

MATERIAL TOPIC: ENERGY & EMISSIONS	2017	2018	2019	2020	2021	CONTEXT	GRI/SASB
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Annual Production - Annual Report figure, financial control: boe	24,827,665	31,853,185	36,630,232	34,839,540	31,173,190		
Annual Production - Annual Report minus non-operated volumes as referenced in CDP submissions: boe	21,273,660	28,712,829	36,604,811	34,723,518	31,154,575	2015-2016: excludes non-op volumes from GBU & IBU; 2017: excludes non-op from IBU; 2018: excludes ~11 months non-op from IBU	
Annual Production - Operated facility throughput including third-party volumes: boe	19,102,132	29,440,819	44,680,354	42,202,207	36,865,352	Use for energy and emissions intensity calculations to ensure numerator/denominator alignment	
ENERGY	2017	2018	2019	2020	2021		
Scope 1: Energy consumption within organization, non-renewable (natural gas, propane liquid, diesel fuel and vehicle fuel): GJ	2,975,227	4,132,866	5,554,821	5,172,331	4,806,111		302-1
Canada	1,929,996	2,809,879	3,592,038	3,223,562	2,907,176		
France	20,583	0	0	3,143	6,280		
Netherlands	77,023	60,390	72,585	73,037	74,841		
Australia	812,226	864,934	722,623	843,308	813,213		
United States	114,077	199,893	204,576	111,857	78,669		
Germany	21,323	120,844	135,350	108,675	112,212		
Central and Eastern Europe - Hungary and Croatia		2,932	9,236	5,119	16,544		
Ireland		73,996	818,413	803,630	797,175		
Energy intensity ratio Scope 1: GJ/boe		0.14	0.12	0.12	0.13		
Scope 2: Energy consumption outside organization, non-renewable (electricity): GJ	833,841	1,403,021	2,077,646	1,232,392	1,049,524	1 MWh = 3.6 GJ	302-2
Canada	232,346	750,356	1,352,186	1,117,288	973,345		
France	581,926	623,641	679,640	60,296	16,762	2020 and 2021 reflect renewable energy breakout	
Netherlands	0	0	0	0	0	Guarantees of Origin green electricity 2017-2021; electricity consumed 2021 = 84,674 MWh	
Australia	727	669	587	383	463		
United States	4,229	10,969	30,803	45,119	45,273		
Germany	14,612	17,369	11,592	6,853	13,470	2020 and 2021 reflect renewable energy breakout	
Central and Eastern Europe - Hungary and Croatia		17	0	229	210		
Ireland		0	2,838	2,224	0	Purchase of electricity from renewable fuels 2021; electricity consumed 2021 = 792.9 MWh	
Energy intensity ratio Scope 2: GJ/boe		0.05	0.05	0.03	0.03		
Energy intensity ratio Scope 1+2: GJ/boe	0.20	0.19	0.17	0.15	0.16	2012-2013: operated battery energy use/operated and financial production 2014+: operated battery energy use/operated battery production	302-3
Renewable energy	2017	2018	2019	2020	2021		
Total amount invested in renewable energy, CAD	\$446,385	\$1,306,667	\$446,778	\$568,182	\$2,887,512		OG2
Canada	\$0	\$391,000	\$220,000	\$230,000	\$2,461,000	DCET solar panels, 16-31 EPOD, solar pump retrofits, RTO remote monitoring devices, existing EFOY	
France	\$12,000	\$312,000	\$190,000	\$270,000	\$388,455	4 geothermal from produced water projects; turbine pilot; hydrogen research	
Netherlands	\$434,385	\$603,667	\$36,778	\$68,182	\$23,680		
Australia	\$0	\$0	\$0	\$0	\$0		
United States	\$0	\$0	\$0	\$0	\$0		
Germany	\$0	\$0	\$0	\$0	\$0		
Central and Eastern Europe - Hungary and Croatia		\$0	\$0	\$0	\$0		
Ireland		\$0	\$0	\$0	\$14,377	hydrogen research	
Renewable energy investment: % of capital expenditure	0.1	0.3	0.1	0.2	0.8		OG2
Renewable energy GHG emissions avoided: tCO2e	22,333	24,566	24,623	18,993	18,635		OG3, OG4, OG5
Renewable energy generated by source (actual energy content transferred): MWh	70,080	77,088	77,095	59,330	58,004		
Canada	0	0	7	11	19		
France	70,080	77,088	77,088	59,319	57,985		
Netherlands	0	0	0	0	0		

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Australia	0	0	0	0	0		
United States	0	0	0	0	0		
Germany	0	0	0	0	0		
Central and Eastern Europe - Hungary and Croatia		0	0	0	0		
Ireland		0	0	0	0		
EMISSIONS	2017	2018	2019	2020	2021		GRI
Percentage of total emissions under emissions-limiting regulations			91%	89%	87%	All BUs except US & Australia operate in regions under some form of emissions limiting regulations: e.g. EU ETS, carbon taxes, carbon pricing	EM-EP-110a.1.4
Scope 1 gross direct GHG emissions: tonne	344,186	742,175	858,823	793,203	648,337		305-1
CO ₂ Scope 1 emissions (excluding CH ₄ and N ₂ O): tonne	278,143	456,817	555,687	531,078	466,472	Hydrofluorocarbons, Perfluorocarbons, Sulfur hexafluoride, VOCs, particulates not tracked	305-1, SS
