

## Supplementary Material

**Table S1**

The collected data for each territorial administrative unit (TAU) within the study area (8 communes and 3 cities)) was analysed in order to estimate and quantify the provisioning services. An overview of the data sources and time frames are presented in supplementary material.

	Pre-communist period (1900-1945)	Communist period (1946-1989)	Transition and EU period (1990-present)	
Land cover	historical topographic maps (3rd Military Mapping Survey of Austria-Hungary, 1910 scale 1:200000)	Corine Land Cover 1990	Corine Land Cover 2018	
Crop provisioning services	Vădineanu et al. (2004)	1960-1990 (Data obtained from the Regional Office of the National Institute of Statistics in Braila, at municipality level)	1990-2004 (Data obtained from National Institute of Statistics, for the entire LTSER, at municipality level)	2004-2016 (Data from the National Institute of Statistics, obtained at county level in production/hectare for the entire LTSER)
Fish provisioning services	Vădineanu et al. (2004); Luiza Florea (unpublished data)	Literature available data (Vădineanu et al. 2004; Luiza Florea unpublished data)	Literature available data (Vădineanu et al. 2004; Luiza Florea unpublished data)	2009-2014 (Data obtained from regional fishing administration)
Timber provisioning services	Vădineanu et al. (2004)	Vădineanu et al. (2004)	1990-2004 (Data obtained from National Institute of Statistics, for the entire LTSER, at municipality level)	2004-2016 (Data from the National Institute of Statistics, obtained at county level in in production/hectare for the entire LTSER)
Livestock provisioning services	Vădineanu et al. (2004)	1960-1990 Data obtained from the Regional Office of the National Institute of Statistics in Braila, at municipality level	1990-2004 (Data obtained from National Institute of Statistics, for the entire LTSER, at municipality level)	2004-2016 Data from the National Institute of Statistics, obtained at county level in production/hectare for the entire LTSER)

Table S2

Data used in HANPP valuation method for the pre-communist period (1900-1945).

Landcover	Potential Net Primary Production (NPP0) g C / m2 /yr *	Actual Net Primary Production (NPPact) g C / m2 /yr *	Harvested Net Primary Production (NPPh) g C / m2 /yr	Human Appropriation of Net Primary Production (HANPP) g C / m2 / yr*	Data Sources
Urban areas	N/A	429.18		226.85	* (96 - Gingrich, S.; Niedertscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47, pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027)
Agricultural areas	652.97	457.08		241.6	
Forest areas	640 ((Haberl et al., 2001; Haberl et al., 2007; Schwarzmüller, 2008)	621 * 1242 g DW / m2 / yr (using 0.5 conversion factorA	55.86 g C / m2 / yr**	74.86	*Derived using the average productivity (gDW/m2/yr) data obtained by Roxana Cazacu, 2002, PhD thesis for forested areas in 2 plots (F3, F2) of the study site and assumed to be constant for the entire period **Derived using literature available data (Vădineanu et al. 2003) on timber harvest (m3/ha) using a density conversion factor of 420 kg/m3 for Salix sp. and 0.5 conversion factor for carbon concentration (98)
Semi-natural areas (Pastures)	267.9	187.5		180	* (96 - Gingrich, S.; Niedertscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47,

					pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027) *NPP0 was calculated using HANPPharv % NPP pot (average values/period)
Inland marshes	1000	700		300	Calculated using NPP act data derived using average value from Asselman I, 1989, Global Distribution of Natural Freshwater Wetland and Rice Paddies their Net Primary Productivity, Seasonality and Possible Methane Emissions (97)
Water bodies	564.29	395		169.2	Calculated after Cristofor et al. 2003, Long-term changes of submerged macrophytes in the Lower Danube Wetland System, using values for Baclanesti Lake 1982 (99)

**Table S3**

Data used in HANPP valuation method for the communist period (1945-1989).

Landcover	Potential Net Primary Production (NPP0) g C / m2 /yr *	Actual Net Primary Production (NPPact) g C / m2 /yr *	Harvested Net Primary Production (NPPh) g C / m2 /yr	Human Appropriation of Net Primary Production (HANPP) g C / m2 /yr*	Data Sources
Urban areas	N/A	467.61		242.47	*(96 - Gingrich, S.; Niederscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47, pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027) *NPP0 was calculated using HANPPharv % NPP pot (average values/period)
Agricultural areas	620.83	502.87		260.75	

