APPENDIX A: Code for QCA process

The programming conducted to perform the QCA calibration, the presentation of the QCA results, the alternative analysis, and finally, the robustness tests are available at:

https://deepnote.com/workspace/Masteroppgave-NTNU-lisens-4d7d8a1e-6917-462c-a2ba-3d9c1708dfb4/project/QCA-Analysis-4acbb9e4-a680-40a6-9b01-1d189634761b/%2FAlt_0_main_QCA_2018-2020.ipynb

Appendix B - Robustness test, extended table

Explanation of the robustness test parameters

	Robustness test parameter	Parameter interpretation
Set oriented	RF_{cons}:	Is RC as consistent as the IS?
	RF_{COV}:	Does RC cover the same as IS?
	RF_{SC_minTS}	Does the solution space of IS overlap with minTS?
	RF_{SC_maxTS}:	Does the solution space of IS overlap with maxTS?
Case oriented	RCR_{typ}:	How robust are typical cases?
	RCR_{dev}:	How robust are deviant cases?
	RCC_RANK	Case oriented rank. Are there shaky and possible cases? If neither: rank=1. No shaky cases: rank=2. No possible cases: rank=3. If both: rank=4.

Complete robustness report

Sensitivity Sets					
Attributes tested		Defined by	Lower limit	Thresholds used in model	Higher limit
	Size	Employees	55	100	108
	Country diversification	Number of countries	2	2	3
	Technological diversification	Number of activities	2	2	2
QCA Parameters	Frequency cut	Number of cases	2	2	2
	Consistency	Min % of cases in config	0.667	0.8	0.8
	Outcome measure	% ROA (after tax)	-0.0047	0	0.0043
Robustness test parameters					
Fit Oriented		RF_{cons}: 1	RF_{COV}: 0.859	RF_{SC_minTS}: 0.462	RF_{SC_maxTS}: 0.412
Case Oriented		RCR_{typ}: 0.375	RCR_{dev}: 0	RCC_RANK: 4	
Worst performing model					
The worst performing hard test model showed a rank of 4 (worst possible). This was significantly improved by setting n.cut to 1, yielding rank 2 (second best					

Appendix C – Interview Guide

1.1 Introduction (5min)

- *Who we are*
- *How the interview will be used*: In a master study. The purpose is to gain insight into the topic of interest, not the interviewee personally. Data will be anonymized.

- *Purpose:* Insight into the operation of VRE developers. The problem thesis we seek to answer is: "How does different configurations of factors impact VRE developers' profits?" and RQs
    - What variables may influence the operations of VRE developers?
    - What configuration of factors are significant for the operations of VRE developers?
        a. Underpin that this interview is to be used as scientific research.
        b. *Clarify the term VRE developer, as the understanding of this term varies; In this context, renewable energy developers are considered the asset owners and the asset developers of renewable energy such as solar PV or onshore wind.*
        c. Okay that we conduct and record an interview?

1.2 Scoping of interview (2 min)

1. Can you briefly tell us about yourself and what you work with.
    a. Considering where we may place focus in this interview, into what parts of the renewable energy industry do you have insights? (i.e., developer, EPC, investor, specific markets (countries or technologies i.e., wind/solar etc.)

1.3 Specific questions (35 min)

1.3.1 For the interviews is conducted before / during the analysis

Operations

2. What characterizes the industry of VRE developers?
3. What characterizes the operations of VRE developers?

4. What factors (native to the solar/wind parks, the corporation and external to the corporation) may impact the profit of VRE developers?

    a. Are there any configurations of factors or interdependency of factors which affect the profits of VRE developers?
        i. Why do you think the configuration of factors may lead to superior firm performance?

5. What do you consider challenging by exploring factors affecting the profits of VRE developers?

6. What are the major concerns of VRE developers?

7. In what way do industry characteristics and profits of VRE developers affect the business model formation of new and existing VRE developers?

1.3.2 For the interviews conducted after the analysis

1. What characterizes the industry of VRE developers?
2. What characterizes the operations of VRE developers?
3. What factors (native to the VRE developer, the corporation and external to the corporation) may impact the profit of VRE developers?

Underline: It is Important for us to understand how the model aligns with reality. We are interested in hearing contradicting thoughts, as well as aligning thoughts.

- Present QCA methodology briefly, i.e., cluster of case companies with different outcomes. We have measured for the outcome ROA.
- Present the attributes measured, i.e., size, maturity of market, national diversification, technological diversification,

For each of the following configurations / minimized configurations:

How do you think this configuration would fare?

- Await response, repeat configuration if needed.

The minimized configuration had _____ outcome, what do you think about this?

N*	DIVERSIFIED_TECHNOLOGY	EPC_INTERNALLY	SEVERAL_COUNTRIES	LARGE_FIRM	LOW_MATURITY_MARKET
M1	1	1	1	1	1
M5_n	0/1	1	0	1	0
M2	1	1	0	0	0
M34_n	0	1	1/0	0	0/1
M6_n	1	0	0	0	0/1

1.4 Wrap up (max 10 min)

4. *Open field*: Any other comments or thoughts related to the topic of research you think which would prove insightful/helpful? (Repeat problem statement)
5. *Feedback*: How do you think the interview went? We are eager to improve (Stiff? Professionalism?)

- Thank you for the interview and the insights you have provided.

Appendix D – Additional data gathered

The following appendix is an overview of where we had to supplement the automatically gathered data with additional sources.

