General information				
Remover name	Bamboo 4 All the World			
Project code	BVUL003			
Project name	Kibale 2			
Location	Kibale, Uganda			
Area	54.87	ha		
Start year	2025		year of planting	
Duration	20	years	project duration	
Permanence	100	years		
Holding pool	20%		freed up when measurements confirm projection pathways	
Project emissions	100.76	tCO2	LCA estimate	
Per hectare				
Baseline TEC	346	tCO2/ha	Soil Organic Carbon and Above Ground Carbon, following CDM AR-ACM0003	
Reference capacity	993	tCO2/ha	Using CEDA and Soil sample data	
Storage potential	647	tCO2/ha	Projection -/- baseline	
Per project				
Projected storage in bamboo field	35,014	tCO2	storage potential per ha x area x storage duration 100 year equivalent	
Storage in fence	5,279	tCO2		
Storage in fruit trees	13	tCO2		
LCA emissions	101	tCO2	project related emissions	
Net storage potential	40,281	tCO2	project storage -/- emissions over 20 years	
Potential Carbon Removal Units				
Units first 12 years	24,169	units	12/20 x net storage potential	
Holding Pool	4,834	units	20% of the first 12 years	
Potential units issued	19,335	units		352.3783488

Field Code	Field name	Size (ha)	Owner	
A	Kibale 2	54.14	Bamboo Uganda Limited	
B	Fence	0.73		
	992.9812797			

#	Field code	Field	Year	Date	Sample depth (cm)	SOC/AGB/REF	Carbon (g/kg)	AGB (tCO2/ha)	Sample/report nr.
001	A	Kibale 2	2024	12/18/2024	30	SOC	17.9		JEL/KLA/24/2716
002	A	Kibale 2	2020	1/1/2020		AGB		72.549	
003		#N/A	1899			REF	31.9		
004		#N/A	1899						
005		#N/A	1899						
006		#N/A	1899						
007		#N/A	1899						
009		#N/A	1899						
010		#N/A	1899						
011		#N/A	1899						
012		#N/A	1899						
013		#N/A	1899						
014		#N/A	1899						
015		#N/A	1899						

Year	Above Ground Biomass (Mg/ha)	Carbon (Mg/ha)	CO2 Equivalent (Mg/ha)
2010 ✅	123.250	61.625	225.958
2017 ✅	15.333	7.667	28.111
2018 ✅	13.250	6.625	24.292
2019 ✅	23.833	11.917	43.694
2020 ✅	22.194	11.097	40.690
Average	39.572	19.786	72.549

Carbon Calculation for		BVUL003								
Surface	54.14	ha	Fields tab							
Capacity Reference SOC	495	tCO2/ha	References tab							
Capacity Reference AGB	498	tCO2e/ha	References tab							
	2025		2028		2031		2034		2037	
Measurement average	17.9	SOC g/kg	#DIV/0!	SOC g/kg	#DIV/0!	SOC g/kg	#DIV/0!	SOC g/kg	#DIV/0!	SOC g/kg
Sample depth	30	cm	#DIV/0!	cm	#DIV/0!	cm	#DIV/0!	cm	#DIV/0!	cm
Calculation depth	30	cm	30	cm	30	cm	30	cm	30	cm
Soil density	1.39	g/cm3	#DIV/0!	g/cm3	#DIV/0!	g/cm3	#DIV/0!	g/cm3	#DIV/0!	g/cm3
SOC (soil carbon) / ha	274	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha
AGB (above ground) / ha	72.55	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha	#DIV/0!	tCO2e/ha
Storage current	18,745	tCO2e	#DIV/0!	tCO2e	#DIV/0!	tCO2e	#DIV/0!	tCO2e	#DIV/0!	tCO2e
Storage capacity	53,760	tCO2e	156,669	tCO2e	156,669	tCO2e	156,669	tCO2e	156,669	tCO2e

Sources									
value	**source**	**URL**	Notes						
CEDA aboveground biomass carbon	https://climateei	https://datacedaa	2018 data						
SOC	A critical review of the conventional SOC to SOM conversion factor (Geoderma,Volume 156, Issues 3–4, 15 May 2010, Pages 75-83)								
Density	Wageningen Ur	https://edepot.wu	We've added these soil density levels to the calculation factors tab						
Reference data for capacity									
SOC	495	tCO2e/ha							
SOC reference	135	tC/ha	Yuen et al. (2017), Max. based on 70 species from 184 studies [Max 200, min 70, Average 135]						
AGB	498	tCO2e/ha							
	398.400	tCO2/ha	Yuen et al. 2017; Hermis et al. 2014; Deepika et al. 2022						

