 557 145	113,4
22	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 556 503	110,0
23	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 720	6 556 874	110,8
24	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 638	6 557 423	112,1
25	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 959	6 557 325	110,0

To be continued on next page...

Project: Järva_tuulikud
Description: 25m arvutusvõrk

Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
28.02.2024 11:57/4.0.531

ZVI - Vertical subtended angle

Calculation: Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

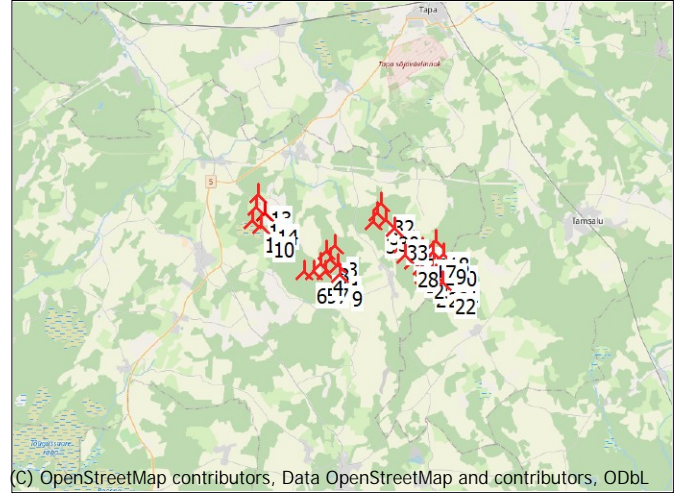
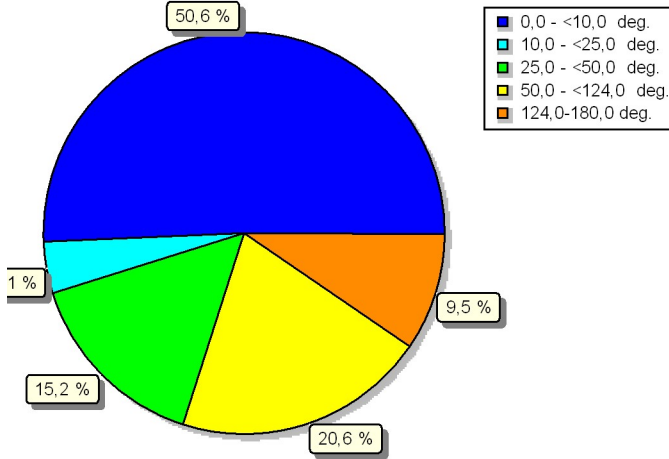
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	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z
26	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 534	6 558 574	110,0
27	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 928	6 558 436	110,0
28	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 090	6 557 923	110,0
29	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	612 128	6 556 841	110,2
30	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 017	6 559 767	110,0
31	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 341	6 559 619	110,0
32	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 739	6 560 628	110,0
33	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 488	6 559 323	110,0
34	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 542	6 560 074	110,0

ZVI - Horizontal subtended angle

Calculation: Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

Area with specific horizontal subtended angle



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
- No area objects used in calculation
- Grid object(s) used in calculation
- New WTGs used in calculation
- Existing WTGs used in calculation

- Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563
- 19 485 m
- 15 697 m
- 25 m
- 1,5 m
- 30 703 ha
- Total height

Height Contours: CONTOURLINE_ONLINEDATA_0.wpo (13)

Elevation Grid Data Object: Järva_tuulikud_29012024_EMDGrid_0.wpg (116)
 34
 0

No maximum distance to WTG

ZVI Results

Horizontal subtended angle [deg]	Area [ha]	Area [%]
0,0 - <10,0	15551	50,6
10,0 - <25,0	1266	4,1
25,0 - <50,0	4659	15,2
50,0 - <124,0	6314	20,6
124,0 - <=180,0	2913	9,5