Forest areas	640 ((Haberl et al., 2001; Haberl et al., 2007; Schwarzmüller, 2008)	621 g C / m <sup>2</sup> /yr* 1242 g DW / m <sup>2</sup> / yr (using 0.5 conversion factor)	88.83 g C / m <sup>2</sup> / yr**	107.83	*Derived using the average productivity (gDW/m <sup>2</sup> /yr) data obtained by Roxana Cazacu, 2002, PhD thesis for forested areas in 2 plots (F3, F2) of the study site and assumed to be constant for the entire period **Derived using statistical data (National Institute of Statistics, INSSE, 2018) on timber harvest (m <sup>3</sup> /ha) using a density conversion factor of 420 kg/m <sup>3</sup> for Salix sp. and 0.5 conversion factor for carbon concentration (98)
Semi-natural areas (Pastures)	358.99	290.78		150.78	*(96 - Gingrich, S.; Niederscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47, pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027) *NPP0 was calculated using HANPPharv % NPP pot (average values/period)
Inland Marshes	864.2	700		164.2	Calculated using NPP act data derived using average value from Asselman I, 1989, Global Distribution of Natural Freshwater Wetlands and Rice Paddies their Net Primary Productivity, Seasonality and Possible Methane Emissions (97)
Waterbodies	490.74	397.5		93.24	Calculated after Cristofor et al. 2003, Long-term changes of submerged macrophytes in the Lower Danube Wetland System, using values for Baclanesti Lake 1982 (99)

Table S4

Data used in HANPP valuation method for the transition and EU period.

Landcover	Potential Net Primary Production (NPP0) g C / m <sup>2</sup> / yr *	Actual Net Primary Production (NPPact) g C / m <sup>2</sup> / yr *	Harvested Net Primary Production (NPPh) g C / m <sup>2</sup> / yr	Human Appropriation of Net Primary Production (HANPP) g C / m <sup>2</sup> / yr*	Data Sources
Urban areas	N/A	631.88		282.49	<p>** (96 - Gingrich, S.; Niedertscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47, pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027)</p> <p>*NPP0 was calculated using HANPPharv % NPP pot (average values/period)</p>
Agricultural areas	735.53	625.20		279.50	
Forest areas	640 ((Haberl et al., 2001; Haberl et al., 2007; Schwarzmüller, 2008)	621 g C / m <sup>2</sup> / yr* 1242 g DW / m <sup>2</sup> / yr (using 0.5 conversion factor)	89.25 g C / m <sup>2</sup> / yr**	108.25	<p>*Derived using the average productivity (gDW/m<sup>2</sup>/yr) data obtained by Roxana Cazacu, 2002, PhD Thesis for forested areas in 2 plots (F3, F2) of the study site and assumed to be constant for the entire period</p> <p>**Derived using statistical data (National Institute of Statistics, INSSE, 2018) on timber harvest (m<sup>3</sup>/ha) using a density conversion factor of 420 kg/m<sup>3</sup> for Salix sp. and 0.5 conversion factor for carbon concentration (98)</p>

Semi-natural areas (Pastures)	223.13	189.66		84.79	<p>** (96 - Gingrich, S.; Niedertscheider, M.; Kastner, T.; Haberl, H.; Cosor, G.; Krausmann, F.; Kuemmerle, T.; Müller, D.; Reith-Musel, A.; Jepsen, M. R.; Vadineanu, A.; Erb, K.-H. (2015): Exploring long-term trends in land use change and above ground human appropriation of net primary production in nine European countries. In: Land Use Policy 47, pp 426-438. DOI: 10.1016/j.landusepol.2015.04.027)</p> <p>*NPP0 was calculated using <math>\text{HANPP}_{\text{harv}} \% \text{NPP}_{\text{pot}}</math> (average values/period)</p>
Inland marshes	823.52	700		123.52	Calculated using NPP act data derived using average value from Asselman I, 1989, Global Distribution of Natural Freshwater Wetlands and Rice Paddies, their Net Primary Productivity, Seasonality and Possible Methane Emissions (97)
Water bodies	396.47	337		59.47	Calculated after Cristofor et al. 2003, Long-term changes of submerged macrophytes in the Lower Danube Wetland System, using values for Baiclanesti Lake 1982 (99)

Table S5

	Lucerne	Wheat	Barley	Sunflower	Maize	Soybean
<b>I. Total Direct input costs (1.+...+9.):</b>	2,275	836	740	929	1,549	1,408
1. <i>Direct costs</i>	1,132	418	370	487	774	704
2. <i>Material costs</i>	440	237	206	332	529	457
3. <i>Irrigations</i>	118	16	10	n/a	69	66
4. <i>Salaries</i>	470	17	13	n/a	23	21
5. <i>Land renting</i>	104	104	104	104	104	104
6. <i>Taxes</i>	10	6	6	6	6	6
7. <i>Insurances</i>	n/a	5	5	n/a	9	8
8. <i>Transportation taxes</i>	2	2	2	n/a	2	n/a
9. <i>Services</i>	n/a	31	24	n/a	33	43
<b>II: Indirect input costs:</b>	n/a	135	116	204	247	247
1. <i>Tractors</i>	20	37	32	55	67	67
2. <i>Combine Harvester</i>	6	25	21	37	45	45
3. <i>Irrigations</i>	16	32	29	51	62	62
4. <i>Common costs</i>	8	41	35	60	73	73
<b>III. Production costs</b>	109	897	907	932	1,270	1,199
<b>IV. Market expenses</b>		58	63	39	181	37
<i>Total expenses</i>	2,400	955	970	971	1,450	1,237
<i>Sales</i>	2,900	1,050	1,050	1,330	1,950	1,480
<i>Profit</i>	500	95	80	359	500	243