Company	Value	Org. Value [Thousands]	Year	Currency	USD value	Source	Date accessed
EAM Solar ASA	net_after_tax2020	-3755	2020	EUR	-4307204.042	https://eamsolar.no/media/9482/2020-EAM-Annual-Report-Screen.pdf	22.04.22
EAM Solar ASA	Total Assets2020	16700	2020	EUR	19155874.17	https://eamsolar.no/media/9482/2020-EAM-Annual-Report-Screen.pdf	22.04.22
WAA Solar Ltd	employees_2017		2017		7	http://www.waasolar.org/annualreport.php	22.04.22
WAA Solar Ltd	net_after_tax2017	1,536	2017	INR	23660.8	http://waasolar.org/doc/annualreport/Waa_Solar_11th_Annual_Report_2020.pdf	22.04.22
WAA Solar Ltd	net_after_tax2018	27,548	2018	INR	403187.9367	http://waasolar.org/doc/annualreport/Waa_Solar_11th_Annual_Report_2020.pdf	22.04.22
WAA Solar Ltd	net_after_tax2019	52900	2019	INR	752017.5833	http://waasolar.org/doc/annualreport/Waa_Solar_11th_Annual_Report_2020.pdf	22.04.22
WAA Solar Ltd	net_after_tax2020	102900	2020	INR	1389235.75	http://waasolar.org/doc/annualreport/Waa_Solar_11th_Annual_Report_2020.pdf	22.04.22
Ind Renewable Energy	employees_2017		2017		36	https://www.zoominfo.com/c/ind-renewable-energy-limited/372150080	22.04.22
Ind Renewable Energy	net_after_tax2017	610013	2017	INR	9396741.921		22.04.22
Ind Renewable Energy	net_after_tax2018	733783	2018	INR	10739525.69		22.04.22
Ind Renewable Energy	net_after_tax2019	2,801	2019	INR	39818.54917		22.04.22
Ind Renewable Energy	net_after_tax2020	-2,858	2020	INR	-38585.38167		22.04.22
Ind Renewable Energy	Total Assets2017	35808118	2017	INR	551594217.7		22.04.22
Ind Renewable Energy	Total Assets2018	36708056	2018	INR	537252989.6		22.04.22
Ind Renewable Energy	Total Assets2019	40,616	2019	INR	577390.2867		22.04.22
Ind Renewable Energy	Total Assets2020	34,843	2020	INR	470409.5358	http://www.vakharia.in/	22.04.22
Adani Green Energy Lt	employees_2017		2017		685	https://www.linkedin.com/search/results/people/?currentCompany=%5B%2279921983%22%5D&origin=COMPANY_PAGE_CANNED_SEARCH	22.04.22
Adani Green Energy Lt	Total Assets2018	12,063	2018	INR	176552.0575	https://www.adanigreenenergy.com/-/media/Project/GreenEnergy/Investor-Downloads/Annual-Reports/AR-2017-18.pdf	22.04.22
China Three Gorges Re	Countries diversification (2017 - Operates and strategy to operate)						22.04.22
China Three Gorges Re	net_after_tax2017		2017				22.04.22
China Three Gorges Re	net_after_tax2018	2,708,570	2018	CNY		Data not found. Case excluded.	22.04.22
China Three Gorges Re	net_after_tax2019	2,839,736	2019	CNY			22.04.22
China Three Gorges Re	net_after_tax2020	3,610,991	2020	CNY			22.04.22
Meshek Energy-Renev	employees_2017		2017		33	https://www.linkedin.com/search/results/people/?keywords=Meshek%20Energy&origin=SWITCH_SEARCH_VERTICAL	22.04.22
Meshek Energy-Renev	Total Assets2017		2017			Assumed based on 2018 value	22.04.22
OY Nofar Energy Ltd	Total Assets2017		2017			Assumed based on 2018 value	22.04.22
Galata Wind Enerji An	net_after_tax2017	65,280	2017	TRY	17948736	http://www.jcrer.com.tr/Upload/Files/Reports/20190527110602_jcrer_galata-wind_summary-page_2018.pdf	22.04.22
Galata Wind Enerji An	net_after_tax2018	33,445	2018	TRY	7101488.333	https://finance.yahoo.com/quote/GWIND.IS/financials?p=GWIND.IS	22.04.22
Galata Wind Enerji An	net_after_tax2019	64,270	2019	TRY	11332943.33	https://finance.yahoo.com/quote/GWIND.IS/financials?p=GWIND.IS	22.04.22
Galata Wind Enerji An	net_after_tax2020	156,357	2020	TRY	22210511.85	https://finance.yahoo.com/quote/GWIND.IS/financials?p=GWIND.IS	22.04.22
Galata Wind Enerji An	Total Assets2017	189,808	2017	USD	189808000	http://www.jcrer.com.tr/Upload/Files/Reports/20190527110602_jcrer_galata-wind_summary-page_2018.pdf	22.04.22
