Gold Standard for the Global Goals
Key Project Information & Project Design Document (PDD)

Version 1.1 – August 2017

Gold Standard

KEY PROJECT INFORMATION

Title of Project:	Gunaydin Hybrid Wind and Solar Power Plant
Brief description of Project:	The project is a large scale wind and solar power plant (WPP&SPP) project located in Manyas District of Balıkesir province, Turkey. The project involves a total of eight installed wind turbines, five of which are 2.5 MW, three of which are 2.75 MW and ten solar panel units with installed power of 0.8316 MWm, 2.7621 MWm, 3.6531 MWm, 1.1286 Mwm, 0.6831 MWm, 1.0395 MWm, 0.7722 MWm, 1.3365 MWm, 5.1975 MWm and 2.2572 MWm resulting in a total installed capacity of 40.4114 MWm/20 MWe. In accordance with the licence issued by the Energy Market Regulatory Authority (EMRA), all legal rights of the project have been granted to Kavram Enerji Yatırım Üretim ve Ticaret A.Ş. for 36 years 10 months 7 days starting from 04/01/2024. This licence was granted to Manres Elektrik Üretim A.Ş. as a continuation of the effect of the production licence dated 11/11/2011. The owner of the licence is responsible for the construction, commissioning, production and sale of the electricity generated. Please see Appendix 2 for the legal ownership licence.
Expected Implemetation Date: Expected duration of Project:	14/06/2013 36 years 10 months 7 days
Project Developer:	Kavram Enerji Yatırım Üretim ve Ticaret A.Ş
Project Representative:	Net Zero Danışmanlık A.Ş.
Project Participants and any communities involved:	Kavram Enerji Yatırım Üretim ve Ticaret A.Ş (Project Developer)
Version of PDD: Date of Version:	23 23/01/2025
Host Country / Location:	Turkey / Balikesir
Certification Pathway (Project Certification/Impact Statements & Products)	Impact statement & products
Activity Requirements applied: (mark GS4GG if none relevant)	Renewable Energy Activity Requirements (GS4GG)
Methodologies applied:	ACM0002 “Grid-connected electricity generation from renewable sources”, version 20.0
Product Requirements applied:	GHG Emissions Reduction – Energy Industries (renewable – non-renewable sources)
Regular/Retroactive:	Regular

SDG Impacts:	1 – Affordable and Clean Energy (SDG 7): The project promotes clean and sustainable energy production and use. 2 – Decent Work and Economic Growth (SDG 8): The project generated employment for all. The employee has required technical training and certifications. 3 – Climate Action (SDG 13): The project contributes toSDG Target 13 with an amount of 36,262 tonnes of CO2e, which represent direct and quantifiable impacton climate security.
Estimated amount of SDG Impact Certified	36,262 tonnes CO2

SECTION A. Description of project

A.1. Purpose and general description of project

The project is a large-scale wind power plant project located within the boundaries of Manyas District of Balıkesir province, Turkey.

The project involves a total of 8 installed wind turbines, five of which are 2.5 MW, three of which are 2.75 MW and 10 solar panel units with installed power of 0.8316 MWm, 2.7621 MWm, 3.6531 MWm, 1.1286 Mwm, 0.6831 MWm, 1.0395 MWm, 0.7722 MWm, 1.3365 MWm, 5.1975 MWm and 2.2572 MWm. Total installed capacity is 40.4114 MWm/20MWe.[1]

In accordance with the licence issued by the Energy Market Regulatory Authority (EMRA), all legal rights of the project have been granted to Kavram Enerji Yatırım Üretim ve Ticaret A.Ş. for 36 years 10 months 7 days starting from 04/01/2024[1]. This licence was granted to Manyes Elektrik Üretim A.Ş. as a continuation of the effect of the production licence dated 11/11/2011. The owner of the licence is responsible for the construction, commissioning, production, and sale of the electricity generated. Please see Appendix 2 for the legal ownership licence. Wind power plant project was commissioned on 20/11/2012[2] and the expected commissioning date for solar panel units is 15/12/2024 as hybrid system.

Kavram Enerji Yatırım Üretim ve Ticaret A.Ş. investing into a Solar project, which will be operated as a hybrid system by integrating to the wind and solar power projects. Gunaydin Hybrid Wind and Solar Power Plant will consist of 19.66 MWm SPP in addition to the 20.75 MWm/ 20 MWe WPP as of date . The hybrid project is designed that wind is the main source and solar will be a feeder. The electricity with a steady capacity will get transferred to the grid thanks to the solar feeding the wind. As a result, the installed capacity of the plant will not change; however, electricity generation, that will occur with the commissioning of the SPP, is expected to be 65,700,000 kWh (65.7 GWh) as in line with the Amended Generation License.

Turbines outputs are transmitted to the switchyard area via underground cabling. Total land used is estimated as 2,000 m^2 including turbines basements, crane pads, switchyard, and access roads[1]. Electricity generated at project is fed to the national grid via Mustafa Kemal Pasa Substation TM 34.5 kV. [1].

During micro siting and optimization studies, several layouts was compiled using different turbines.

Total output of the project is 65.7 GWh as per Generation License. Annual emission reduction is estimated as 36,262 tCO_2 per year. Average lifetime of turbines and solar panels are assumed as 25 years as per the relevant tool[3].

Main goals of the project include:

- Utilization of the renewable energy potential of Turkey to meet rapidly increasing electricity demand and contribute achieving energy security.