Canada	133,430	300,947	374,495	354,167	283,298	Increase reflects acquisition of Saskatchewan assets partial year 2018 and full year 2019	
France	63,197	61,169	64,419	56,764	65,665		
Netherlands	23,954	15,198	11,403	8,393	6,803		
Australia	42,409	46,587	42,024	50,209	50,627		
United States	13,693	19,152	15,409	13,253	11,949		
Germany	1,460	9,710	4,069	7,262	6,408		
Central and Eastern Europe - Hungary and Croatia		285	2,260	357	1,146		
Ireland		3,769	41,608	40,673	40,576	Increase reflects Corrib change to operating control ~1 month in 2018 and full year 2019	
Methane: tCO₂e	65,782	284,762	302,027	261,051	180,987		SS
Canada	30,847	241,279	258,500	216,739	144,005		
France	9,236	10,197	8,499	8,752	8,009		
Netherlands	8,315	5,318	4,018	5,215	3,265		
Australia	13,611	16,961	18,601	21,373	18,655		
United States	370	1,468	3,981	4,436	4,739		
Germany	3,403	9,101	7,492	3,284	1,763		
Central and Eastern Europe - Hungary and Croatia		384	244	656	1		
Ireland		54	692	597	550	Increase reflects Corrib change to operating control ~1 month in 2018 and full year 2019	
Methane as a % of total Scope 1 direct GHG emissions		38	35	33	28		EM-EP-110a.1.3
Nitrous Oxide (N₂O): tCO₂e	260	596	1,109	1,073	878		SS
Canada	99	378	465	505	290		
France	102	107	547	428	462		
Netherlands	0	22	7	28	12		
Australia	57	82	68	90	104		
United States	1	5	16	18	3		
Germany	1	2	1	4	4		
Central and Eastern Europe - Hungary and Croatia		0	5	0	3		
Ireland		0	0	0	0		
Scope 1 GHG emissions intensity, oil and gas production: tCO ₂ e/boe	0.018	0.025	0.019	0.019	0.018	2012-2013: operated battery Scope 1 emissions/operated and financial production 2014+: operated battery Scope 1 emissions/operated battery production	305-4
Total Scope 2 GHG emissions: tCO₂e	60,904	173,847	288,345	247,144	214,778		305-2
Canada	55,088	160,369	269,349	222,010	194,319	Increase reflects acquisition of Saskatchewan assets partial year 2018 and full year 2019	
France	8,959	11,444	6,808	8,628	2,661		
Netherlands	(4,328)	0	0	0	0		
Australia	141	130	114	73	88		
United States	308	787	10,231	14,425	13,856		
Germany	735	1,090	1,575	1,735	3,845		

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Central and Eastern Europe - Hungary and Croatia		1	0	11	10		
Ireland		25	268	262	0		
Scope 2 GHG emissions intensity: tCO2e per boe	0.003	0.006	0.006	0.006	0.006	2012-2013: operated battery Scope 2 emissions/operated and financial production 2014+: operated battery Scope 2 emissions/operated battery production	305-5
Scope 1+2 GHG emissions intensity: tCO2e per boe	0.021	0.031	0.026	0.025	0.023	2012-2013: operated battery Scope 1+2 emissions/operated and financial production 2014+: operated battery Scope 1+2 emissions/operated battery production	
Scope 3 Gross other indirect GHG emissions: tCO2e	8,393,391	12,408,270	14,188,122	13,226,527	11,631,963		305-3
Biogenic CO ₂ Scope 3 emissions	0	0	0	0	0		305-3
Estimated Scope 3 associated with product end use: tCO2e	7,674,486	11,311,601	12,937,168	12,176,323	10,624,199		SS
Emissions of ozone-depleting substances	0	0	0	0	0		305-6
Nox: tonne	26	29	2,136	1,190	977		305-7
Canada	Not Tracked	Not Tracked	1,912	1,011	818		
France	18	22	51	45	50		
Netherlands	7	7	2	4	2		
Australia	Not Tracked	Not Tracked	171	131	104		
United States	Not Tracked	Not Tracked	Not Tracked	Not Tracked	Not Tracked		
Germany	Not Tracked	Not Tracked	Not Tracked	Not Tracked	2		
Central and Eastern Europe - Hungary and Croatia		Not Tracked	Not Tracked	Not Tracked	Not Tracked		
Ireland		Not Tracked	Not Tracked	Not Tracked	Not Tracked		
SO ₂ : tonne	675	736	2,488	2681	2219		305-7
Canada	166	198	1800	1,935	1,360	2019 and 2020 updated in 2022 (revised calculation)	
France	509	538	682	737	851		
Netherlands	0	0	0	0	0		
Australia	0	0	0	0.7	0.9		
United States	0	0	5	8	7		
Germany	0	0	0	0	0		
Central and Eastern Europe - Hungary and Croatia		0	0	0	0		
Ireland		0	0	0	0		
Volatile Organic Compounds (VOCs) (non-methane): tonne						Volatile organic compounds that participate in atmospheric photochemical reactions; excludes carbon monoxide, carbon dioxide and methane	305-7
Canada			68	Not Tracked	138		
France			Not Tracked	128	181		
Netherlands			Not Tracked	13	19		
Australia			Not Tracked	Not Tracked	Not Tracked		
United States			Not Tracked	Not Tracked	278		
Germany			Not Tracked	4	5		
Central and Eastern Europe - Hungary and Croatia			Not Tracked	Not Tracked	Not Tracked		
Ireland			Not Tracked	Not Tracked	Not Tracked	Ireland is below the regulatory reporting threshold for NMVOC.	