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	180,0	180,0	607 553	6 557 291	110,0
2	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 122	6 557 557	110,0
3	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 335	6 558 258	110,0
4	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 595	6 557 297	110,0
5	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 278	6 556 890	110,0
6	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	605 774	6 556 848	107,7
7	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 887	6 556 886	110,0
8	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	606 868	6 558 000	110,0
9	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	607 683	6 556 797	110,0
10	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 400	6 559 258	100,0
11	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	602 904	6 559 490	97,8
12	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 109	6 560 194	100,0
13	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 176	6 560 874	100,0
14	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	603 565	6 559 899	100,0
15	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 506	6 557 587	110,0
16	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 158	6 558 945	110,0
17	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 999	6 558 292	110,0
18	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 710	6 558 700	115,7
19	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 567	6 558 056	111,6
20	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 557 990	113,9
21	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 277	6 557 145	113,4
22	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	613 133	6 556 503	110,0
23	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 720	6 556 874	110,8
24	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	612 638	6 557 423	112,1
25	Yes	VESTAS V172-7.2-7 200	7 200	180,0	180,0	611 959	6 557 325	110,0

To be continued on next page...

Project: Järva_tuulikud
Description: 25m arvutusvõrk

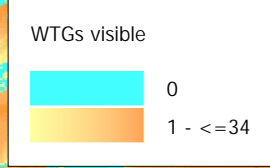
Licensed user:
Lemma OÜ
Värvi 5 - A308
EE-10621 Tallinn
+3725059914
Piret Toonpere / piret@lemma.ee
Calculated:
28.02.2024 11:57/4.0.531

ZVI - Horizontal subtended angle

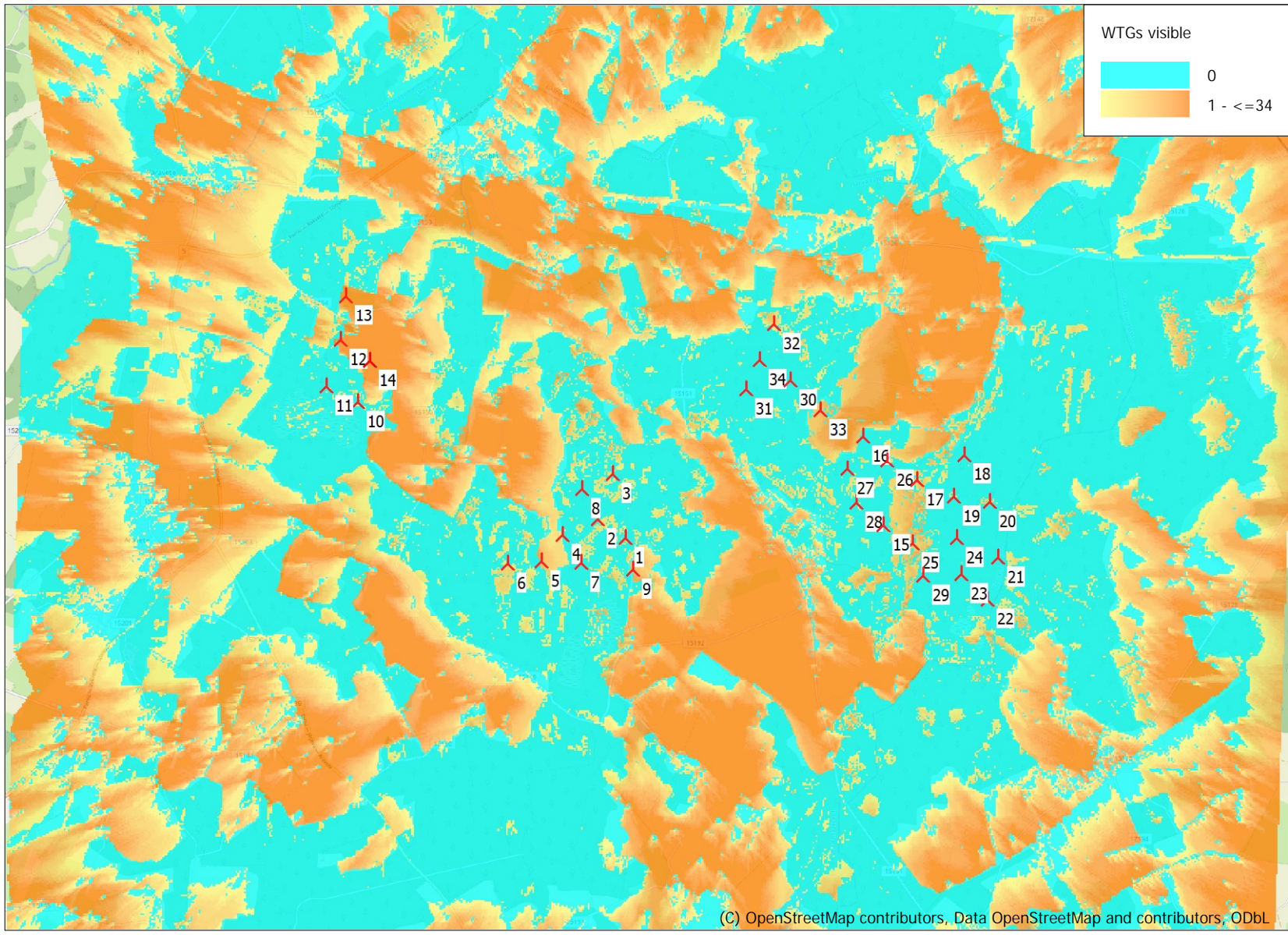
Calculation: Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