- Increase share of WPP and SPPs in electricity generation mix of Turkey and reduction of GHG emissions.

[1] Amended Generation License Dated 04/01/2024
[2] Gunaydin WPP PDD Version 15
[3] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf

- Contribute to the national economic development by creating direct and indirect job opportunitiesduring construction and operation phases.

- Reduce import dependency of fossil fuel dominated electricity sector and diversify generation mixthrough use of local resources.

- Contribution to sustainable development through supporting local community and local economy.

Providing benefits by keeping the amount of electricity produced with the hybrid system at the maximum value allowed by the license. In terms of sustainable development, project does not only contribute to the emission reduction through use of renewable resources and creating job opportunities. In terms of environmental impact, project is considered to have positive impacts on air quality due to avoided NOx, PM and SO_2 emissions whereas no negative impact on water quality and biodiversity has been identified. As per the national regulations, a project introductory file (PIF) was prepared for the project to assess the environmental impacts. In additionto national requirements, a full Environmental and Social Impact Analysis (ESIA) study was carried out for the project for compliance with international standards.[2]

In addition to contribution to local economy, project also contributes use of local and renewable resources to meet the increasing energy demand of Turkey and reduce dependency on fossil fuels.

Table 1. Milestones for Gunaydin Hybrid Wind and Solar Power Plant

Milestone	Date
Preliminary EIA	February 2009
Contribution Fee Agreement	24/09/2011
License Issuance	11/11/2011
Collecting offers for carbon agreement	15/11/2011
EM Equipment Purchase Contract (Investment decision date for the initial wind power plant)	20/12/2011
Carbon Agreement	24/01/2012
EIA Exemption Letter	25/01/2012
License Revision	09/02/2012
LSC Meeting	21/02/2012
Connection Agreement	03/04/2012
Construction Subcontractor Agreement	03/04/2012
Forest Permission	20/04/2012
Commissioning Date	20/11/2012
Start date of first crediting period	01/12/2012
Loan Agreement for Extension	27/06/2013
EIA Exemption Letter for Capacity Extension	05/03/2014
LSC meeting for capacity extension	31/10/2013
Turbine Agreement for capacity extension	18/03/2014
Amended License for Capacity Extension	31/03/2014
Start of construction for extension	August 2014
Commissioning date for extension	20/12/2014 and 26/12/2014
Transition approval	09/03/2020
Start date of second crediting period	01/12/2019
EPC Agreement (Investment decision date for hybrid system)[4]	11/12/2023
Construction date for hybrid system[5]	17/04/2024
Expected commissioning date for hybrid system	15/12/2024

[4] EPC Agreement Cover Page
[5] Site Delivery Document

A.2. Eligibility of the project under Gold Standard

General Eligibility Criteria:

Scale of the project activity: The project is a 40.41 MWm/20 MWe wind &solar hybrid farm project and exceeding the 15 MW limit for small scale project according to UNFCCC regulations, the project is categorized under large scale.

Host country: As Turkey, the host country, has no cap on GHG emissions, the GS VERs don't need to be backed up by allowances or other denominated units resulting in local authorities stating that an equivalent amount of allowances will be retired to back up the GS VERs issued. The project will be registered and seek approval from the national registry on GHG emission reduction projects as regulated by Communique on Procedures for Registration of Greenhouse Gas Emission Reduction Projects.

Type of the project activity: The proposed project fits into 'Renewable Energy Supply' category as it is defined generation and delivery of energy services from non-fossil and non-depletable sources , especially wind and solar

Greenhouse gases: The project activity complies with Gold Standard and UNFCCC eligibility criteria as reducing carbon dioxide emission that is mainly produced by the Turkish Grid dominated by fossil fuel power plants.

Official Development Assistance: Non-ODA for the project

activityProject timeframe: Please see Table 1.

Other Certification Schemes: The project doesn't claim Green or White certificates or equivalents that mayresult in double counting as a result of carbon dioxide emission reduction purposes.

Renewable Energy Activity Requirements: Project is also a wind & solar hybrid power plant providing electricity from clean resources to the national grid. If project is located in a country where the penetration level of the proposed Renewable Energy Technology type is greater than 5% of the total grid installed capacity, at the time of the first submission to Gold Standard. But since the preliminary review of the project was completed before, the project is considered to be eligible.

• 2.1 Principle-1: Contribution to Climate Security & Sustainable Development: Project contributes 3 SDGs including SDG 13. Please see Section B 6.1.

• 2.2 Principle-2: Safeguarding Principles: Please see Section D.

• 2.3 Principle-3: Stakeholder Inclusivity: Please see Section E.

• 2.4 Principle-4: Demonstration of Real Outcomes: Please see Section B 6.4.

• 2.5 Principle-5: Financial Additionality & Ongoing Financial Needs: Please see Section B.5.

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

As per the license issued by Energy Market Regulatory Authority (EMRA), all legal rights of the project is given to Kavram Enerji Yatırım Üretim ve Ticaret A.Ş for 36 years 10 months 7 days. The owner of the licence is responsible for the construction of the facility, commissioning, production and sale of the electricity produced. Please see Appendix 2 for legal ownership licence.

A.4. Location of project

A.4.1. Host Country

Turkey

A.4.2. Region/State/Province etc.

Balikesir province / Manyas district

A.4.3. City/Town/Community etc.

The closest settlement is a village called Yayla Neighborhood which has about 1 km distance to the project site.