Particulate Matter (PM ₁₀): tonne						Airborne finely divided solid or liquid material with an aerodynamic diameter ≤ 10 micrometers	305-7
Canada			125	219	9		
France			Not Tracked	3	2		
Netherlands			Not Tracked	Not Tracked	Not Tracked		

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Australia			Not Tracked	8	12		
United States			Not Tracked	Not Tracked	Not Tracked		
Germany			Not Tracked	Not Tracked	Not Tracked		
Central and Eastern Europe - Hungary and Croatia			Not Tracked	Not Tracked	Not Tracked		
Ireland			Not Tracked	Not Tracked	Not Tracked		
FLARING AND VENTING	2017	2018	2019	2020	2021		
Volume of flared hydrocarbon: e3m3/yr	35,920	69,906	78,962	83,116	66,563	Note that all flared volumes are reported, not just continuous flares	OG6
Canada	12,023	45,455	55,526	62,108	42,144	Increase reflects acquisition of Saskatchewan assets partial year 2018 and full year 2019	OG6
France	21,492	21,261	20,123	17,797	20,456		OG6
Netherlands	472	201	235	236	287		OG6
Australia	309	788	1,351	1,413	1,688		OG6
United States	1,561	1,858	780	1,379	1,713		OG6
Germany	64	289	23	31	58		OG6
Central and Eastern Europe - Hungary and Croatia		32	763	0	0		OG6
Ireland		22	161	152	217		OG6
Volume of continuously vented hydrocarbon: e3m3/yr	3,256	12,318	14,222	9,758	10,441		OG6
Canada	648	9,447	11,424	6,968	8,442	Increase reflects acquisition of Saskatchewan assets partial year 2018 and full year 2019	OG6
France	773	847	729	765	696		OG6
Netherlands	194	260	62	189	66		OG6
Australia	919	1,097	1,390	1,446	1,158		OG6
United States	9	25	48	45	24		
Germany	713	617	526	275	21		OG6
Central and Eastern Europe - Hungary and Croatia		21	11	37	0		OG6
Ireland		3	33	33	35		OG6
Flaring/Venting Intensity based on production: e3m3/boe	0.0021	0.0028	0.0021	0.0022	0.0021	2012-2013: operated battery flaring and venting/operated and financial production 2014+: operated battery flaring and venting emissions/operated battery production	OG6
Hydraulic Fracturing						Hydraulic fracturing used in Canadian and US operated production	
Percentage of global production from hydraulic fracturing		40	42	37	49	% is approximate based on 100% fracked in US, estimated 51% in Canada, and 0% in Europe and Australia.	
Percentage of public disclosure of hydraulic fracturing fluids						All fracturing fluids are disclosed through FracFocus	
Canada			100	100	100		EN-EP-140a.3
United States			100	100	100	No proprietary blends used	
Enhanced Oil Recovery from Carbon Capture and Storage						Based on non-operated production	
Volume of oil and NGLs produced from CCS ops: bbls/d, equity basis		2,321	2,045	2,098	2,065	Weyburn Carbon Capture and Storage project: non-operated	
CCS ops percentage of total (global) oil and NGLs produced: equity basis		5	4	4	4	Global oil & NGLs 2018 Equity/Financial Control: 45,548 bbl/d Global oil & NGLs 2019 Equity/Financial Control: 55,886 bbl/d Global oil & NGLs 2020 Equity/Financial Control: 52,358 bbl/d	