Overview of assessed categories - on plant level (1/2)

Nursery - Starting material

Description	Nursery-grown bamboo seedlings, propagated by division
Average weight per starting material [gr]	0.16
Process - propagation	by hand
Defined as cut-off: impact of cuttings itself	

Nursery - Soil

Description	Common Ugandan ground, non-treated (1 Black soil : 1 Sand soil : 5 Loam soil)
Average weight per soil plug [kg]	0.9
Transport distance (Natabulirwa - Seeta) [km]	4
Transport vehicle	Small truck, 3.5-7.5 tons, EURO 4
Process - soil extraction	by hand
Defined as cut-off: impact of land use change due soil extraction from the ground; impact of soil itself	

Nursery - Pots

Description	Polyethylene (PE) grow bags
Average weight per PE pot [gr]	6.11
Transport distance (Kampala - Seeta) [km]	19
Transport vehicle	Pick-up truck, Diesel, Euro 4

Nursery - Cultivation of young plants

Description	Planting of 1 cutting per pot
Process - planting (nursery)	by hand
Growth loss	5%
Defined as cut-off: water usage	

Transport from nursery to field

Average weight of a young plant [kg]	1.45
Transport distance (Seeta - field (Kibaale)) [km]	252
Transport vehicle	Tipper truck, 3.5-7.5, EURO 4

Field - Cultivation of plantation

Total amount of growing plants - field and fence	31086
Growth loss	20%
Process - planting (field)	by hand

Transport fruit trees to plantation (total Kibale)

Average weight of a young cocoa/ guava/ mango plant [kg]	1
Average weight of a young avocado plant [kg]	2.5
Total weight of bean seeds [kg]	150
Transport distance (Kibale district - field (Buyaga, Kibaale)) [km], cocoa/ guava/ mango/ avocado	15
Transport distance (Neighbouring town - field (Buyaga, Kibaale)) [km], bean seeds	2
Transport vehicle	Small truck, 3.5-7.5 tons, EURO 4
Defined as cut-off: impact of young trees itself (grown naturally)	

Carbon Footprint assessment (ecoinvent 3.10, EF 3.1)

On plant level (1/2)

Category	**CF in kg CO2-eq.**	***Remarks***
Soil	0.002	
Pots (Material, Transport)	0.024	
Transport to field	0.215	-
Per young plant	**0.027**	*Incl. 5% loss*
Per plant in field	**0.291**	*Incl. 20% loss*
All plants in field	**9056.8**	*500 plants/ha for total area + fence*

Activities of 20 years (2/2)

Category	**CF in kg CO2-eq.**	***Remarks***
All plants in field	9056.8	*plantation and fence*
Fruit trees in field	2.9	*Forth and back (Kibale), allocated to 54.87 ha*
Maintenance - soil measurement, biodiversity	1241.9	*Forth and back (Kibale), allocated to*
Maintenance - travelling (BV)	50031.7	*Forth and back (Kibale), allocated to 54.87 ha*
Maintenance - Business trips (BV)	40421.7	*Forth and back (Kibale), allocated to 54.87 ha*
Total CF of 20 years	**100755.0**	*kg CO2-eq*
Total CF of 20 years	**100.76**	*t CO2-eq.*

Overview of assessed categories - activities of 20 years (2/2)

Land preparation, planting, maintenance

Process - land preparation, planting, maintenance (such as watering or pruning)	by hand
Transport of workers	Employment of local farmers in walking distance
No fertiliser usage needed	

Maintenance - soil measurement, biodiversity

Transport distance (Kampala - field (Buyaga, Kibaale)) [km]	239
Transport vehicle	Large car, Diesel, EURO 4
Occurring amount (in 20 years)	7

Maintenance - travelling (to the field) & business trips

Bamboo Village/ Bamboo Community Limited	Visiting field, maintaining the plantation development, employing workers
Transport distance (Kampala - field) [km]	239
Transport vehicle	Large car, Diesel, EURO 4
Occurring amount (in 20 years)	282
Bamboo Village/ Bamboo Community Limited	Business trips
Transport distance (Netherlands - Uganda) [km]	6335
Transport vehicle	Plane
Occurring amount (in 20 years)	35

Assumptions and used numbers:

Conversion C in CO2 with 44/12 (= ratio of molecular weight)

