

NOTA TÉCNICA PARA EL USO DEL PRECIO SOCIAL DEL CARBONO EN LA EVALUACIÓN SOCIAL DE PROYECTOS DE INVERSIÓN

Cálculo del costo por externalidades causadas por emisiones de efecto invernadero:

Completar las celdas en verde

Horizonte de Evaluación	años	30
Tipo de cambio	\$/€	3.3
Precio global del carbono	US\$/t ton CO ₂	7.17
Factor de emisión (FE)	t CO ₂ eq/MWh	0.09
Factor de emisión del SEIN	t CO ₂ /MWh	0.4521
Ccp	W	1100
Csp	W	800
Acp	m ⁻²	1000
Asp	m ⁻²	1000
DP	W/m ⁻²	N/A

Cálculo del costo por externalidades causadas por emisiones de efecto invernadero: Planta de Tratamiento de Aguas Residuales

¿Proyecto incluye generación de energía? Sí

Horizonte de Evaluación	años	20
Tipo de cambio	S/.	3.3
Precio Social del carbono	US\$/ton CO ₂	7.17
Factor de emisión del SEIN	ton CO ₂ /MWh	0.4521
Potencial de calentamiento global del metano	t CO ₂ e/t CH ₄	34

Tecnología de tratamiento de aguas residuales

Densidad del metano	kg/m ³	0.667
Energía potencial del metano	kWh/m ³	10
Eficiencia de la tecnología de conversión en energía eléctrica	%	40%