Renew Energy Global	employees_2017		2017				22.04.22
Renew Energy Global	net_after_tax2017		2017				22.04.22
Renew Energy Global	net_after_tax2018		2018				22.04.22
Renew Energy Global	net_after_tax2019		2019				22.04.22
Renew Energy Global	Total Assets2017		2017				22.04.22
Renew Energy Global	Total Assets2018		2018			Data not found. Case excluded.	22.04.22
Renew Energy Global	Total Assets2019		2019				22.04.22
Kartal Yenilenebilir En	employees_2017		2017	TRY			22.04.22
Kartal Yenilenebilir En	net_after_tax2017		2017	TRY			22.04.22
Kartal Yenilenebilir En	Total Assets2017		2017	TRY			22.04.22
Advanced SolTech Swe	employees_2017		2017		5	https://www.linkedin.com/search/results/people/?currentCompany=%5B%2265837366%22%5D&origin=COMPANY_PAGE_CANNED_SEARCH	19.04.22
Advanced SolTech Swe	net_after_tax2017	-2269.126	2017	SEK	-267794.6868	https://advancedsoltech.se/wp-content/uploads/2021/05/arsredovisning-2017-ASAB.pdf	19.04.23
Advanced SolTech Swe	net_after_tax2018	3,016	2018	SEK	345332	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.24
Advanced SolTech Swe	net_after_tax2019	-15,269	2019	SEK	-1611642.95	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.25
Advanced SolTech Swe	net_after_tax2020	-98,477	2020	SEK	-10794720.48	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.26
Advanced SolTech Swe	Total Assets2017	75633	2017	SEK	8925954.55	https://advancedsoltech.com/investors/financial-reports/	19.04.27
Advanced SolTech Swe	Total Assets2018	674,651	2018	SEK	77247539.5	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.28
Advanced SolTech Swe	Total Assets2019	1,200,798	2019	SEK	126744228.9	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.29
Advanced SolTech Swe	Total Assets2020	1,257,049	2020	SEK	137793521.2	https://finance.yahoo.com/quote/ASAB.ST/balance-sheet?p=ASAB.ST	19.04.30
Oceanic Wind Energy	Countries diversification (2017 - Operates and strategy to operate)				Canada		19.04.31
Oceanic Wind Energy	employees_2017				7	https://www.linkedin.com/search/results/people/?keywords=oceanic%20wind%20energy%20inc.&origin=CLUSTER_EXPANSION	19.04.32
Oceanic Wind Energy	net_after_tax2017	-966.8	2017	CAD	-746393.77	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.33
Oceanic Wind Energy	net_after_tax2018	-987.9	2018	CAD	-760147.8875	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.34
Oceanic Wind Energy	net_after_tax2019	-1,261.70	2019	CAD	-953435.1475	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.35
Oceanic Wind Energy	net_after_tax2020	-832.7	2020	CAD	-621707.6983	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.36
Oceanic Wind Energy	Total Assets2017	1,074.40	2017	CAD	829463.66	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.37
Oceanic Wind Energy	Total Assets2018	581.7	2018	CAD	447593.9125	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.38
Oceanic Wind Energy	Total Assets2019	609.4	2019	CAD	460508.345	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.39
Oceanic Wind Energy	Total Assets2020	96.1	2020	CAD	71749.86167	https://www.wsj.com/market-data/quotes/CA/XTSX/NKWH/financials/annual/income-statement	19.04.40
Fintel Energija ad Beo	diversification (2017 - Operates and				Serbia, Italy	https://www.fintelenergija.rs/kupovina_akcija/fintel_energija_prospectus.pdf	19.04.41
Fintel Energija ad Beo	employees_2017				17	https://www.fintelenergija.rs/kupovina_akcija/fintel_energija_prospectus.pdf	19.04.42
Fintel Energija ad Beo	Engages in PV				1	https://www.fintelenergija.rs/kupovina_akcija/fintel_energija_prospectus.pdf	19.04.43
Fintel Energija ad Beo	Engages in Other				1	https://www.fintelenergija.rs/kupovina_akcija/fintel_energija_prospectus.pdf	19.04.44