Carbon content in biomass 58%

Overview of the CO2 storage potential in above- and below-ground biomass

Bamboo species	**ABG carbon total** (incl. culms, branches, leaves) **[t C/ha]**	**BGB carbon total** (incl. rhizomes) **[tC/ha]**	**Total stored carbon** [t C/ha]	**Total stored CO2** [t CO2/ha]	*Source*
Dendrocalamus Asper	108.1	23.6	131.7	482.8	*Yuen et al. (2017)*
	86.7	20.0	106.7	391.3	*Hermis et al. (2014)*
	64.8	22.7	87.6	321.1	*Deepika et al. (2022)*
Average		**21.8**	**108.7**	**398.4**	
Bambusa bambos	168.7	6.2	174.9	641.3	*Shanmughavel et al. (2001)*
	143.3	12.2	155.5	570.2	*Yuen et al. (2017)*
	144	22.5	166.5	610.4	*Nath et al. (2009) - Shanmughavel (1996)*
	121	19.5	140.5	515.1	*Sohel et al. (2015)/Nath et al. (2009) - Kumar et al. (2005)*
Average		**15.1**	**159.3**	**584.2**	

Tree species	**ABG carbon total [tC/tree]**	**BGB carbon total [tC/tree]**	**Total stored carbon** [t C/tree]	**Total stored CO2** [t CO2/tree]	
Mango	0.04	0.01	0.05	**0.2**	*Valery et al. (2023)*
Guava	0.02	0.005	0.02	**0.1**	*Sushanta et al. (2021)*
Coffee	0.01	0.01	0.02	**0.1**	*Negash, M., Starr, M. (2015)*
Banana	0.003	0.01	0.01	**0.0**	*Ganeshamurthy (2023) - Ortiz-Lilloa et al. (2020)*
Cocoa	0.02	0.004	0.02	**0.1**	*Verwuurt et al. (2022) - Somarriba et al. (2013) - Sliue et al. (2024)*

Estimation of carbon stored in below ground biomass.

	Participation per area [%]	**BGC** a	b	**[Mg C/ha]**	
Dendrocalamus Asper	100%	0.7367	0.74		*Yuen et al. (2017), p.123 (d) Dendrocalamus sp. & Gigantochloa sp.*
Bambusa bambos		0.3714	0.8256		*Yuen et al. (2017), p.123 (e) Bambusa sp. & G. angustifolia*
		0.6378	**0.8028**		*Yuen et al. (2017), p.123 (a) all species/groups*

Fence calculation

Perimeter of total Kibale plantation (54.87 + 9.46 ha), excl. 2 entrances	4280	*m*
Amount of bamboo for totale fence (1 plantim) (54.87 + 9.46 ha)	4280	*100% Bambusa bambos*
Allocated amount of bamboo of fence (54.87 ha)	3651	
Storage potential of total fence	6251	t CO2/total fence (54.87 + 9.46 ha)
Allocated storage potential of fence (54.87 ha)	5332	t CO2/fence (for 54.87 ha)
Allocated surface area of the 2 meters wide fence (ha)	0.73	

Fruit tree calculation

Planting schema - total Kibale plantation (54.87 + 9.46 ha)	Amount of trees	**Total stored CO2** [t CO2]
Mango	50	9.3
Guava	50	3.7
Coffee	-	-
Banana	-	-
Cocoa	20	1.7
		14.7
Allocated storage potential of fruit trees (54.87 ha)		**12.6**

