Supporting information

Analysis of Carbon Emissions in China's Freshwater Aquaculture Industry Using LMDI and Tapio Decoupling Models

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Table S1 The total output value of freshwater aquaculture-D

10000 yuan	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beijing	90344.99	86030.97	77608.13	53818.53	79159.5	40704.35	27358.02	18765.7	17705.6	16969.9	20867.7
Tianjin	475130	481748	499130	587052	490619.46	505516	493202	540269	588783	569772.72	569643.7
Hebei	558922.94	578155.2	594768.79	551028.31	483390.86	493432.72	487267.03	512700.23	575732.61	592504.7	605438.85
Shanxi	49881.44	56604.4	58054.76	57682.26	74483	66383.6	64738.8	62921.5	86628.57	87801.74	94613.57
Inner Mongolia	145249.09	156426.06	161135.05	167569.39	257594.74	156169.33	153376.14	155802.75	157582.66	167809.51	187546.56
Liaoning	1627519	1632383	1462136	1672513	120610 5.42	1183922	1232771	1108502	1133351	1094398	1213685
Jilin	207581	211953.95	216849.5	232106.5	378815.67	332418	338401	419216	485027.83	560057.08	598859.76
Heilongjiang	567869.6	611003.8	645807	672525.8	877689.85	952206.23	1106109	1138752.31	1178905.46	1312778.9	1388542
Shanghai	444103	478391	401795.5	328277.9	341475.3	265913.86	244721.13	223494	219911.99	297642.26	277948.88
Jiangsu	8725703.97	9328933.77	9859314.75	11406125.41	11462991.22	10550026	11588033.38	10658092	12058327.65	12642225	13058379
Zhejiang	1957964	1939377	2014521	2325946	3162114	2281732	2385085	2477011	2982769	3138732	3265863.97
Anhui	3045800.82	3373162.29	3672532.12	3945251.9	4085609.73	4215878.12	4488163.2	4880197.13	5639052.48	6090037.69	6500209.63
Fujian	1759349.65	1775143.83	1768815.13	1902934.25	1498357.94	1710102.24	1837904.25	1803023.21	2159716.03	2236824.44	2278517.79
Jiangxi	3302759	3680284	3857911	4033500	3997383.18	4232297	4315453.64	4466420	5295888.85	5438277.97	5509709.3
Shandong	2452067	2501475.93	2522480.6	2341391	2425373	2043783	1932567.02	1829520.28	2216998	2234874.95	2528600
Henan	880924	990069	1164415	1208741	910510	1155946	1113067	1108080	1350932	1388968	1256009
Hubei	6989348	7961369	8756554	9830188	10234469	10752111	11254800	11445997	14514896	15771193	15955572
Hunan	2856960.7	3034442.4	3299832.45	3577090.13	3822551.27	4005725.09	4322249.98	4730330	5696145.82	6173478.8	6346486.01
Guangdong	4847188.55	5436063.13	5489294.62	5814667.76	5710845.5	6135722	6350472	7505486.07	8277513	8463889.16	9213715.93

Guangxi	1450189	1661469	1703990	1746770	163137 6.28	1826728	1921870	1973701	216451 2.23	223252 5.7	2302162
Hainan	431023	481448	499076	523789.02	554237.13	538855.26	531170	520449	568401	452556.46	464678.35
Chongqing	496429.94	594491	652835	730946	853362	902380	955057	1035774	1381702	136993 7	1428650
Sichuan	1632786	176877 5.4	1936179	2068200	218944 8.37	233440 9.72	251320 8.47	285955 5.41	327813 7.97	343108 5.03	359094 7.1
Guizhou	331808.15	418738.52	494275.96	642539	538291.42	474220.7	560606.37	606763.88	661370.78	775072.32	795114.94
Yunnan	583015.68	703283.92	754613.23	837582.38	792197.71	898789.94	892147.54	974726.67	106414 2.82	114017 9.92	127501 5.64
Tibet	542.98	525.74	433.07	916	1852.32	967.5	2112	2208	1745	329	343.07
Shaanxi	430862.65	422337.85	445957.17	450590	263652.1	263666	263813.6	305652.56	331421.33	350581.48	425799.11
Gansu	16924.78	17635	19084.25	19590.35	20904	18767.75	22198.73	22536.46	23788.6	23637.13	25698.36
Qinghai	12600	22000	23470	47200	34402.05	56003.7	60650	61215	62000	65000	63870
Ningxia	132002.58	148939.99	157247.7	169402.61	185793.47	196991.24	165233.97	179503.58	240433.2	218104.11	224029.5
Xinjiang	152834.96	173111.02	161095.8	185899.62	197441.94	250914	242190.05	244850.46	324000	293050	312646.05