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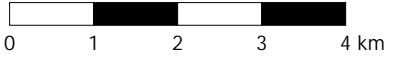
	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	East	North	Z
26	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 534	6 558 574	110,0
27	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 928	6 558 436	110,0
28	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	611 090	6 557 923	110,0
29	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	612 128	6 556 841	110,2
30	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 017	6 559 767	110,0
31	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 341	6 559 619	110,0
32	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 739	6 560 628	110,0
33	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	610 488	6 559 323	110,0
34	Yes	VESTAS	V172-7.2-7 200	7 200	180,0	180,0	609 542	6 560 074	110,0



Project:
Järva_tuulikud
 Description:
 25m arvutusvõrk



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



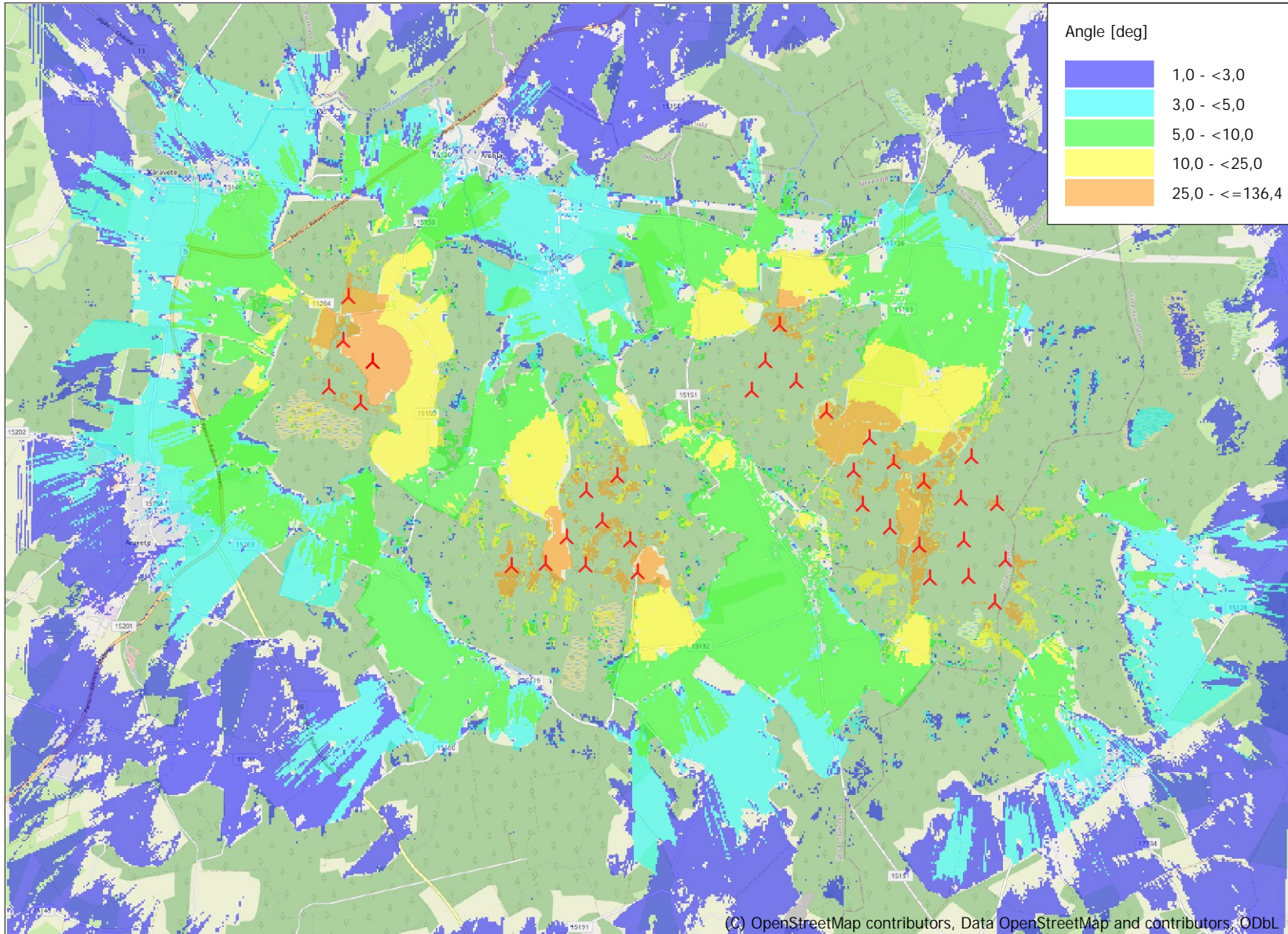
Map: EMD OpenStreetMap , Print scale 1:90 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563

New WTG

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

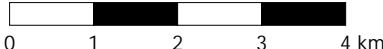
ZVI -
 Map Standard ZVI summary
 Calculation:
 Nähtavus_Eesti_taimkatte_kõrgusmodeliga_28022024

Licensed user:
 Lemma OÜ
 Värvi 5 - A308
 EE-10621 Tallinn
 +3725059914
 Piret Toonpere / piret@lemma.ee
 Calculated:
 28.02.2024 11:57/4.0.531