from C to CO2	3.666666667		
soil density	% organic matter	% organic carbon	soil density
1.59	0.5	0.25	1.59
1.583	0.6	0.3	1.583
1.576	0.7	0.35	1.576
1.569	0.8	0.4	1.569
1.562	0.9	0.45	1.562
1.555	1	0.5	1.555
1.548	1.1	0.55	1.548
1.541	1.2	0.6	1.541
1.534	1.3	0.65	1.534
1.527	1.4	0.7	1.527
1.52	1.5	0.75	1.52
1.513	1.6	0.8	1.513
1.506	1.7	0.85	1.506
1.499	1.8	0.9	1.499
1.492	1.9	0.95	1.492
1.485	2	1	1.485
1.478	2.1	1.05	1.478
1.471	2.2	1.1	1.471
1.464	2.3	1.15	1.464
1.457	2.4	1.2	1.457
1.45	2.5	1.25	1.45
1.444	2.6	1.3	1.444
1.438	2.7	1.35	1.438
1.432	2.8	1.4	1.432
1.426	2.9	1.45	1.426
1.42	3	1.5	1.42
1.414	3.1	1.55	1.414
1.408	3.2	1.6	1.408
1.402	3.3	1.65	1.402
1.396	3.4	1.7	1.396
1.39	3.5	1.75	1.39
1.385	3.6	1.8	1.385
1.38	3.7	1.85	1.38
1.375	3.8	1.9	1.375
1.37	3.9	1.95	1.37
1.365	4	2	1.365
1.36	4.1	2.05	1.36
1.355	4.2	2.1	1.355
1.35	4.3	2.15	1.35
1.345	4.4	2.2	1.345
1.34	4.5	2.25	1.34
1.335	4.6	2.3	1.335
1.33	4.7	2.35	1.33
1.325	4.8	2.4	1.325
1.32	4.9	2.45	1.32
1.315	5	2.5	1.315
1.31	5.1	2.55	1.31
1.305	5.2	2.6	1.305
1.3	5.3	2.65	1.3
1.295	5.4	2.7	1.295
1.29	5.5	2.75	1.29
1.285	5.6	2.8	1.285
1.28	5.7	2.85	1.28
1.275	5.8	2.9	1.275
1.27	5.9	2.95	1.27
1.265	6	3	1.265
1.26	6.1	3.05	1.26
1.255	6.2	3.1	1.255
1.25	6.3	3.15	1.25
1.245	6.4	3.2	1.245
1.24	6.5	3.25	1.24
1.234	6.6	3.3	1.234
1.228	6.7	3.35	1.228
1.222	6.8	3.4	1.222
1.216	6.9	3.45	1.216
1.21	7	3.5	1.21
1.204	7.1	3.55	1.204
1.198	7.2	3.6	1.198
1.192	7.3	3.65	1.192
1.186	7.4	3.7	1.186
1.18	7.5	3.75	1.18
1.175	7.6	3.8	1.175
1.17	7.7	3.85	1.17
1.165	7.8	3.9	1.165
1.16	7.9	3.95	1.16
1.155	8	4	1.155
1.15	8.1	4.05	1.15
1.145	8.2	4.1	1.145
1.14	8.3	4.15	1.14
1.135	8.4	4.2	1.135
1.13	8.5	4.25	1.13
1.126	8.6	4.3	1.126
1.122	8.7	4.35	1.122
1.118	8.8	4.4	1.118
1.114	8.9	4.45	1.114
1.11	9	4.5	1.11
1.106	9.1	4.55	1.106
1.102	9.2	4.6	1.102
1.098	9.3	4.65	1.098
1.094	9.4	4.7	1.094
1.09	9.5	4.75	1.09
1.086	9.6	4.8	1.086
1.082	9.7	4.85	1.082
1.078	9.8	4.9	1.078
1.074	9.9	4.95	1.074
1.07	10	5	1.07
1.066	10.1	5.05	1.066
1.062	10.2	5.1	1.062
1.058	10.3	5.15	1.058
1.054	10.4	5.2	1.054
1.05	10.5	5.25	1.05
1.046	10.6	5.3	1.046
1.042	10.7	5.35	1.042
1.038	10.8	5.4	1.038
1.034	10.9	5.45	1.034
1.03	11	5.5	1.03
1.026	11.1	5.55	1.026
1.022	11.2	5.6	1.022
1.018	11.3	5.65	1.018
1.014	11.4	5.7	1.014
1.01	11.5	5.75	1.01
1.005	11.6	5.8	1.005
1	11.7	5.85	1
0.995	11.8	5.9	0.995
0.99	11.9	5.95	0.99
0.985	12	6	0.985
0.98	12.1	6.05	0.98
0.975	12.2	6.1	0.975
0.97	12.3	6.15	0.97
0.965	12.4	6.2	0.965
0.96	12.5	6.25	0.96
0.957	12.6	6.3	0.957
0.954	12.7	6.35	0.954
0.951	12.8	6.4	0.951
0.948	12.9	6.45	0.948
0.945	13	6.5	0.945
0.942	13.1	6.55	0.942
0.939	13.2	6.6	0.939
0.936	13.3	6.65	0.936
0.933	13.4	6.7	0.933
0.93	13.5	6.75	0.93
0.927	13.6	6.8	0.927
0.924	13.7	6.85	0.924
0.921	13.8	6.9	0.921
0.918	13.9	6.95	0.918
0.915	14	7	0.915
0.912	14.1	7.05	0.912
0.909	14.2	7.1	0.909
0.906	14.3	7.15	0.906
0.903	14.4	7.2	0.903
0.9	14.5	7.25	0.9
0.897	14.6	7.3	0.897
0.894	14.7	7.35	0.894
0.891	14.8	7.4	0.891
0.888	14.9	7.45	0.888
0.885	15	7.5	0.885
0.882	15.1	7.55	0.882
0.879	15.2	7.6	0.879
0.876	15.3	7.65	0.876
0.873	15.4	7.7	0.873
0.87	15.5	7.75	0.87
0.867	15.6	7.8	0.867
0.864	15.7	7.85	0.864
0.861	15.8	7.9	0.861
0.858	15.9	7.95	0.858
0.855	16	8	0.855
0.852	16.1	8.05	0.852
0.849	16.2	8.1	0.849
0.846	16.3	8.15	0.846
0.843	16.4	8.2	0.843
0.84	16.5	8.25	0.84
0.837	16.6	8.3	0.837
0.834	16.7	8.35	0.834
0.831	16.8	8.4	0.831