Table S2 The total output value of the fisheries industry-N

10000 yuan	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beijing	127809.59	126928.09	134839.38	90789.8	110421.8	61631.15	43343.82	37380.7	41561.96	36619.9	40409.4
Tianjin	752235	818746	846312	917404	727915.36	736919	734005	699185	828884	704583	719100
Hebei	1909700.86	2016273.7	2103057.57	2238935.21	2080383.62	2220942	2276606.82	2574949.12	3134088.67	3422908.04	3512110
Shanxi	52845.79	59756.27	61427.01	61030.89	78443	70632.7	70727.4	67427.3	91240.57	88984.54	95877.57
Inner Mongolia	189780.99	202163.13	208986.41	217701.86	322881.95	196002.51	186064.58	184623.11	188622.21	187739.43	207537.75
Liaoning	7957059	8318642	7828059	8380403	6716649.42	6374872	6522229	6642164	7091705	6845166	7302874
Jilin	256746	264128.17	267444.1	282785.3	431760.7	406584.21	417893.63	496388.19	561966.44	615945.41	654425.46
Heilongjiang	690261	734837.8	773668.6	802269.2	1026405.73	1100286	1284626.7	1302891	1358773.95	1478997.9	1551000
Shanghai	655041.9	688648.4	586878.58	531468.1	599971.59	527826.5	517034.9	477679.6	442972.93	512094.98	527088.86
Jiangsu	13993010	14809082.02	15456701.49	16837759.27	16999477	17863162.97	16578688.42	18540218	19196256.15	18569330	19032133
Zhejiang	7320691	7575295	7906672	6898022	9999593	10640899	11017107	11336086	12111816	12611763	13752503.9
Anhui	3880925.76	4252533.36	4562187.88	4901991.38	5079719.08	5273937.89	5539922.3	5795012.82	6488862.67	6430976.22	6832723.53
Fujian	10247887.42	10663467.35	11225778.73	12816457.91	12476533.97	13645754.25	14123981.28	14226369.26	16754169.16	17407483.2	17895643.9
Jiangxi	4010928.21	4329978.73	4534630.53	4835220.87	4872340.03	5119006.2	5158602.57	5142069.27	5835881.03	5552333 6.53	5614106.1
Shandong	14827816.9	15522551.24	15934272.18	15950265.63	15711154.61	15582170	14740419.01	15655283.02	17324586.5	17297000	18076400
Henan	1069532	1185307	1374739	1423371	1216441.5	1348553	1299897	1292627	1552963	1474489	1415079
Hubei	8384881	9436406	10322763	11399247	11853853	12052032	12529320	12385151	15560442	15843494	16020233
Hunan	3098939.11	3388518	3669271.3	3966575.9	4220546.15	4429350.38	4688495.9	5088828.29	6050632.92	6178100	6350300
Guangdong	10048944.16	11106272.84	11472808.35	12234421.73	13066450.92	14153875.76	14584612.84	16087886.76	17862410	18611780.71	20053082.84
Guang	383868	437846	455029	489648	498931	532365	565628	533872	581114	575804	583006