A.4.4. Physical/Geographical location

Table 2 . Wind Power Plant Coordinates

Zone(35S)	Y	X
T1	586478	4425918
T2	586566	4425088
T3	586463	4425636
T4	586268	4425305
T5	585994	4425329
T6	586582	4426185
T7	586792	4425776
T8	586249	4425719
Switchyard	586249 586009	4425184

The coordinates of the solar panel units that will be added with the design change are given below.[2]

Table 3. 1. Solar Panel Unit Coordinates

	E	N		E	N
KI	586699,558	4426351,881	**K17**	586676,541	4426205,746
K2	586723,209	4426344,316	**K18**	586677,682	4426233,066
K3	586726,54	4426342,282	**K19**	586662,857	4426227,03
K4	586737,001	4426334,672	**K20**	586648,556	4426222,111
K5	586736,452	4426309,98	**K21**	586648,556	4426247,725
K6	586741,759	4426287,484	**K22**	586651,748	4426257,13
K7	586739,926	4426263,643	**K23**	586652,652	4426264,3o7
K8	586738,828	4426246,268	**K24**	586649,874	4426270,519
K9	586752,134	4426229,345	**K25**	586645,586	4426284,903
κιο	586749,39	4426220,053	**K26**	586645,651	4426289,17

K11	586728,396	4426214,236	**K27**	586649,232	4426302,481
K12	586715,142	4426213,683	**K28**	586655,293	4426316,708
K13	586704,903	4426207,726	**K29**	586655,919	4426317,525
K14	586696,351	4426205,356	**K30**	586660,519	4426321,697
K15	586687,381	4426204,182	**K31**	586683,319	4426336,308
K16	586679,693	4426204,427	**K32**	586695,7	4426351,274

Table 4. 2. Solar Panel Unit Coordinates

	E	**N**		**E**	**N**
K1	586773,13	4426473518	**K38**	586945,513	4426319,491
K2	586821,98	4426471,71	**K39**	586942,93	4426328,974
K3	586859,674	4426459054	**K40**	586906,426	4426345,371
K4	586874751	4426444,891	**K41**	586903,082	4426347,246
K5	586895,859	4426429,221	**K42**	586895,744	4426354034
K6	586928,79	4426411364	**K43**	586889,709	4426362,546
K7	586973,419	4426399,913	**K44**	586889375	4426373,396
K8	586995,432	4426390571	**K45**	586858,361	4426386,733
K9	587013826	4426362,546	**K46**	586854,507	4426389,604
K10	587044944	4426337,437	**K47**	586850,922	4426395,094
K11	587066957	4426322,37	**K48**	586845,351	4426414,344
K12	587110,983	4426310,919	**K49**	586822,724	4426416,6
K13	587145,336	4426298,735	**K50**	586821,48	4426413,655
KI4	587144,851	4426293885	**K51**	586802,176	4426396,637
K15	587143,672	4426291,938	**K52**	586797,734	4426394,745
K16	587144,451	4426289,119	**K53**	586792,3	4426391,573
K17	587144,184	4426276,845	**K54**	586789,121	4426390,766
K18	587140,152	4426266,764	**K55**	586784,095	4426381621
K19	587140,102	4426266,048	**K56**	586775,784	4426374,78
K20	587137,664	4426260,916	**K57**	586771,986	4426369,219
K21	587124,701	4426244,092	**K58**	586767,77	4426367,019
K22	587087,196	4426242,933	**K59**	586757,455	4426376574
K23	587071,061	4426233,99	**K60**	586738,642	4426388,564
K24	587070,284	4426234,044	**K61**	586730,68	4426386,49
K25	587063,757	4426236,511	**K62**	586727,559	4426387,165
K26	587047,642	4426250,664	**K63**	586723,881	4426383,978
K27	587042881	4426252,819	**K64**	586716,258	4426378,745
K28	587042,348	4426253,167	**K65**	586681,135	4426383,14
K29	587041,443	4426253,47	**K66**	586672,764	4426393,014
K30	587021,6	4426262,45	**K67**	586675,054	4426397,937
K31	587011,221	4426272,575	**K68**	586694,967	4426404,036
K32	587007807	4426278,078	**K69**	586708,774	4426420,727
K33	587001,405	4426299,74	**K70**	586711278	4426427,791
K34	586992501	4426300,76	**K71**	586714,302	4426431672
K35	586988512	4426303,495	**K72**	586719,105	4426443,595
K36	586957,52	4426307626	**K73**	5867214,38	4426458,643
K37	586950,622	4426312831			

