

**Table S1.** Land use and land cover changes with ecosystem service values of different areas in Ethiopia.

LULC classes	LULC classes (ha)		Time interval		LULC Percentage Change	ESV (USD million)		Change	Description of the study setting	Sampled references
	Initial area (A)	Final area (B)	Year A	Year B		@ Year A	@ Year B			
Cultivated	3,202.78	3,493.17	1973	2015	9.1	0.29	0.321	0.031	A typical dry afromontane forest vegetation of 76.87 km <sup>2</sup> Chillimo forest area	Tolessa <i>et al.</i> , 2017
Settlement	5.36	341.64	1973	2015	6273.9	0.00	0	0		
Shrub land	216	1,161.36	1973	2015	437.7	0.21	0.13	0.08		
Forest land	4,263.12	1,952.01	1973	2015	-54.2	8.56	3.92	-4.64		
Bare land	0	739.08	1973	2015	739.08	0	0	0		
Cultivated	36,820	45,108	1985	2015	22.5	8.31	10.17	1.86	A 587.6 km <sup>2</sup> watershed with excessive pressure from agricultural expansion	Gashaw <i>et al.</i> , 2018
Settlement	35	672	1985	2015	1820	0.00	0.0	0		
Shrub land	15,377	8,992	1985	2015	-41.52	15.17	8.87	-6.3		
Forest land	2,068	1,138	1985	2015	-44.97	2.04	1.12	-0.92		
Grassland	4,461	2,850	1985	2015	-36.11	1.31	0.84	-0.47		
Crop land	13,498	50,317	1973	2012	272.8	1.2	4.6	3.4	A 1091 km <sup>2</sup> area and characterized by mixed farming system	Kindu <i>et al.</i> , 2016
Settlement	439	1586	1973	2012	261.3	0.0	0.0	0.0		
Woodlands	11,842	656	1973	2012	-94.46	23.8	1.3	-22.5		
Natural forests	21,726	9,588	1973	2012	-55.9	43.6	19.3	-24.3		
Grassland	43,830	25,139	1973	2012	-42.64	10.7	6.1	-4.6		
Plantation forests	0	1284	1973	2012		0.0	2.6	2.6		
Water	9,976	9,871	1973	2012	-1.05	84.8	83.9	-0.9		
Tree patches	2,021	3,606	1973	2012	78.43	0.5	0.9	0.4		
Bare land	343	1765	1973	2012	414.6	0.0	0.0	0.0		
Cultivated land	13424.5	43286.4	1973	2014	222.44	1.24	3.98	2.74	A 72,697.2-ha area with an estimated population density of 198 persons per km <sup>2</sup> and is characterized by mixed farming	Tolessa <i>et al.</i> , 2016
Shrub/bush land	19531.7	20683.9	1973	2014	-67.23	18.9	6.20	-12.7		
Grass land	12298.4	6562.5	1973	2014	-46.64	2.85	1.5	-1.35		
Forest land	14955.1	2507.32	1973	2014	-83.23	30.01	5.03	-24.98		
Settlement	1202.13	6869.82	1973	2014	471.47	0.0	0.0	0.0		
Bare land	11285.38	7069.74	1973	2014	-37.35	0.0	0.0	0.0		
Cultivated land	593,175	666,489	1986	2021	12.4	133.8	150.3	16.5	An area that ranges from between 1646	Biratu <i>et al.</i> , 2022
Settlement	1,462	7,880	1986	2021	439.2	0.0	0.0	0.0		

Shrub-bush land	245,398	182,237	1986	2021	-25.7	72.0	53.4	-18.5	masl nearby Lake Zeway and 4171 masl on the ridges of Chilalo mountain covering a total of 10,074 km <sup>2</sup>
Forest land	26,432	16,677	1986	2021	-36.9	26.1	16.5	-9.6	
Bare land	21,502	40,945	1986	2021	90.4	0.0	0.0	0.0	
Water body	82,489	81,584	1986	2021	-1.1	668.4	653.7	-7.3	
Wetland	10,664	6,572	1986	2021	-38.4	86.4	53.3	-33.2	
Grazing land	26,230	4,967	1986	2021	-81.1	7.7	1.5	-6.2	
Inland waters	1,432.4	1,434.1	1985	2010	0.12	1792.2	1794.4	2.1	An area of about 18,600 km <sup>2</sup> that ranges from 1082 near the lakeshore – 3500 masl in the highlands
Forests	531.6	522.5	1985	2010	-1.7	286	281.2	-4.9	
Shrubland	4478.9	3188.2	1985	2010	-28.8	2410.1	1715.6	-694.5	
Arable land	4454	7088.6	1985	2010	59.2	2480	3946.9	1466.9	
Heterogeneous agricultural areas	2519.1	2162.1	1985	2010	-14.2	1402.6	1203.9	-189.8	
Coffee agroforestry	2226.3	2216.8	1985	2010	-0.43	1670.6	1663.5	-7.1	
Natural grassland	3205.7	2143.8	1985	2010	-33.1	1335.5	893.1	-442.4	
Inland wetlands	291.2	365.5	1985	2010	25.5	747.8	938.6	190.8	
Built-up areas	7.5	25	1985	2010	233.3	5	16.7	11.7	
Cultivated land	101038	123977	2000	2020	22.7	22.8	28	5.2	An area of about 1583 km <sup>2</sup> that ranges from 1785 to 4084 masl in the Upper Blue Nile basin
Forest	10460	5623	2000	2020	-46.2	10.3	5.5	-4.8	
Shrubland	25182	13984	2000	2020	-44.5	24.8	13.8	-11	
Grassland	20524	11999	2000	2020	-41.5	6	3.5	-2.5	
Waterbody	586	1056	2000	2020	80	4.7	8.5	3.8	
Settlement	843	1993	2000	2020	136.5	0	0	0	

NB: ESV = Ecosystem Service Value, VC<sub>k</sub> = Value coefficient of land use and land cover type 'K'.

Sources : Gashew et al. [9]; Tolessa et al., [5]; [56]; Kindu et al., [1]; Biratu et al. [71]; Woldeyohannes et al. [73]; Anley et al. [72] and some calculations of this data were made by the authors.