xi	5.82	0.31	1.66	1.67	2.2	0.37	5.83	0.03	7.24	4.17	3
Hainan	2919534	3286610	3459906	3778455.65	3964202.78	4096707.73	4174429	4258954	4664898	4666111.43	52300392.75
Chongqing	588918.8	744074.59	851054.84	960348.29	1059724	1116792	1170883	1195169	1498951	1369937	1428650
Sichuan	1943459.44	2102362.85	2293705.61	2443508.98	2575699.68	2716917.48	2920697.29	3177302.8	3599786.87	3431085.03	3590947.1
Guizhou	371033.92	460918.3	538095.35	687368.43	649554.95	580494.07	631985.01	668398.36	722011.07	795583.18	811930.23
Yunnan	684068.58	823209.98	904375.52	974846.11	934839.28	1053486.09	1030204.65	1094735.18	1199819.6	1199000	1342618.04
Tibet	1035.41	943.94	967.63	4020	3271.36	2933.3	2316.13	2418.25	6525.45	629	1505.07
Shaanxi	464778.75	459028.69	484502.7	486660	295704.6	296676	298266.93	339259.78	354083.42	350581.48	425799.11
Gansu	17528.54	18233.6	19876.24	20412.85	21612.47	19451.46	22823.76	2251.67	24373.43	23637.13	25698.36
Qinghai	12600	22000	23470	47200	34402.05	56003.7	60650	61215	62000	65000	63870
Ningxia	153472.08	175400.84	183663.4	196924.21	214796.19	220842.9	196257.12	212729.78	274301.85	227072.05	233290.6
Xinjiang	194639.6	215480.62	195791.79	245075.15	244804.83	293446.69	274896.42	272351.18	359500	321000	335600

Table S3 The number of the fishing population-Pz

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beijing	18964	18086	17809	16506	9721	9232	6080	5506	4713	4232	4112
Tianjin	38397	37816	38026	36823	32826	28635	23531	19696	15115	15764	15569
Hebei	24041	239377	221682	222989	217703	204974	183285	179281	177052	177817	171399
Shanxi	5886	5983	6060	6063	5661	5398	4911	5024	3873	3819	4105
Inner Mongolia	29856	30073	30326	30699	31208	29648	27747	25600	25049	24725	24306
Liaoning	592040	564931	543727	542554	529930	527043	526784	524256	451369	432130	432232
Jilin	67647	71878	70134	70045	69654	67999	67963	68248	76137	75454	75847
Heilongjiang	135446	127746	123903	129052	128794	127338	121595	118535	113743	112555	111169
Shanghai	26513	26426	25199	21166	19268	17782	13895	12269	8889	9461	8175
Jiangsu	1154484	1132406	1120484	1105557	1087225	1050302	1017558	951493	904867	893144	890127
Zhejiang	792776	779505	755862	690382	714416	687456	676610	654384	629724	66986	609305
Anhui	688257	681882	669471	668135	629296	606106	592915	558577	547696	527532	532030
Fujian	963601	960103	952220	940503	935681	922086	909679	888620	886222	887230	892756
Jiangxi	958874	939832	936470	914939	908863	879347	873553	789689	788420	775929	772734
Shandong	1483643	1489275	1487021	1478557	1450222	1412728	1314134	1253687	1194646	1167710	1051337
Henan	468488	465422	459756	446927	432787	418213	405751	380980	359816	354098	343174
Hubei	1289998	1294019	1312604	1330289	1253872	1202966	1163494	1127480	1042942	1054458	1139162
Hunan	919452	913097	907271	925532	925948	907985	875186	828888	840601	854529	856217
Guangdong	1319024	1297480	1275172	1258858	1242203	1250222	1238809	1214032	1155209	1175312	1238251
Guangxi	815303	821834	819745	815673	815221	808960	810036	809371	801897	803462	803719
Hainan	244244	245056	249234	237420	246267	249354	244238	221974	194069	193114	201214
Chongqing	389765	342732	345728	350753	347754	346240	341761	334694	302252	305884	303005
Sichuan	1153529	1154038	1147552	1151929	1132060	1100059	1074368	1031356	966877	946544	925342
Guizhou	245766	265184	275629	77653	74652	62417	74794	76354	73793	73415	75335
Yunnan	289428	286915	261718	251125	251068	240787	236061	224849	192140	204259	189508
Tibet	141	152	268	40	63	114	114	138	138	138	1237
Shaanxi	54067	56695	54284	55489	55082	55091	58059	56993	55879	56410	57576
Gansu	8374	8682	7834	7990	8454	7974	7839	7843	7269	7386	7592
Qinghai	811	2752	2752	2877	3504	3504	3504	3504	3504	3508	3433
Ningxia	18006	17114	16398	16204	15301	12884	9022	9000	8903	8903	8790
Xinjiang	13755	13710	14174	14185	19209	14386	13676	13537	13621	13415	13576