Table 5. 3. Solar Panel Unit Coordinates

	E	N		E	N
K1	586569,689	4425250,31	**K47**	586857,915	4424943,459
K2	586591,169	4425235,405	**K48**	586856,891	4424927,462
K3	586587,863	4425228,52	**K49**	586820,712	4424946,356
K4	586589,186	4425228,532	**K50**	586815,212	4424951,167
K5	586587,677	4425225,358	**K51**	586812,486	4424956,445
K6	586595,971	4425225,445	**K52**	586787,684	4424980,24
K7	586596,366	4425224,602	**K53**	586772,677	4424996,976
K8	586610,485	4425210,492	**K54**	586766,544	4425017,491
K9	586643,015	4425192,094	**K55**	586766,686	4425018,152
K10	586649,521	4425188,774	**K56**	586766,252	4425018,468
K11	586656,063	4425195,661	**K57**	586765,392	4425021,345
K12	586693,161	4425192,617	**K58**	586771,267	4425028,958
K13	586701,467	4425192,064	**K59**	586776,976	4425042,75
K14	586709,436	4425195,505	**K60**	586773,239	4425057,223
K15	686717,685	4425206,925	**K61**	596772,22	4425069,252
K16	586722,947	4425202,1	**K62**	586766,414	4425075,218
K17	586730,927	4425201,085	**K63**	586754,217	4425053,595
K18	586741,039	4425202,275	**K64**	586737,553	4425055,583
K19	586751,816	4425203,696	**K65**	586725,51	4425058,953
K20	586761901	4425200363	**K66**	586712,6	4425057997
K21	586772,189	4425198,09	**K67**	586712,069	4425058,009
K22	586773695	4425196,251	**K68**	586702,988	4425062,125
K23	586779,041	4425189,296	**K69**	586700,99	4425066,462
K24	586781,722	4425179,86	**K70**	586698,04	4425076,847
K25	586792,412	4425193,709	**K71**	586698,549	4425095015
K26	586813178	4425202,721	**K72**	586700,896	442512214
K27	586834,425	4425194,42	**K73**	586675,432	4425125,048
K28	586838,097	4425186,207	**K74**	586664,652	4425116,396
K29	586830,228	4425181,313	**K75**	586665,968	4425113,161
K30	586823,146	4425177,032	**K76**	586667,54	4425108,292
K31	586829,703	4425161,479	**K77**	586.644.547	4425120,088
K32	586834,425	4425156,935	**K78**	586625,666	4425123,884
K33	586841,007	4425137,923	**K79**	586625,584	4425123,919
K34	586846604	4425116485	**K80**	58662549	4425148,494
K35	586861,293	4425112,204	**K81**	586570,218	4425148,083
K36	586867,764	4425116,398	**K82**	586508,117	4425147,62
K37	586888,87	4425112,882	**K83**	586508,146	4425147,829
K38	586914,227	4425105,367	**K84**	586512,639	4425159,52
K39	586925,349	4425054,779	**K85**	586513,767	4425168,074
K40	586919,004	4425054,592	**K86**	586513,77	4425178,789
K41	586902,981	4425041,334	**K87**	586515243	4425186,462
K42	586882728	4425028,985	**K88**	586516,337	4425195493
K43	586877296	4425015,6	**K89**	586569,608	4425195,486
K44	586866,703	4424996,647	**K90**	586569,689	4425195,695
K45	586854599	4424961,67	**K91**	586569,608	4425195,695

K46	586845,481	4424950225			

Table 6. 4. Solar Panel Unit Coordinates

	E	N		E	N
K1	586649,964	4424976,115	**K21**	586626,585	4424809,637
K2	586653,877	4424971,072	**K22**	586617,397	4424819,718
K3	586653,949	4424970,561	**K23**	586608,203	4424841,873
K4	586660,278	4424959,278	**K24**	586602,297	4424850,218
K5	586669,451	4424950,564	**K25**	586601,865	4424850,663
K6	586690,19	4424937,227	**K26**	586601,847	4424850,704
K7	586694,815	4424932,413	**K27**	586601,764	4424850,766
K8	586699,401	4424926,147	**K28**	586594,391	4424858342
K9	586705,091	4424915,791	**K29**	586589,34	4424862,972
K10	586.707.186	4.424.911.156	**K30**	586577,021	4424874416
K11	586708,65	4424903,302	**K31**	586567,713	4424883,375
K12	586703,592	4424892,786	**K32**	586567,232	4424884,898
K13	586684,742	4424869,602	**K33**	586567,439	4424891,945
K14	586669,745	4424851,21	**K34**	586575,742	4424905,929
K15	586658571	4424830,199	**K35**	586572,858	4424918,896
K16	586652129	4424812,03	**K36**	586569,187	4424932,808
K17	586646,161	4424803,795	**K37**	586600,014	4424950,106
K18	586639,484	4424797,056	**K38**	586626,615	4424965,241
K19	586638,813	4424796,948	**K39**	586634,216	4424969,225
K20	586634498	4424799,384	**K40**	586638,757	4424971,667

Table 7. 5. Solar Panel Unit Coordinates

	E	N		E	N
K1	586281,807	4425516,292	**K17**	586279,385	4425399,711
K2	586292,942	4455492,569	**K18**	586276,136	4425403,536
K3	586286745	4425481677	**K19**	586268,764	4425397,292
K4	586288188	4425474,277	**K20**	586268,543	4425397,253
K5	586286,88	4425466,365	**K21**	586234,607	4425395,748
K6	586289,957	4425450,76	**K22**	586224,969	4425406,652
K7	586292612	4425448,861	**K23**	586219,193	4425419,286
K6	586292,724	4425448,104	**K24**	586213,176	4425424,867
K9	586299,661	4425443,817	**K25**	586186,166	4425421,253
K10	586303,463	4425441,097	**K26**	586170,355	4425440,71
K11	586305,018	4425435,579	**K27**	586167,484	4425444,684
K12	586304,495	4425433,576	**K28**	586165,371	4425450,719
K13	586303,328	4425431,589	**K29**	586163,787	4425454,821
K14	586291,897	4425416,782	**K30**	586185,162	4425467,974
K15	586286,46	4425403,426	**K31**	586251,439	4425499,644
K16	586279,568	4425399,802	**K32**	586278,339	4425514,764