**Cálculo del costo por externalidades causadas por emisiones de efecto invernadero:
Residuos Sólidos**

Año	Cantidad de residuos sólidos a disponer por año t/año <i>Qref,t,año</i>	Producción anual de metano (Q244) MWh/año	Producción de electricidad por quema de metano t CO2eq/año	Emisiones evitadas de GEI por recogida y quema de metano	Emisiones evitadas por generación de electricidad	Emisiones GEI sin proyecto ton CO2 eq/año	Emisiones GEI con proyecto ton CO2/año	Emisiones GEI evitadas con la implementación del proyecto ton CO2/año	Beneficio anual por emisiones GEI evitadas \$/año
0	37,256	128	961	2,693	435	3,127	1,346	1,781	42,141
1	37,916	128	961	2,693	435	3,127	1,346	1,781	42,141
2	38,591	241	1,806	5,060	817	5,877	2,530	3,347	79,188
3	39,281	340	2,552	7,150	1,154	8,304	3,575	4,729	111,800
4	39,982	429	3,213	9,000	1,452	10,452	4,500	5,952	140,838
5	40,694	507	3,798	10,642	1,717	12,360	5,321	7,038	166,538
6	41,420	576	4,321	12,105	1,954	14,059	6,053	8,006	189,432
7	42,165	639	4,788	13,413	2,165	15,578	6,707	8,871	209,500
8	42,917	695	5,207	14,587	2,354	16,942	7,294	9,548	228,278
9	43,687	745	5,586	15,648	2,525	18,373	7,824	10,349	244,869
10	44,468	791	5,930	16,621	2,681	19,292	8,356	10,988	259,951
11	45,260	833	6,242	17,533	2,824	20,211	8,878	11,613	274,529
12	46,063	867	6,513	18,364	2,955	21,099	9,399	12,264	288,667
13	46,877	900	6,745	19,115	3,077	21,921	9,891	12,844	301,348
14	47,702	928	6,940	19,800	3,189	22,699	10,342	13,379	312,679
15	48,538	952	7,100	20,421	3,289	23,418	10,753	13,839	323,669
16	49,385	972	7,235	21,000	3,377	24,095	11,127	14,278	334,278
17	50,234	988	7,350	21,544	3,454	24,713	11,469	14,675	344,598
18	51,084	1,002	7,454	22,053	3,519	25,297	11,781	15,026	354,629
19	51,935	1,014	7,550	22,522	3,574	25,811	12,073	15,338	364,371
20	52,787	1,025	7,635	22,953	3,617	26,293	12,345	15,618	373,893
21	53,640	1,035	7,710	23,344	3,650	26,683	12,597	15,869	383,195
22	54,494	1,044	7,774	23,696	3,673	27,034	12,830	16,093	392,278
23	55,348	1,052	7,827	24,018	3,695	27,345	13,043	16,287	401,142
24	56,203	1,059	7,870	24,300	3,716	27,606	13,236	16,459	409,787
25	57,058	1,065	7,902	24,543	3,736	27,827	13,410	16,619	418,216
26	57,914	1,071	7,923	24,756	3,755	28,018	13,569	16,767	426,530
27	58,770	1,076	7,934	24,939	3,773	28,188	13,710	16,903	434,731
28	59,626	1,081	7,935	25,099	3,790	28,338	13,839	17,028	442,822
29	60,482	1,085	7,926	25,240	3,806	28,478	13,957	17,142	450,801
30	61,338	1,088	7,907	25,364	3,821	28,598	14,064	17,245	458,668
31	62,194	1,091	7,887	25,468	3,835	28,708	14,161	17,337	466,424
32	63,050	1,093	7,867	25,553	3,848	28,808	14,248	17,420	473,970
33	63,906	1,095	7,846	25,618	3,859	28,898	14,324	17,493	481,306
34	64,762	1,096	7,825	25,663	3,869	28,988	14,390	17,556	488,531
35	65,618	1,097	7,803	25,690	3,878	29,078	14,446	17,610	495,646
36	66,474	1,098	7,781	25,700	3,885	29,168	14,491	17,654	502,650
37	67,330	1,098	7,758	25,700	3,891	29,258	14,526	17,688	509,543
38	68,186	1,098	7,735	25,690	3,896	29,348	14,551	17,712	516,325
39	69,042	1,098	7,711	25,670	3,900	29,438	14,575	17,735	522,996
40	69,898	1,098	7,687	25,640	3,903	29,528	14,598	17,758	529,556
41	70,754	1,098	7,662	25,600	3,906	29,618	14,619	17,779	535,995
42	71,610	1,098	7,637	25,550	3,908	29,708	14,639	17,799	542,313
43	72,466	1,098	7,612	25,490	3,910	29,798	14,658	17,818	548,511
44	73,322	1,098	7,586	25,420	3,911	29,888	14,676	17,836	554,588
45	74,178	1,098	7,560	25,340	3,912	29,978	14,693	17,853	560,545
46	75,034	1,098	7,533	25,250	3,913	30,068	14,709	17,869	566,382
47	75,890	1,098	7,506	25,150	3,914	30,158	14,724	17,884	572,108
48	76,746	1,098	7,478	25,040	3,915	30,248	14,739	17,898	577,723
49	77,602	1,098	7,450	24,920	3,916	30,338	14,753	17,911	583,137
50	78,458	1,098	7,422	24,790	3,917	30,428	14,766	17,923	588,340
51	79,314	1,098	7,393	24,650	3,918	30,518	14,779	17,935	593,332
52	80,170	1,098	7,364	24,500	3,919	30,608	14,791	17,946	598,113
53	81,026	1,098	7,335	24,340	3,920	30,698	14,802	17,957	602,683
54	81,882	1,098	7,305	24,170	3,921	30,788	14,813	17,967	606,942
55	82,738	1,098	7,276	24,000	3,922	30,878	14,823	17,977	611,000
56	83,594	1,098	7,245	23,820	3,923	30,968	14,833	17,986	614,856
57	84,450	1,098	7,216	23,630	3,924	31,058	14,843	17,995	618,502
58	85,306	1,098	7,185	23,430	3,925	31,148	14,852	18,003	621,998
59	86,162	1,098	7,155	23,220	3,926	31,238	14,861	18,011	625,264
60	87,018	1,098	7,125	23,000	3,927	31,328	14,870	18,018	628,310
61	87,874	1,098	7,095	22,770	3,928	31,418	14,878	18,025	631,146
62	88,730	1,098	7,064	22,530	3,929	31,508	14,886	18,031	633,772
63	89,586	1,098	7,034	22,280	3,930	31,598	14,893	18,037	636,197
64	90,442	1,098	7,003	22,020	3,931	31,688	14,899	18,042	638,412
65	91,298	1,098	6,972	21,750	3,932	31,778	14,905	18,047	640,426
66	92,154	1,098	6,941	21,470	3,933	31,868	14,911	18,052	642,239
67	93,010	1,098	6,909	21,180	3,934	31,958	14,916	18,056	643,851
68	93,866	1,098	6,878	20,880	3,935	32,048	14,921	18,060	645,262
69	94,722	1,098	6,846	20,570	3,936	32,138	14,925	18,063	646,572
70	95,578	1,098	6,814	20,250	3,937	32,228	14,929	18,066	647,771
71	96,434	1,098	6,782	19,920	3,938	32,318	14,932	18,069	648,869
72	97,290	1,098	6,749	19,580	3,939	32,408	14,935	18,071	649,856
73	98,146	1,098	6,717	19,230	3,940	32,498	14,938	18,073	650,732
74	99,002	1,098	6,684	18,870	3,941	32,588	14,940	18,075	651,507
75	99,858	1,098	6,651	18,500	3,942	32,678	14,942	18,076	652,171
76	100,714	1,098	6,618	18,120	3,943	32,768	14,944	18,077	652,725
77	101,570	1,098	6,585	17,730	3,944	32,858	14,945	18,078	653,178
78	102,426	1,098	6,552	17,330	3,945	32,948	14,946	18,079	653,520
79	103,282	1,098	6,519	16,920	3,946	33,038	14,947	18,080	653,851
80	104,138	1,098	6,486	16,500	3,947	33,128	14,948	18,081	654,171
81	104,994	1,098	6,452	16,070	3,948	33,218	14,949	18,082	654,480
82	105,850	1,098	6,418	15,630	3,949	33,308	14,950	18,083	654,777
83	106,706	1,098	6,385	15,180	3,950	33,398	14,951	18,084	655,063
84	107,562	1,098	6,351	14,720	3,951	33,488	14,952	18,085	655,338
85	108,418	1,098	6,317	14,250	3,952	33,578	14,953	18,086	655,602
86	109,274	1,098	6,283	13,770	3,953	33,668	14,954	18,087	655,855
87	110,130	1,098	6,249	13,280	3,954	33,758	14,955	18,088	656,097
88	110,986	1,098	6,215	12,780	3,955	33,848	14,956	18,089	656,328
89	111,842	1,098	6,181	12,270	3,956	33,938	14,957	18,090	656,557
90	112,698	1,098	6,147	11,750	3,957	34,028	14,958	18,091	656,775
91	113,554	1,098	6,113	11,220	3,958	34,118	14,959	18,092	656,981
92	114,410	1,098	6,078	10,680	3,959	34,208	14,960	18,093	657,186
93	115,266	1,098	6,044	10,130	3,960	34,298	14,961	18,094	657,380
94	116,122	1,098	6,009	9,570	3,961	34,388	14,962	18,095	657,563