

Appendix

We report on the scores reported in Table 6 and attributed to the alternative path, according to the criteria CR1-7 illustrated in Table 2. As for CR1, we used as proxy score the total accessibility to the GI of resident population living in four buffers at different distances (Table A1).

Table A1 Scores attributed to the alternative paths, according to CR1 (Access to GI for resident people).

Paths	Resident population living in each buffer by distance of the axis from GI (in km)				Buffer Accessibility by distance of the axis from GI (in km)				Total Accessibility (1/km ²)
	0.05	0.10	0.50	1.00	0.05	0.10	0.50	1.00	
P1	2176	2102	16763	26955	870440.51	210240.78	67053.74	26954.58	1174689.61
P2	2177	1688	12162	16687	870840.51	168756.63	48649.15	16686.95	1104933.24
P3	2178	2374	18944	24760	871240.51	237368.65	75775.00	24760.43	1209144.58

Total accessibility is obtained by summing the buffer accessibility values as shown in Figure 1 (Section Materials and methods).

We adopted the power law rule with exponent equal to 2, to calculate the component measuring the friction of distance.

As for CR2, we used as proxy score the total accessibility to wetlands located in four buffers at different distances by GI users (Table A2).

Table A2 Scores attributed to the alternative paths, according to CR2 (Access to wetlands for GI users).

Paths	Wetlands (in ha) located in each buffer by distance of the axis from GI (in km)				Buffer Accessibility by distance of the axis from GI (in km)				Total Accessibility (Ha/km ²)
	0.05	0.10	0.50	1.00	0.05	0.10	0.50	1.00	
P1	25.69	21.85	88.89	63.39	10276.00	2185.00	355.56	63.39	12879.95
P2	11.28	12.18	89.44	57.77	4512.00	1218.00	357.76	57.77	6145.53
P3	12.44	18.22	134.91	86.18	4976.00	1822.00	539.64	86.18	7423.82

Total accessibility is obtained by summing buffer accessibility values. We adopted the power law rule with exponent equal to 2, to calculate the component measuring the friction of distance.

As for CR3, we used as proxy score the total accessibility to public buildings located in four buffers at different distances by GI users (Table A3).

Table A3 Scores attributed to the alternative paths, according to CR3 (Access to public buildings).

Paths	Number of public buildings located in each buffer by distance of the axis from GI (in km)				Buffer Accessibility by distance of the axis from GI (in km)				Total Accessibility (1/km ²)
	0.05	0.10	0.50	1.00	0.05	0.10	0.50	1.00	
P1	10	10	147	221	16000.00	4000.00	2352.00	884.00	23236.00
P2	15	11	104	129	24000.00	4400.00	1664.00	516.00	30580.00
P3	32	32	202	182	51200.00	12800.00	3232.00	728.00	67960.00

Total accessibility is obtained by summing buffer accessibility values. We adopted the power law rule with exponent equal to 2, to calculate the component measuring the friction of distance.

As for the scores attributed to CR4 and CR5 for CDS in the short and long run, we used as proxy values the figures reported in Table A4, where L stands for the length of path (m), I for the distance between trees (m), S for the area covered by each crown (ha) and v for the coefficient describing the quantity of carbon dioxide synthesized in one year by hardwood during the transformation into vegetable biomass (t/ha/y).

Table A4 Scores attributed to the alternative paths, according to CR4 and CR5 (CDS in the short and long run).

Paths	CDS in the short run					CDS in the long run				
	L (m)	I (m)	S (sqm)	V (t/ha/y)	CDS (t/ha/y)	L (m)	I (m)	S (sqm)	V (t/ha/y)	CDS (t/ha/y)
P1	13,500.00	10.00	4.00	4.60	7.80	13,500.00	10.00	25.00	4.60	304.68
P2	9,920.00	10.00	4.00	4.60	5.73	9,920.00	10.00	25.00	4.60	223.88
P3	12,660.00	10.00	4.00	4.60	7.31	12,660.00	10.00	25.00	4.60	285.72

The total area covered by the plants is described by multiplying the number of plants -equal to L/I - by the crown area of each plant. We assumed I equal to 10 m and S to 4 sqm, for young plants (short run scenario), and 25 sqm, for mature plants (short run scenario). CDS can be obtained by multiplying the total area covered by the plants by the coefficient v , which is drawn from the French National Forest Inventory (NFI)¹ and set equal to 4,60 t/ha/y.

As for CR6, we calculated the cost after the evaluation of a building enterprise specialized in the construction of road paving. The price can be estimated in 56 €/m² and the costs obtained are reported in Table A5.

Table A5 Construction cost of the paths.

Paths	Length (m)	Width (m)	Price (€/m ²)	Total cost (€)
P1	13500	0.6	56.00	453,600.00
P2	9920	0.6	56.00	333,312.00
P3	12660	0.6	56.00	425,376.00

As for CR7, we estimated the maintenance costs by hypothesizing that after 30 years the infrastructure will need to be completely rebuilt. Thus, the maintenance cost is calculated dividing by 30 years the (opportunity) cost of the reconstruction of the whole infrastructure (see Table A6).

Table A6 Maintenance cost of the paths.

Paths	Length (m)	Width (m)	Price (€/m ² /y)	Total cost (€/y)
P1	13500	0.6	1.86	15,120.00
P2	9920	0.6	1.86	11,110.30
P3	12660	0.6	1.86	14,179.20

¹ <https://inventaire-forestier.ign.fr>