Table 8. 6. Solar Panel Unit Coordinates

	E	N		E	N
K1	586302,274	4425191,093	**K26**	586242,001	4424987,301
K2	586309,968	4425189,287	**K27**	586224,466	4424981747
K3	586313,656	4425186,285	**K28**	586225,234	4425001,928
K4	586314,796	4425184,495	**K29**	586241,459	4425037,217
K5	586315,705	4425182,61	**K30**	586242,364	4425040,147
K6	586315,328	4425177,706	**K31**	586244,003	4425043,654
K7	586313,106	4425164,022	**K32**	586244,403	4425046,739
K8	586312,471	4425161,499	**K33**	586246,468	4425053,419
K9	586312,442	4425159,931	**K34**	586245,462	4425054,912
K10	586311,447	4425153,809	**K35**	586245,718	4425056,889
K11	586312,261	4425150,149	**K36**	586239,101	4425064,242
KI2	586312,216	4425147,732	**K37**	586234,689	4425071,104
K13	586315,732	4425140,449	**K38**	586233,749	4425075,188
KI4	586342,943	4425119,422	**K39**	586243,812	4425095,083
K15	586352,513	4425110,527	**K40**	586248,731	4425101,932
K16	586358,569	4425102,392	**K41**	586253,133	4425107,741
K17	586360,627	4425097,885	**K42**	586260,164	4425120,986
K18	586361,486	4425087,204	**K43**	586271,357	4425147,243
K19	586357,94	4425078,552	**K44**	586273,364	4425157,421
K20	586343,58	4425058,266	**K45**	586273,344	4425158,476
K21	586338,683	4425057,425	**K46**	586274,129	4425161,095
K22	586335,786	4425056,417	**K47**	586273,113	4425170,61
K23	586317,892	4425053,877	**K48**	586272,826	4425185,732
K24	586288,385	4425016,2	**K49**	586278,94	4425188,888
K25	586270,451	4424995,831	**K50**	586285,908	4425190,464

Table 9. 7. Solar Panel Unit Coordinates

	E	N		E	N
κι	586193,414	4424967,922	**K12**	586210,201	4424844,555
K2	586213,147	4424966,452	**K13**	586207,895	4424848,49
K3	586251,777	4424957,74	**K14**	586194,969	4424873,137
K4	586260,174	4424930,202	**K15**	586190,977	4424874,145
K5	586260,292	4424928,171	**K16**	586190,088	4424878,774
K6	586275,415	4424917,532	**K17**	586185,039	4424892,872
K7	586272,29	4424887,518	**K18**	586167,024	4424934,281
K8	586271,083	4424875,932	**K19**	586163,347	4424943,317
K9	586259,957	4424854,523	**K20**	586180,252	4424961,85
κιο	586242,808	4424839,437	**K21**	586183,661	4424963,61
K11	586220,105	4424841,006			

Table 10. 8. Solar Panel Unit Coordinates

	E	N		E	N
K1	586030,198	4425268,991	**K30**	586017,891	4424973,791
K2	586053,994	4425268,989	**K31**	586018,027	4424975,091
K3	586053538	4425222172	**K32**	586020,249	4424989,221
K4	586037,333	4425223,065	**K33**	586018,849	4424991,509
K5	586030,291	4425221,023	**K34**	586017,074	4424997,278
K6	586030,222	4425220,923	**K35**	586011,763	4425003,406
K7	586030,122	4425220,894	**K36**	585988,454	4425027,109
K8	586018,417	4425203,916	**K37**	585984,307	4425029,641
K9	586009,631	4425186,519	**K38**	585962,415	4425044,389
K10	586007,154	4425174,318	**K39**	585953,185	4425054,672
K11	586008,718	4425164,184	**K40**	585953,163	4425054,705
K12	586013,155	4425155,851	**K41**	585951,009	4425058,402
KI3	586022,526	4425144,562	**K42**	585943516	4425075852
K14	586027,455	4425137,153	**K43**	585928,306	4425094,505
K15	586041,784	4425124,396	**K44**	585925,831	4425107,355
K16	586052,467	4425114,774	**K45**	585928,891	4425130,941
K17	586054,882	4425109,759	**K46**	585928,968	4425131,111
K18	586056,913	4425104,868	**K47**	585955,615	4425149,23
K19	586054,819	4425096,3	**K48**	585971,401	4425168,884
K20	586044,047	4425076,303	**K49**	585977,352	4425189,055
K21	586039,42	4425061,706	**K50**	585975,434	4425215,219
K22	586037,37	4425041,026	**K51**	585975,591	4425215,493
K23	586035,517	4425016,098	**K52**	585993,162	4425237,33
K24	586033,955	4424999,807	**K53**	586012,811	4425250,151
K25	586035,027	4424984,741	**K54**	586012,924	4425250,244
K26	586031,806	4424979,766	**K55**	586012,979	4425250,28
K27	586031,122	4424971,572	**K56**	586025,808	4425260,868
K28	586027,837	4424970,19	**K57**	586028,877	4425266,599
K29	586023,814	4424970,931			