0.828	16.9	8.45	0.828
0.825	17	8.5	0.825
0.822	17.1	8.55	0.822
0.819	17.2	8.6	0.819
0.816	17.3	8.65	0.816
0.813	17.4	8.7	0.813
0.81	17.5	8.75	0.81
0.808	17.6	8.8	0.808
0.806	17.7	8.85	0.806
0.804	17.8	8.9	0.804
0.802	17.9	8.95	0.802
0.8	18	9	0.8
0.798	18.1	9.05	0.798
0.796	18.2	9.1	0.796
0.794	18.3	9.15	0.794
0.792	18.4	9.2	0.792
0.79	18.5	9.25	0.79
0.788	18.6	9.3	0.788
0.786	18.7	9.35	0.786
0.784	18.8	9.4	0.784
0.782	18.9	9.45	0.782
0.78	19	9.5	0.78
0.778	19.1	9.55	0.778
0.776	19.2	9.6	0.776
0.774	19.3	9.65	0.774
0.772	19.4	9.7	0.772
0.77	19.5	9.75	0.77
0.768	19.6	9.8	0.768
0.766	19.7	9.85	0.766
0.764	19.8	9.9	0.764
0.762	19.9	9.95	0.762
0.76	20	10	0.76
0.758	20.1	10.05	0.758
0.756	20.2	10.1	0.756
0.754	20.3	10.15	0.754
0.752	20.4	10.2	0.752
0.75	20.5	10.25	0.75
0.748	20.6	10.3	0.748
0.746	20.7	10.35	0.746
0.744	20.8	10.4	0.744
0.742	20.9	10.45	0.742
0.74	21	10.5	0.74
0.738	21.1	10.55	0.738
0.736	21.2	10.6	0.736
0.734	21.3	10.65	0.734
0.732	21.4	10.7	0.732
0.73	21.5	10.75	0.73
0.728	21.6	10.8	0.728
0.726	21.7	10.85	0.726
0.724	21.8	10.9	0.724
0.722	21.9	10.95	0.722
0.72	22	11	0.72
0.718	22.1	11.05	0.718
0.716	22.2	11.1	0.716
0.714	22.3	11.15	0.714
0.712	22.4	11.2	0.712
0.71	22.5	11.25	0.71
0.709	22.6	11.3	0.709
0.708	22.7	11.35	0.708
0.707	22.8	11.4	0.707
0.706	22.9	11.45	0.706
0.705	23	11.5	0.705
0.704	23.1	11.55	0.704
0.703	23.2	11.6	0.703
0.702	23.3	11.65	0.702
0.701	23.4	11.7	0.701
0.7	23.5	11.75	0.7
0.699	23.6	11.8	0.699
0.698	23.7	11.85	0.698
0.697	23.8	11.9	0.697
0.696	23.9	11.95	0.696
0.695	24	12	0.695
0.694	24.1	12.05	0.694
0.693	24.2	12.1	0.693
0.692	24.3	12.15	0.692
0.691	24.4	12.2	0.691
0.69	24.5	12.25	0.69
0.688	24.6	12.3	0.688
0.686	24.7	12.35	0.686
0.684	24.8	12.4	0.684
0.682	24.9	12.45	0.682
0.68	25	12.5	0.68
0.678	25.1	12.55	0.678
0.676	25.2	12.6	0.676
0.674	25.3	12.65	0.674
0.672	25.4	12.7	0.672
0.67	25.5	12.75	0.67
0.668	25.65	12.825	0.668
0.666	25.8	12.9	0.666
0.664	25.95	12.975	0.664
0.662	26.1	13.05	0.662
0.66	26.25	13.125	0.66
0.658	26.4	13.2	0.658
0.656	26.55	13.275	0.656
0.654	26.7	13.35	0.654
0.652	26.85	13.425	0.652
0.65	27	13.5	0.65
0.647	27.2	13.6	0.647
0.644	27.4	13.7	0.644
0.641	27.6	13.8	0.641
0.638	27.8	13.9	0.638
0.635	28	14	0.635
0.632	28.2	14.1	0.632
0.629	28.4	14.2	0.629
0.626	28.6	14.3	0.626
0.623	28.8	14.4	0.623
0.62	29	14.5	0.62
0.618	29.2	14.6	0.618
0.616	29.4	14.7	0.616
0.614	29.6	14.8	0.614
0.612	29.8	14.9	0.612
0.61	30	15	0.61
0.608	30.2	15.1	0.608
0.606	30.4	15.2	0.606
0.604	30.6	15.3	0.604
0.602	30.8	15.4	0.602
0.6	31	15.5	0.6
0.598	31.2	15.6	0.598
0.596	31.4	15.7	0.596
0.594	31.6	15.8	0.594
0.592	31.8	15.9	0.592
0.59	32	16	0.59
0.588	32.2	16.1	0.588
0.586	32.4	16.2	0.586
0.584	32.6	16.3	0.584
0.582	32.8	16.4	0.582
0.58	33	16.5	0.58
0.578	33.2	16.6	0.578
0.576	33.4	16.7	0.576
0.574	33.6	16.8	0.574
0.572	33.8	16.9	0.572
0.57	34	17	0.57
0.568	34.2	17.1	0.568
0.566	34.4	17.2	0.566
0.564	34.6	17.3	0.564
0.562	34.8	17.4	0.562
0.56	35	17.5	0.56
0.558	35.2	17.6	0.558
0.556	35.4	17.7	0.556
0.554	35.6	17.8	0.554
0.552	35.8	17.9	0.552
0.55	36	18	0.55
0.548	36.2	18.1	0.548
0.546	36.4	18.2	0.546
0.544	36.6	18.3	0.544
0.542	36.8	18.4	0.542
0.54	37	18.5	0.54
0.538	37.2	18.6	0.538
0.536	37.4	18.7	0.536
0.534	37.6	18.8	0.534
0.532	37.8	18.9	0.532
0.53	38	19	0.53
0.528	38.2	19.1	0.528
0.526	38.4	19.2	0.526
0.524	38.6	19.3	0.524
0.522	38.8	19.4	0.522
0.52	39	19.5	0.52
0.518	39.2	19.6	0.518
0.516	39.4	19.7	0.516
0.514	39.6	19.8	0.514
0.512	39.8	19.9	0.512
0.51	40	20	0.51
0.508	40.2	20.1	0.508
0.506	40.4	20.2	0.506
0.504	40.6	20.3	0.504
0.502	40.8	20.4	0.502
0.5	41	20.5	0.5

