

Appendix 6 : Techno-economic assumptions for the current and alternative steel production technologies based on [59, 11, 60, 75, 34, 76, 43, 63, 1, 19, 65, 45, 62, 77]

	Units	Existing BF-BOF	Retrofitted BF-BOF w/CC	New BF-BOF	BF-BOF w/CC	BF-BOF w/TGR	BF-BOF w/CC & TGR	Existing coke oven	New coke oven	Corex	Corex w/CC	CUPOLA	Existing DRI	Retrofitted DRI-H2	New DRI-H2	DRI-H2 w/Electrolyzer	Existing EAF	NewEAF	Finishing process	New finishing process	Hisarna	Hisarna w/CC	Midrex	Midrex w/CC	Retrofitted Midrex w/CC	Iron production	New oxygen production	Existing pellet production	New pellet production	Existing sinter production	New sinter production	Ulcologysis	Ulcored	Ulcored w/CC	Ulcowin	
Availability		85%	85%	85%	85%	85%	85%	95%	95%	85%	85%	90%	85%	85%	85%	85%	85%	90%	90%	90%	85%	85%	85%	85%	85%	85%	85%	95%	95%	95%	95%	85%	85%	85%	85%	
Lifetime	y	25	25	25	20	25	20		25	30	25	30	25	25	40	40	25	25	20	20	25	20	25	20	25	20	30		25		25	25	25	20	25	
Investment cost	[\$2018/Mt pa]		426	335	412	632	692		9	414	507	1126		437	587	989		240		195	918	961	510	531	462		353		126		71	775	593	658	731	
Fixed costs	[\$2018/Mt pa]	19	80	58	64	70	77			54	51	113	16	59	59	69	13	25	56	56	103	151	32	37	34	18	18	3	6	3	3	51	58	62	76	
Variable costs	[\$2018/Mt]	59	64	19	23	19	23	2	2	18	23	225	51	41	40	42	59	36	11	11	56	67	40	44	56			5	5	6	6		38	42	36	
Start year			2030	2020	2020	2030	2030		2020	2025	2025	2020		2030	2030	2030		2020		2020	2030	2030	2020	2030	2030		2020		2020		2020	2050	2030	2030	2050	
Inputs	Coke or biochar	[PJ]	13.43	15.9	15.17	10.44	7.7	7.7	0.07	0.02	24.3	24.3									13.41	13.41					3.92	2.15	2.67	0.89						
	Coal or biochar	[PJ]				3.37	6.53	6.53	1.35	1.46	3.02	3.02																								
Gas or biogas	[PJ]				0.51	0.25		0.16	0.14			11.4	13.85	0.77	0.77	1.41							16.17	12.79	12.79								10.91	11.41		
Hydrogen	[PJ]													6.41	6.41																					
Electricity	[PJ]				0.97	0.15	0.88			0.39	1.02	4.6		2.32	1.66	12.35	2.29	3.17	2.36							1.03	0.72					14.2	3.16	3.57	11.24	
Heavy fuel oil	[PJ]				0.64	0																														
Limestone	[Mt]	0.02	0.02	0.02	0.02	0.02	0.02			0.28	0.28			0.07	0.07	0.07	0.07	0.07					0.14	0.14	0.14						0.05	0.17	0.17	0.18		