	EUR	CAD	SEK	TRY	CNY	INR
2017	1.1390	0.7720	0.1180	0.2750	0.1484	0.0154
2018	1.1781	0.7695	0.1145	0.2123	0.1510	0.0146
2019	1.1176	0.7557	0.1056	0.1763	0.1449	0.0142
2020	1.1471	0.7466	0.1096	0.1421	0.1452	0.0135

Appendix E – Overview of case sample and data

The following appendix is an overview of all cases and the attached data needed to perform the QCA analysis.

Company Common Name	Business Description	Engaged in PV	Engaged in Wind	Engaged in Battery	Engaged in Other (OK)	Engages in land-seeking / Screening	Engages in EPC / Operatons	Owns energy assets	employees_2017	technology_diversification_2017	value_chain_integration	ROA_MEAN	ROA_MEAN_2018_2019	ROA_MEAN_2020_2021	avg_growth_18_21	number_of_countries	net_after_tax_mean	Total Assets2017	engages_in_low_income_country	age	only_engages_in_high_income	engages_in_multiple_contingents	engages_in_high_country	technology_diversification_2017_only_pv_wind	engages_in_high_both	non_mature	avg_growth_total_assets_18_21
Solegreen Ltd	Solegreen Ltd is an Israel-based renewable energy company. The Company operates as independent power producer (IPP) and develops, owns, operates and finances renewable energy projects across Israel, Europe and the US, with a focus on solar and storage projects. Generation Capital, an Israeli infrastructure fund, is the controlling shareholder of Solegreen Ltd.	1	0	1	1	1	0	1	0	3	2	-0.018688751	-0.015797758	-0.024470736	6.80651495	1	-1735754.883	28768726.46	0	17	1	0	1	1	1	1	1.263196295
EAM Solar ASA	EAM Solar ASA is a Norway-based investment company. The Company is primarily engaged in the acquisition and operation of solar power plants. It acquires solar power plants that are already in operation. It is active in Italy, Germany and France. The Company owns two plants located 80 kilometers northeast of Venice, Italy. The Codroipo power plant covers 16.85 hectares of land and consists of 368 dual-axis tracker structures and 4,416 modules. The Varmo power plant covers eight hectares of land and consists of 184 dual-axis tracker structures and 2,208 modules. The plants have a combined capacity of 4.65 megawatts peak (MWp) and an annual electricity production of approximately seven gigawatt hours (GWh) . The Company is managed by EAM Solar Park Management, a subsidiary of Energeia Asset Management. In July 2014, the Company executed the transfer of the shares of seven out of eight companies that comprise the P31 portfolio, bringing 21 power plants under the Company's control.	1	0	0	0	0	0	1	0	1	1	-0.098876063	-0.04271818	-0.211191828	7.208742483	1	-2373739.46	36200429.46	0	6	1	0	1	1	1	0	-0.186109643
Greencoat Renewab	Greencoat Renewables PLC is an Ireland-based renewable infrastructure investment company, that invests in renewable energy assets. The Company is focused on the acquisition and management of operating wind farms in Ireland. It invests is also focused on euro-denominated renewable energy infrastructure assets in countries, such as Northern European countries, such as Belgium, Finland, France, Germany, the Netherlands, Denmark, Norway and Sweden. Its portfolio includes a total installed capacity of approximately 528 megawatts (MW). Its portfolio of assets includes Ballybane, Beam Hill, Cloosh Valley, Garranereagh, Glanaruddery, Gortahile, Killala, Killhills, Knockacummer, Knocknalour, Letteragh, Lisdowney, Monaincha, Raheenleagh and Sliabh Bawn. Greencoat Capital LLP is the CompanyÃ¢â‚¬â„¢s investment manager.	0	1	0	1	0	0	1	0	2	1	0.038773144	0.050662847	0.014993738	-0.394396936	6	28875532.26	401347152.7	0	0	1	0	1	1	1	0	0.501954412
Figene Capital SA	Figene Capital SA, formerly known as GPPI SA, is a Poland-based company engaged in the renewable energy sector. Through its portfolio companies, the Company focuses on developing projects related to wind farms and photovoltaic (PV) technology. The Company aims at building wind farms portfolio of 500 megawatt (MW) capacity, as well as developing energy storage centers.	1	1	1	1	1	0	1	1	4	2	-0.010716526	-0.012897797	-0.006353985	0.289800531	1	-448600.7967	2238444.47	0	21	1	0	1	2	1	1	7.945842329
Aega ASA	Aega ASA, a solar utility company, acquires, invests in, and operates solar power plants. The company was formerly known as Nordic Financials ASA and changed its name to Aega ASA in January 2016. Aega ASA was founded in 2011 and is headquartered in Oslo, Norway.	1	0	0	0	0	0	1	2	1	1	-0.02769928	-0.033641174	-0.015815492	2.16491641	1	-511829.39	24361443.6	0	6	1	0	1	1	1	0	-0.130941268
Fintel Energija ad Be	Fintel Energija ad Beograd, formerly known as Fintel Energija doo Beograd, is an alternative energy sources establishment. It is mainly engaged in the development, construction and operation of a wind portfolio composed by 10 wind farms in the northern and north-eastern area of Serbia, totaling over 352 Megawatts MW) of installed capacity. Kosava - I phase (69 MW) is the Company1s flag project, and it is under construction.	1	1	1	0	1	0	1	4	3	2	0.007426175	0.010332654	0.001613216	-0.005288366	2	780997.3433	34457586.84	0	10	0	0	1	2	1	1	0.874313445
Edisun Power Europ	Edisun Power Europe AG is a Switzerland-based holding company engaged in the production and marketing of solar power energy. The Company, along with its subsidiaries, develops, finances and operates photovoltaic systems (PV) in Europe and market solar energy to the local electricity companies. The Company's Group is present in Switzerland, Germany, Spain and France. The Company owns a number of solar installations. Edisun Power Europe AG operates a number of wholly-owned subsidiaries in Switzerland, Germany, Spain and France, including Edisun Power Switzerland Ltd, Edisun Power PLC, Edisun Power Iberia SA, Edisun Power France SAS and PV Leipzig Alter Flughafen UG & Co. KG.	1	0	0	0	1	0	1	4	1	2	0.023886381	0.027261577	0.017135989	0.06809205	5	3413072.36	121726367.6	0	21	1	0	1	1	1	0	0.311250371