0.499	41.2	20.6	0.499
0.498	41.4	20.7	0.498
0.497	41.6	20.8	0.497
0.496	41.8	20.9	0.496
0.495	42	21	0.495
0.494	42.2	21.1	0.494
0.493	42.4	21.2	0.493
0.492	42.6	21.3	0.492
0.491	42.8	21.4	0.491
0.49	43	21.5	0.49
0.488	43.2	21.6	0.488
0.486	43.4	21.7	0.486
0.484	43.6	21.8	0.484
0.482	43.8	21.9	0.482
0.48	44	22	0.48
0.478	44.2	22.1	0.478
0.476	44.4	22.2	0.476
0.474	44.6	22.3	0.474
0.472	44.8	22.4	0.472
0.47	45	22.5	0.47
0.469	45.2	22.6	0.469
0.468	45.4	22.7	0.468
0.467	45.6	22.8	0.467
0.466	45.8	22.9	0.466
0.465	46	23	0.465
0.464	46.2	23.1	0.464
0.463	46.4	23.2	0.463
0.462	46.6	23.3	0.462
0.461	46.8	23.4	0.461
0.46	47	23.5	0.46
0.458	47.2	23.6	0.458
0.456	47.4	23.7	0.456
0.454	47.6	23.8	0.454
0.452	47.8	23.9	0.452
0.45	48	24	0.45
0.448	48.2	24.1	0.448
0.446	48.4	24.2	0.446
0.444	48.6	24.3	0.444
0.442	48.8	24.4	0.442
0.44	49	24.5	0.44