Project:
Järva_tuulikud
 Description:
 25m arvutusvõrk

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

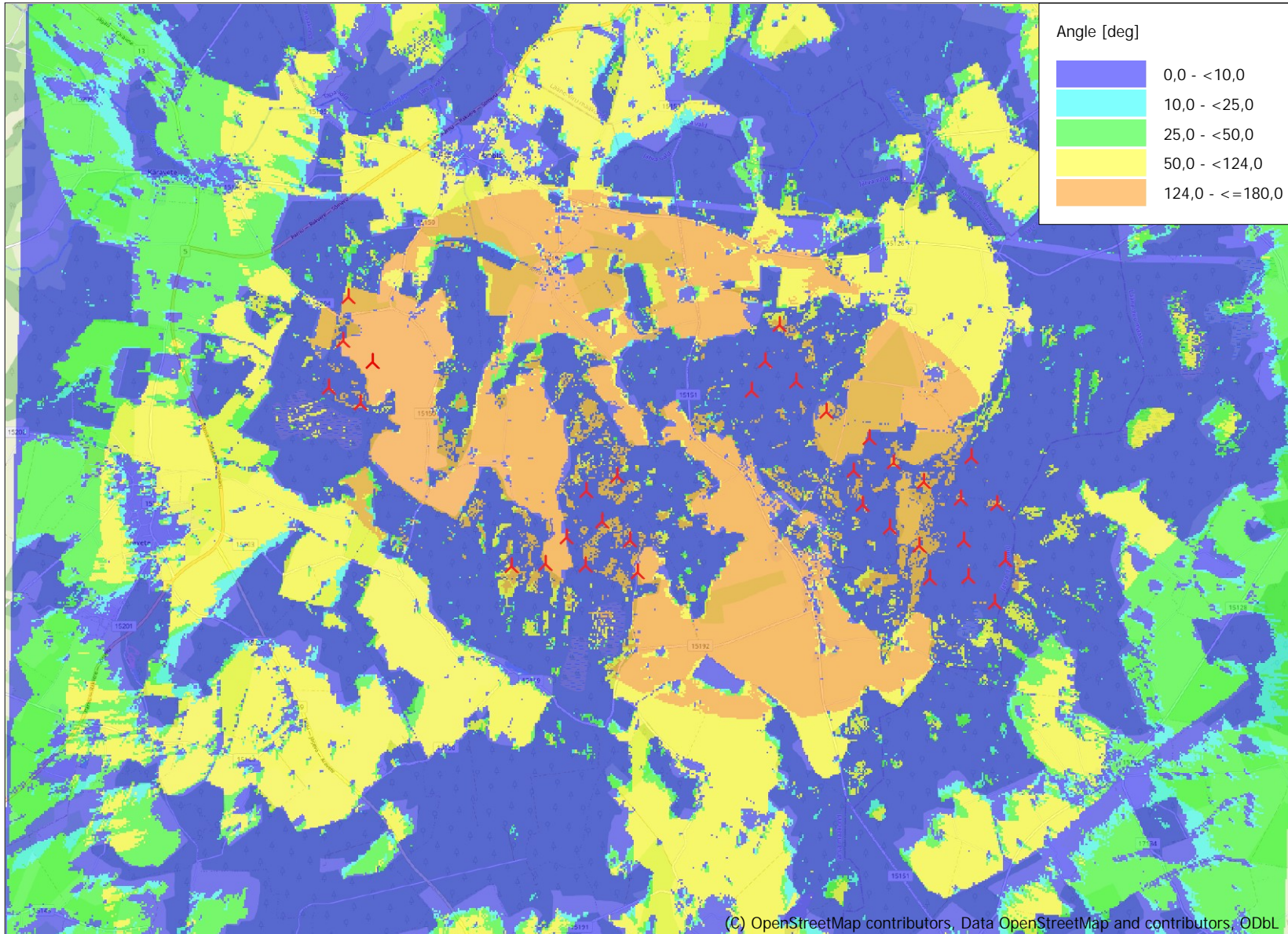


Map: EMD OpenStreetMap , Print scale 1:90 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563

New WTG

ZVI -
 Map Vertical subtended angle
 Calculation:
 Nähtavus_Eesti_taimkatte_kõrgusmudeliga_28022024

Licensed user:
 Lemma OÜ
 Värvi 5 - A308
 EE-10621 Tallinn
 +3725059914
 Piret Toonpere / piret@lemma.ee
 Calculated:
 28.02.2024 11:57/4.0.531



Map: EMD OpenStreetMap , Print scale 1:90 000, Map center Estonian Lambert L-EST97-EST97 (EE) East: 607 937 North: 6 558 563

🚧 New WTG

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

Project:
Järva_tuulikud
 Description:
 25m arvutusvõrk

ZVI -
 Map Horizontal subtended angle
 Calculation:
 Nähtavus_Eesti_taimkatte_kõrgusmodeliga_28022024

Licensed user:
 Lemma OÜ
 Värvi 5 - A308
 EE-10621 Tallinn
 +3725059914
 Piret Toonpere / piret@lemma.ee
 Calculated:
 28.02.2024 11:57/4.0.531