Advanced SolTech Sv	Advanced SolTech Sweden AB (publ) is a Sweden-based solar energy company. The Company , through its wholly owned subsidiaries in China, offers Chinese customers electricity from solar energy plants placed on the roofs of customers' properties. Its offer means that the Company invests in, owns and operates the solar energy plant, for the customer who is buying the electricity that the plant produces at a pre-agreed price during a contract period of 20 years. The electricity that the customer does not buy is sold to the electricity grid.	1	0	0	0	0	1	1	5	1	2	-0.029799399	-0.003893125	-0.081611947	0.015511266	1	-4020343.81	8925954.55	0	1	0	0	0	1	0	0	2.794064343
NZ Windfarms Ltd	NZ Windfarms Limited is engaged in the business of operating a wind power generation asset for the purpose of generating and selling electricity. The Company's Te Rere Hau wind farm is situated in North Range road in the Taraua Ranges approximately 10 kilometers from Palmerston North. The site operates over 97 Windflow Technology WF500 turbines capable of producing approximately 48.5 megawatts of power per annum. Its approximately 500 kilowatts (kW) turbines are over 30 meters high and have a rotor diameter of approximately 30 meters. Each one produces enough electricity to power approximately 200 households a year. The Company operates within New Zealand. Its subsidiaries include NZWL-TRH Limited and TRH Services Limited. NZWL-TRH Limited holds the Company's interest in the Te Rere Hau wind farm. TRH Services Limited is responsible for the operations and maintenance of the turbines at the Te Rere Hau wind farm.	0	1	0	0	0	0	1	5	1	1	-0.063812368	-0.111058067	0.030679031	0.287751987	1	-3005871.54	51977446.7	0	15	1	0	1	1	1	0	-0.119902454
Oceanic Wind Energ	Oceanic Wind Energy Inc. is a Canada-based renewable energy company. The Company's primary business is the development of renewable energy projects. The Company is developing an offshore wind project on the north coast of British Columbia in Hecate Strait. Its wholly owned subsidiaries include NaiKun Wind Operating Inc. (Opco) and NaiKun Wind Generating Inc. (Genco).	0	1	0	0	1	1	0	7	1	2	-1.875473924	-1.645154315	-2.336113143	-0.046826418	1	-778430.2467	829463.66	0	60	1	0	1	1	1	0	-0.425240909
WAA Solar Ltd	Waa Solar Limited is an India-based company, which is engaged in solar power generation. The Company sets up solar power project and invests in special purpose vehicle (SPV) associate and subsidiaries companies, which are engaged in solar power generation activities. The Company is focused on engineering, procurement and construction (EPC) in solar project. The CompanyÃ¢â‚¬â„¢s projects include Solar Photovoltaic (PV) Grid Interactive Power Plant of approximately 10 megawatts (MW) capacity at village Nayka, Taluka-Sami, District Patan; Solar Power plant of approximately 100 kilowatt-peak (KWP) at Raja Bhoj Airport, Bhopal; Solar PV Grid Interactive Power Plant of approximately 10.42 MW on a land of 20 Acres, Solar PV Grid Interactive Power Plant of approximately 4.00 MW on a land of 20 Acres, and Solar PV Grid Interactive Power Plant of approximately 4.00 to 6.00 MW capacity at Vadodara. Its subsidiaries include Aspire Infracon Pvt. Ltd. and Madhav Solar(Vadodara Rooftop) Pvt. Ltd.	1	0	0	0	1	0	1	7	1	2	0.015662207	0.011093021	0.024800581	0.856261767	1	848147.09	38469647.48	1	8	0	0	0	1	1	0	0.1048136
Westbridge Energy C	Westbridge Energy Corporation is a Canada-based renewable energy company that is focused on originating and developing utility-scale solar photovoltaics (PV) projects that use energy storage and enabling technologies. The Company is advancing the Georgetown Solar project in Alberta and has diversified by entering the United States market with the Accalia Point Solar project in Texas. It is also exploring battery storage opportunities in the United Kingdom. The Georgetown Project has an installed capacity of 278 Megawatts-peak (MWp), which comprises of approximately 710 acres located in Vulcan County, Alberta. Accalia Point Solar Project has an installed capacity of 221 Megawatts (MW), which comprises of approximately 1,210 acres located in Cameron County, Texas, United States of America. The Accalia Point Solar Project has secured site control in the form of long-term solar leases covering approximately 1,120 acres of primarily cultivated farmland.	1	0	1	0	1	0	0	9	2	1	-1.870673706	-3.692146604	1.772272091	-6.434744782	1	45766.80667	208634.01	0	61	1	0	1	1	1	0	16.12740353