Table S4 The number of people engaged in fishery farming -P

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beijing	8344	7417	7249	6233	4389	3960	2626	2495	2166	1995	1939
Tianjin	13858	13060	12856	12661	11915	11278	11063	10035	7534	8093	8056
Hebei	62173	58292	56817	55525	49889	47571	39991	38604	37377	38032	40174
Shanxi	2785	2682	2624	2656	2480	2423	2370	2166	1728	1698	1794
Inner Mongolia	10101	9486	9724	9798	10107	9691	9735	8685	8346	7859	7886
Liaoning	216931	209096	205404	204667	194669	183367	183164	183567	137613	136725	136459
Jilin	12987	13074	13258	13905	13815	13140	12785	12880	14478	14086	13977
Heilongjiang	63481	57955	55369	56001	56578	56451	53358	51140	46996	46906	47372
Shanghai	16098	15634	14664	10776	9765	9380	8629	7375	4687	5147	4716
Jiangsu	484765	473737	467800	459495	456413	440976	427020	406469	387625	381293	379508
Zhejiang	212415	205205	200969	198255	194895	175699	171754	160479	154882	153500	148937
Anhui	246163	243188	239142	239173	221570	213029	214404	206265	207156	211397	218886
Fujian	300344	302795	301428	301743	300474	299790	297751	297075	298360	298422	299856
Jiangxi	315253	309402	307032	306783	303571	291604	292061	288033	290672	288392	288657
Shandong	355656	364214	365547	361615	354231	328463	316390	304064	294224	292755	278164
Henan	161130	160242	157492	155264	151210	143563	136035	129285	115621	110483	109962
Hubei	759648	765368	768436	772921	712065	697224	682582	686323	621512	626520	708123
Hunan	359570	358919	362748	374825	376430	367379	359477	343434	343199	351147	351183
Guangdong	531618	515230	514136	507101	500009	496727	496599	503038	506489	472869	523026
Guangxi	310725	309123	307421	306387	305004	303613	304494	302862	297914	297388	297730
Hainan	52712	52700	55070	60769	63244	54852	59803	54109	44918	44902	51610
Chongqing	168721	147340	152224	152539	153230	151742	150870	150292	127395	127117	128824
Sichuan	309383	310511	307224	309875	310240	308240	307490	304296	288266	282929	280515
Guizhou	88278	90117	96313	19823	21205	16261	14104	17027	16416	16368	16911
Yunnan	83390	81359	75792	75119	74941	71371	66775	63771	56880	58821	55298

Tibet	30	50	116	10	20	40	40	50	50	50	300
Shaanxi	25591	28552	27483	28521	28658	28660	28408	27730	27698	27838	28584
Gansu	2760	2878	3131	3243	3108	2878	2824	2903	2789	3041	3062
Qinghai	212	301	301	294	349	349	349	349	349	350	374
Ningxia	9483	9070	8060	8043	7364	6170	4190	4151	4121	4107	4076
Xinjiang	7164	7264	7345	7676	10053	6876	6577	6500	6584	6520	6500