Table 11. 9. Solar Panel Unit Coordinates

	E	N		E	N
K1	585498422	4425393,273	**K34**	585511,512	4425090,995
K2	585508,251	4425392,393	**K35**	585511,731	4425091,524
K3	585519,237	4425383,825	**K36**	585516,952	4425097,956
K4	585524012	4425377,562	**K37**	585518264	4425106,813
K5	585524,339	4425375,119	**K38**	585518,183	4425107,116
K6	585542,828	4425351,22	**K39**	585521,99	4425116,314
K7	585551,578	4425346,362	**K40**	585508,299	4425130,53
K8	585552,245	4425345,734	**K41**	585501,617	4425138,006
K9	585564,459	4425337,273	**K42**	585497,594	4425143,203
K10	585599,687	4425316,271	**K43**	585496,263	4425143,996

K11	585608688	4425313,84	**K44**	585488,863	4425152,276
K12	585620,242	4425304,214	**K45**	585450,669	4425171,636
K13	585629,586	4425294,779	**K46**	585450,075	4425193,033
K14	585649,256	4425263,445	**K47**	585450,525	4425197,828
K15	585670585	4425243,529	**K48**	585449,85	4425218,643
K16	585679,462	4425229,056	**K49**	585446,046	4425244,111
K17	585684,305	4425224,767	**K50**	585437,389	4425272508
K18	585689,575	4425224989	**K51**	585435,017	4425272,173
K19	585695,538	4425219,002	**K52**	585427,74	4425282,345
K20	585711,181	4425260,714	**K53**	585427,585	4425282,654
K21	585731,566	4425257,146	**K54**	585427,526	4425282,644
K22	585733,735	4425255,988	**K55**	585426,858	4425283578
K23	585738,586	4425250,692	**K56**	585414079	4425281,524
K24	585720,01	4425197,804	**K57**	585413,705	4425282,94
K25	585712,835	4425176,2	**K58**	585413,811	4425323,231
K26	585715,172	4425154,831	**K59**	585415,148	4425330,625
K27	585719721	4425152,194	**K60**	595420,092	4425330,895
K28	585720,371	4425149,969	**K61**	585461,234	4425338,024
K29	585727,216	4425139,6	**K62**	585465,769	4425352,019
K30	585631,617	4425104,087	**K63**	585468,501	4425366,604
K31	585611,741	4425093,049	**K64**	585480,234	4425381,638
K32	585596,282	4425060,881	**K65**	585487,097	4425387,648
K33	585546,118	4425089,896			

Table 12. 10. Solar Panel Unit Coordinates

	E	**N**		**E**	**N**
K1	585749,859	4425585,562	**K28**	585658,67	4425418,329
K2	585756,815	4425576,473	**K29**	585642,51	4425427,122
K2	585760,47	4425573,459	**K30**	585634,159	4425411,186
K3	585765,451	4425554,724	**K31**	585607,843	4425413,164
K3	585773,121	4425521,536	**K32**	585593,108	4425419,686
K4	585772,562	4425509,233	**K33**	585588,098	4425424,262
K4	585766,658	4425498,703	**K34**	585579,908	4425433,384
K5	585756,45	4425502,38	**K35**	585561,196	4425451,539
K5	585746,269	4425505,489	**K36**	585548,754	4425454,803
K6	585739,199	4425492,772	**K37**	585536,455	4425461,581
K6	585736,058	4425476,305	**K38**	585516,594	4425463,241
K7	585735,761	4425465,098	**K39**	585503,855	4425466,583
K7	585758,857	4425452,399	**K40**	585503,003	4425466,755
K8	585772,891	4425451,736	**K41**	585488,795	4425473,908
K8	585795,261	4425454,116	**K42**	585491,067	4425479,652
K9	585797,713	4425431,062	**K43**	585516,785	4425499,642
K9	585800,259	4425369,058	**K44**	585549,301	4425512,866
K10	585794,876	4423367,924	**K45**	585575,341	4425486,193
K10	585760,716	4425368,91	**K46**	585604,098	4425472,576
K11	585759,451	4425369,54	**K47**	585623,462	4425469,161
K11	585746,674	4425372,122	**K48**	585634,283	4425472,291
K12	585739,081	4425373,015	**K49**	585646,813	4425485,667
K12	585721,358	4425378,06	**K50**	585644,548	4425516,184

K13	585719,003	4425381,903	**K51**	585653,376	4425534,112
K13	585702,483	4425404,692	**K52**	585665,456	4425546,381
K14	585695,66	4425409,178	**K53**	585692,075	4425549,949
K14	585677,883	4425413,664	**K54**	585728,704	4425582,775