R Energy 1 SA	R Energy 1 SA is a Greece-based company, which invests in the renewable energy sector. The Company generates electricity through the operation of photovoltaic (PV) parks, that is then sold to Public Power Corporation SA (PPC) in Greece. Its portfolio includes a number of PV parks in Zakynthos and Thiva, Greece. Its Zakynthos portfolio is comprised of over 20 PV parks with a total nominal power capacity of over two megawatts (MW). Zakynthos PV parks are located in the island of Zakynthos in the west of Greece at approximately 300 kilometers (km) from the city of Athens. The Company's Thiva portfolio is comprised of over two PV parks of a nominal power capacity ranging between 100 kilowatt (KW) to 500 KW.	1	0	0	0	0	0	1	12	1	1	0.022202268	0.022124063	0.02235868	1.376531764	1	392036.0967	14409332.09	0	16	1	0	1	1	1	0	0.19289773
7C Solarparken AG	7C Solarparken AG is a Germany-based company engaged in the design, manufacture and operation of solar power plants. It also serves as an independent supplier of solar power systems, cooperating with a network of manufacturers, other suppliers and service providers. The Company divides its business operations into three segments: Plant operation, Projects & Services, and Trade. The Plant operation segment operates a portfolio of a number of solar power plants in Germany. The activities of Projects & Services segment comprise the maintenance and optimization of external photovoltaic systems and own solar power plants, as well as the development of solar projects for private and institutional investors. The Trade segment is engaged in the sales of solar modules and complementary accessories.	1	0	0	0	0	0	1	14	1	2	0.017522072	0.019946466	0.012673285	-0.005988304	1	7452260.143	353208334.8	0	12	1	0	1	1	1	0	0.167333982
OY Nofar Energy Ltd	OY Nofar Energy Ltd is an Israel-based company. The Company is engaged in the initiation, construction and operation of systems for the production of electricity from solar energy.	1	0	0	0	1	1	1	23	1	3	-0.106731333	0.035711012	-0.391616024	-26.72488413	1	-23830196.71	20465801.1	0	6	1	0	1	1	1	1	2.491481166
Enlight Renewable E	Enlight Renewable Energy Ltd is an Israel-based investment company active in the renewable energy sector. It specializes in initiating, developing, constructing and operating clean electricity production projects from renewable energy sources, such as solar and wind. Among the CompanyÃ¢â‚¬â„¢s projects are Kibbutz Alonim Site; Moshav Yonatan Site; Moshav Ramat Magshimim Site; Emek Sara Site, Beer Sheva Industrial Area; Haplada Site, Arad Industrial Area; Hanapach Site, Carmiel; Hod Hashron Municipality; Kibbutz Cramim, Solar Farm; Odakim Municipality; Kiryat Yam Municipality; Kiryat Bialik Municipality and Israeli Ministry of Defense.	1	1	0	1	1	1	1	25	3	3	-0.004758179	0.006056582	-0.026387699	-6.800098751	4	-10501921.5	571832533	0	9	0	1	1	2	1	1	0.473005237
Arise AB	Arise AB is a Sweden-based company engaged in the renewable energy industry. Arise manages the entire value chain - from exploration and permit management to financing, construction, sales and long-term management of wind power electricity production. The Company's business model consists of three areas: Project development, construction and sales of projects for renewable electricity production; Management of renewable electricity production; Production and sales of electricity and electricity certificates. The business areas are reported in two business segments. The purpose of the Development and management segment is to develop, construct, sell and manage wind farms. Own wind power operations are the GroupÃ¢â‚¬â„¢s wholly owned operational wind farms that are owned in separate subsidiaries.	0	1	0	0	1	1	1	26	1	3	-0.057250121	-0.053543585	-0.064663192	-5.903692196	2	-11410063.38	258970701.2	0	31	1	0	1	1	1	0	-0.125619973
Solaria EnergÃƒÂ£Ã¢â‚¬Ã¢â€žÃ¢Ã‚Ã‚a	Solaria EnergÃƒÂ£Ã¢â‚¬Ã¢â€žÃ¢Ã‚Ã‚a y Medio Ambiente, S.A. engages in the solar photovoltaic power generation business. The company owns, manages, and operates photovoltaic plants in Spain, Italy, Uruguay, and Greece. The company was incorporated in 2002 and is headquartered in Madrid, Spain.	1	0	0	0	1	0	1	30	1	2	0.052059696	0.055648931	0.044881226	0.179774693	3	28878828.61	336952531.8	0	15	1	1	1	1	1	1	0.376218854
Meshek Energy-Ren	Meshek Energy Renewable Energies Ltd is an Israel-based alternative energy sources establishment. TheCcompany is engaged in the initiation, construction and operation of facilities for the production of solar electricity in Israel. The company is engaged in the initiation, construction and operation of facilities for the production of solar electricity in Israel.	1	0	0	0	1	1	1	33	1	3	-0.060186919	-0.075597451	-0.029365855	0.202471258	1	-2849492.113	30868424.58	0	1	1	0	1	1	1	1	1.011207194

Energix - Renewable	Energix - Renewable Energies Ltd initiates, develops, and constructs renewable energy projects in Israel and Poland. It owns and operates 30 small and 2 medium systems; Banie wind farm with a total capacity of 106 MW; and Neot Hovav with a capacity of 37.5 MW. The company was incorporated in 2006 and is based in Ramat Gan, Israel. Energix - Renewable Energies Ltd is a subsidiary of Alony Hetz Properties and Investments Ltd.	1	1	0	0	1	1	1	33	2	3	0.024030108	0.024286211	0.023517902	0.667948397	3	16315908.08	439223624.8	0	8	1	1	1	2	1	1	0.41943184
Naturel Yenilenebilir	Naturel Yenilenebilir Enerji Ticaret A.S. engages in the generation of electricity from renewable energy sources in Turkey. It engages in the establishment of electricity generation plants, operation of the established power plants, and trade of the generated electrical energy. The company owns and operates solar power plants with total unlicensed generation capacity of 44.07 MWp. It also provides renewable energy contracting EPC services, including power plant site location and licensing, project development and engineering, land acquisition, meteorological measurement, turnkey renewable power plant installation, transmission and distribution network engineering and contracting, and network connection services, as well as switchyards, substations, and distribution centers engineering and contracting services; and supplies power plant components. The company was founded in 2009 and is headquartered in Ankara, Turkey.	1	0	0	1	1	1	1	34	2	3	0.106763438	0.10771032	0.104869672	2.89961393	1	9426247.813	24401365.27	0	8	0	0	0	1	0	0	0.951835464
Ind Renewable Energ	IND Renewable Energy Limited, formerly Vakharia Power Infrastructure Limited, is an India-based company focuses on providing infrastructure, which include conventional and non-conventional energy sources. The Company also invests in the projects. The Company operates in investment segment.	1	0	0	1	0	0	1	36	2	1	-0.017925268	0.009937243	-0.073650289	-1.4826613	1	3580252.953	551594217.7	1	6	0	0	0	1	1	0	-0.403402714
SAAM Development	SAAM Development Public Company Limited develops and sells renewable energy power plants in Thailand. The company operates through two segments, Development Service and Distribution of Electricity. It also develops and manages inhouse solar energy power plants. The company was formerly known as SAAM Energy Development Public Company Limited and changed its name to SAAM Development Public Company Limited in September 2021. SAAM Development Public Company Limited was founded in 2007 and is based in Bangkok, Thailand.	1	1	0	1	1	1	0	47	3	2	0.045683266	0.039920825	0.057208147	0.294452584	2	592478.4633	9292934.1	0	10	0	0	1	2	1	0	0.157509406
Galata Wind Enerji A	Galata Wind Enerji AS, formerly Galata Wind Enerji Ltd Sti is a Turkey-based company, which is engaged in the establishment, commissioning, leasing of electrical power generation facilities and generation and sales of wind and solar electrical energy. The Company is also involved in renting, buying and selling machinery and equipment in relation with fields of activity.	1	1	0	1	1	1	1	54	3	3	0.062199345	0.042008556	0.102580922	0.77783658	1	13548314.5	189808000	0	11	0	0	0	2	0	0	0.055241827
Orient Green Power	Orient Green Power Company Limited is a renewable power producing company. It is engaged in the business of generation and sale of power using renewable energy sources, such as wind energy. It is focused on developing, owning, and operating a portfolio of wind energy power plants. It has an installed operational capacity of about 25 megawatts (MW) of wind assets spread across the states of Tamil Nadu, Andhra Pradesh, Gujarat and Karnataka. It also owns and operates about 10.5 MW wind power plant in Croatia, Europe. It focuses on the creation and ownership of renewable energy assets in India and overseas through Bessemer Venture Partners of United States and Olympus Capital Holdings Singapore. Its subsidiaries include Beta Wind farm Private Limited, Bharath Wind Farm Limited, Gamma Green Power Private Limited, Orient Green Power Europe B.V., Orient Green Power (Maharashtra) Private Limited, Statt Orient Energy (Private) Limited and Amrit Environmental Technologies Private Limited.	0	1	0	0	1	1	1	57	1	3	-0.003593255	-0.014099454	0.017419142	-1.137797862	5	-1763197.82	437771796.5	1	11	0	1	1	1	2	0	-0.141101569
Neoen S.A.	Neoen S.A., an independent renewable energy production company, engages in the design, development, finance, construction project management, and operation of renewable energy power plants. The company operates solar, wind, and energy storage plants. It operates in Argentina, Ecuador, El Salvador, Jamaica, Mexico, the United States, Finland, France, Ireland, Mozambique, Portugal, Zambia, Sweden, Croatia, and Australia. Neoen S.A. was founded in 2008 and is headquartered in Paris, France. Neoen S.A. is a subsidiary of Impala SAS.	1	1	1	0	1	1	1	79	3	3	0.00485411	0.006819603	0.000923126	-0.2154537	11	14830930.31	2170077134	1	9	0	1	1	2	2	1	0.28709795

Indowind Energy Lim	Indowind Energy Limited operates as an IPP in the renewable energy sector in India. It engages in developing, setting up, operating, and maintaining wind farms. It also provides project management and asset management services, as well as trades in and sells carbon credits (CERs) in Indian and international CER markets. Indowind Energy Limited was incorporated in 1995 and is based in Chennai, India.	0	1	0	1	1	0	1	87	2	3	-0.034281224	-0.051517446	0.000191219	-0.732602468	1	-1668162.793	52301063.99	1	22	0	0	0	1	1	0	-0.092285572
Ningxia Jiaze Renew	Ningxia Jiaze Renewables Corporation Limited is a China-based company principally engaged in the development, investment, construction, operation and management of new energy and power. The Company's main business includes the centralized wind power generation, photovoltaic power generation and intelligent microgrid operation business. The Company mainly operates its business in Ningxia, Xinjiang, Shaanxi and Heilongjiang Province.	1	1	1	1	1	1	1	98	4	3	0.027202276	0.031785198	0.018036433	-0.141080409	1	37323966.75	1372220239	0	7	0	0	0	2	0	0	0.12887712
Encavis AG	Encavis AG, an independent power producer, acquires and operates solar and onshore wind parks. It operates through PV Parks, PV Service, Wind Parks, and Asset Management segments. The company operates 190 solar parks and 93 wind parks with an installed capacity of approximately 2.8 gigawatt in Germany, Italy, France, the United Kingdom, Austria, Finland, Sweden, Denmark, the Netherlands, and Spain. It also provides advisory and asset management services to institutional investors in the renewable energy sector; and commercial, technical, and other services. The company is headquartered in Hamburg, Germany.	1	1	0	1	0	0	1	108	3	1	0.007127065	0.007477874	0.006425447	0.611455871	9	22200283.05	3022634085	0	15	1	0	1	2	1	1	0.046218213
Energiekontor AG	Energiekontor AG, a project developer, engages in the planning, construction, and operation of wind and solar parks in Germany, Portugal, and Great Britain. It owns and operates 127 wind farms and 12 solar parks with a total output of approximately 1 gigawatt. The company was founded in 1990 and is headquartered in Bremen, Germany.	1	1	0	0	1	1	1	139	2	3	0.022298059	0.009787871	0.047318435	41.70055923	7	10491314	433911541.4	0	27	1	0	1	2	1	1	0.089761387
Xinyi Energy Holding	XINYI ENERGY HOLDINGS LIMITED is a China-based investment holding company. The Company is principally engaged in the management and operation of solar farms through its subsidiaries, and generates revenue by selling the electricity to subsidiaries of the State Grid. The Company operates Jinzhai Solar Farm, Sanshan Solar Farm, Nanping Solar Farm, Lixin Solar Farm, Binhai Solar Farm, HongAn Solar Farm and Wuwei Solar Farm, among others. These solar farms are mainly located in Anhui, Tianjin, Fujian and Hubei Provinces in China. The Company mainly conducts its businesses in domestic market.	1	0	0	0	0	0	1	163	1	2	0.071759572	0.07894124	0.057396237	0.124452127	1	109060637.6	1179756931	0	2	0	0	0	1	0	0	0.277389795
Thai Solar Energy PC	Thai Solar Energy Public Company Limited is a Thailand-based company. The Company is engaged in the business of generation and distribution of electricity from solar power and biomass to government and private company. It operates its business in Thailand and in Japan. Its clients in Thailand include the Provincial Electricity Authority (PEA) and Metropolitan Electricity Authority (MEA) and in Japan includes Hokuriku Electric Power Company, Tokyo Electric Power Company, and Tohoku Electric Power Company. The CompanyÃ¢â‚¬â„¢s projects include Solar PV Farm Projects, Solar Rooftop Project and Biomass Power Plants.	1	0	0	1	1	1	1	184	2	3	0.029557937	0.032903124	0.022867563	1.531495437	3	14937805.95	375374594.2	0	9	0	0	1	1	1	1	0.193728309
Scatec ASA	Scatec ASA, formerly known as Scatec Solar ASA, is a Norway-based integrated independent solar power producer, delivering affordable, rapidly deployable and sustainable clean energy worldwide. It develops, builds, owns, operates and maintains solar power plants.	1	1	1	1	1	1	1	184	4	3	0.004356222	0.013585572	-0.014102478	-1.795956032	14	2057868.017	1247758255	1	10	0	1	1	2	2	1	0.357377365
Eastern Power Grou	Eastern Power Group Public Company Limited engages in the solar power generation business. The company was formerly known as Eastern Printing Public Company Limited and changed its name to Eastern Power Group Public Company Limited in April 2020. Eastern Power Group Public Company Limited was founded in 1993 and is headquartered in Bangkok, Thailand.	1	0	0	1	1	1	1	288	2	3	0.075417441	0.048901834	0.128448657	0.867113371	3	25050859.26	261374676.6	1	24	0	0	1	1	2	1	0.052427396

Azure Power Global	Azure Power Global Limited is an India-based energy solutions provider and power producer. The Company is primarily engaged in the development, construction, ownership, operation, maintenance and management of solar power plants. The Company operates through the sale of power segment. It supplies renewable energy to government utilities and independent industrial and commercial customers at fixed prices. The Company has a renewable energy asset base of over seven gigawatts (GWs) with approximately two GWs of operational capacity and over four GWs of capacity under construction and in the pipeline. The CompanyÃ¢â‚¬â„¢s Solar Power Plant Project has a capacity of approximately 7,425 megawatts. Its portfolio is spread across India, including Rajasthan, Gujarat, Karnataka, Punjab, Andhra Pradesh, Telangana, Uttar Pradesh, Assam, Chhattisgarh, Bihar, Maharashtra and Delhi. The CompanyÃ¢â‚¬â„¢s subsidiaries include Azure Power India Pvt. Ltd. and Azure Power Rooftop Pvt. Ltd.	1	0	0	0	1	1	1	401	1	3	-0.01191606	-0.007972996	-0.019802188	-9.36919533	1	-16202524.62	886568465.7	1	9	0	0	0	1	1	0	0.261142599
Nyocor Co Ltd	Nyocor Co Ltd, formerly Tianjin Quanyechang Group Co Ltd, is a China-based company mainly engaged in the development, investment, construction and operation of new energy power. The Company mainly operates its business through two sectors: photovoltaic power generation and wind power generation. The Company's main product is electricity. The Company mainly conducts business within the domestic market.	1	1	0	0	1	1	1	537	2	3	-0.06878618	-0.111106152	0.015853764	-1.499397155	1	-10398772.23	225033896.3	0	25	0	0	0	2	0	0	2.745505032
Adani Green Energy	Adani Green Energy Limited (AGEL) is an India-based is a holding company. The Company is engaged in renewable power generation and other ancillary activities. The Company develops, builds, owns, operates, and maintains utility-scale grid-connected solar power, wind power, hybrid projects, and solar parks. It serves markets by the Company such as Local, State, and National with approximately 70 locations across States in India. The Company power projects are located in Gujarat Punjab, Rajasthan, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Chhattisgarh, Madhya Pradesh, and Uttar Pradesh. Its wind power plants are located across Madhya Pradesh and Gujarat.	1	1	1	1	1	1	1	685	4	3	-0.036569349	-0.054328268	-0.001051511	0.600628992	1	-30423883.54	949871195.1	1	2	0	0	0	2	1	0	3999.753107