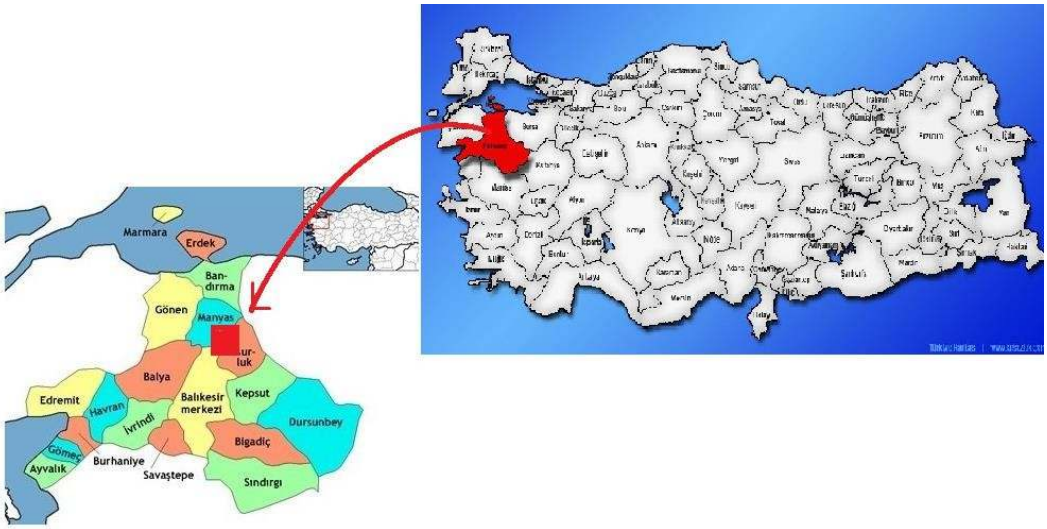

Figure 1. Location of the project area on the map

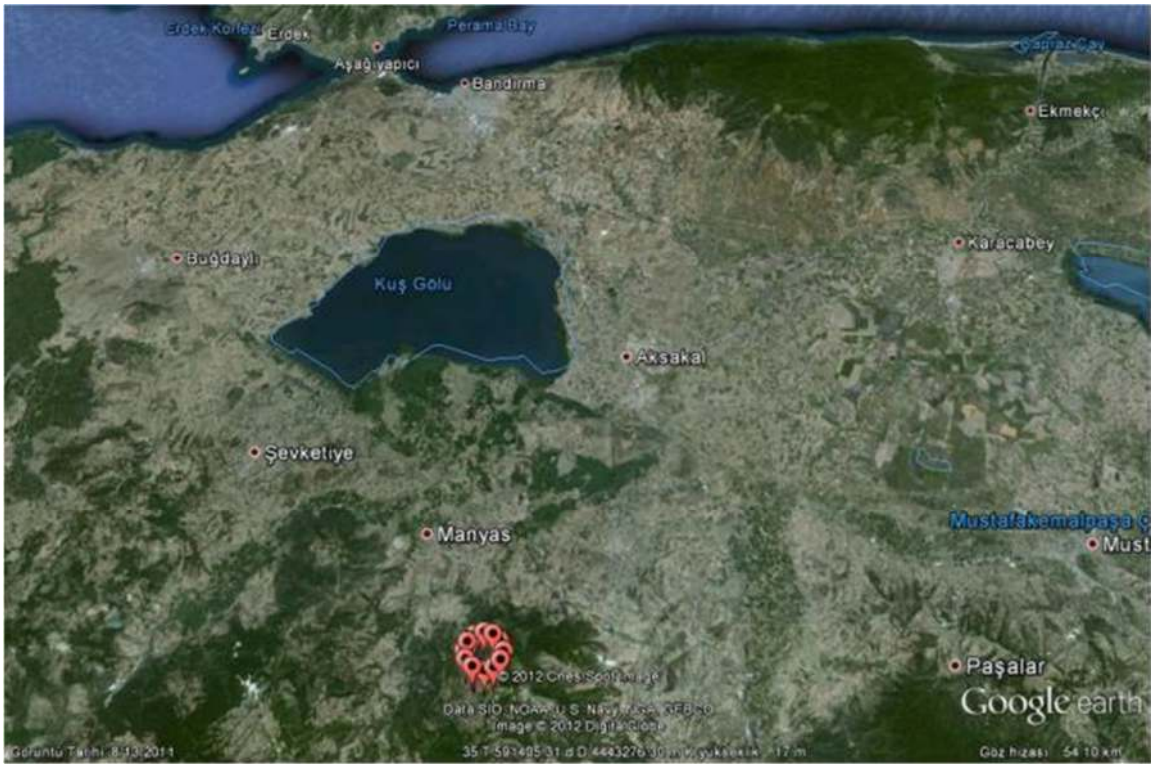

Figure 2. Location of the project area

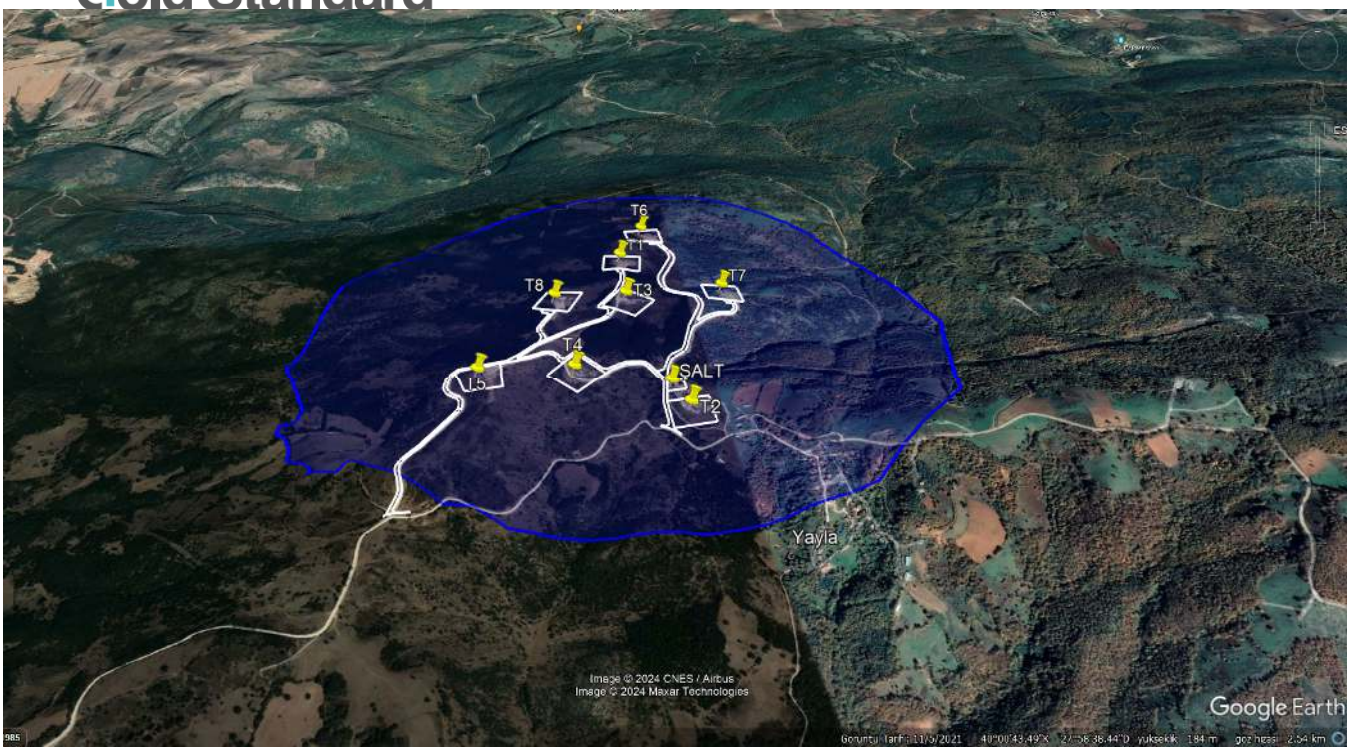

Figure 3. Location of the wind turbines[6]

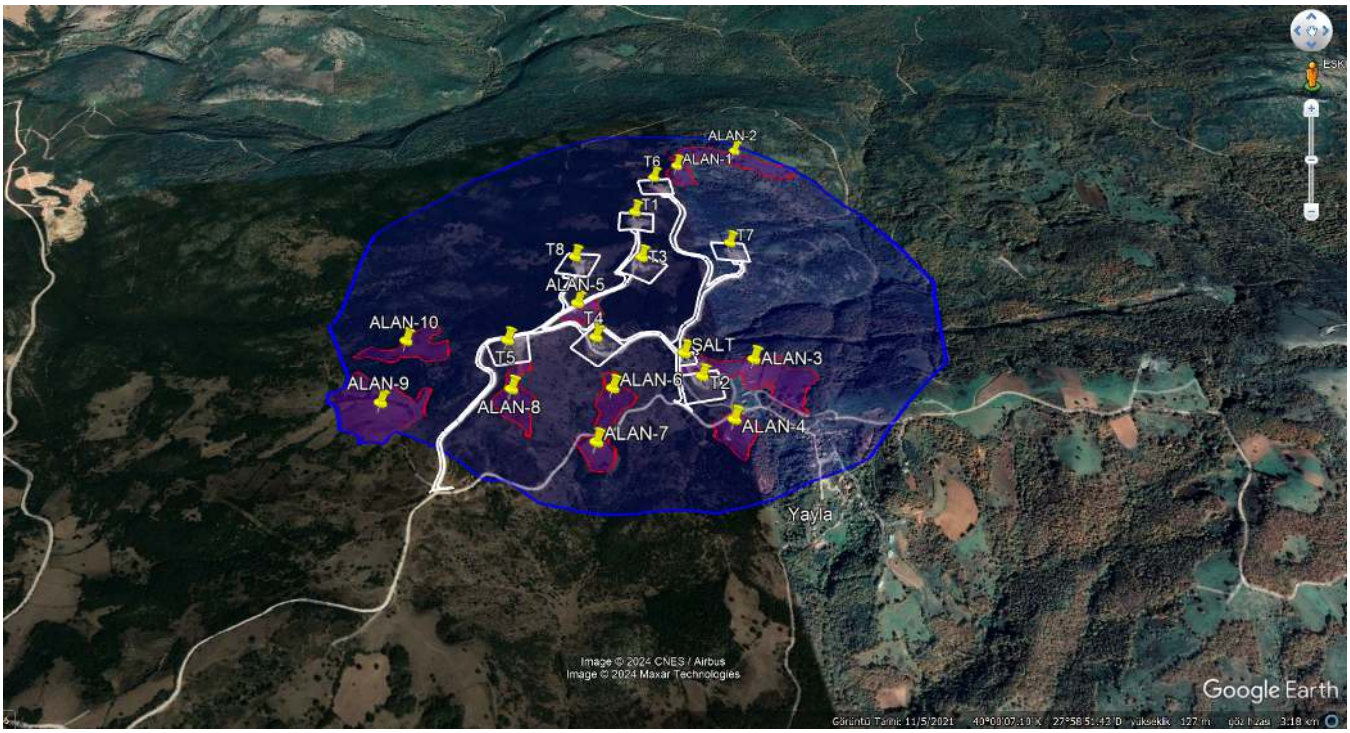

Figure 4. Location of the wind turbines and solar panel units [6]

[6] Gunaydin Hybrit Plan kmz Document

A.5. Technologies and/or measures

Wind Power Plants use Wind Energy Converters (WEC), called wind turbines, to convert the wind energy into electrical energy. Average annual wind speeds measured at the project site is 8.1 meters per second andhub height is 85 meters. The project uses 5 Wind Energy Converters (WEC's) of GE 2.5-100 MW and 3 GE 2.75-100 generators with total electrical output of 20Mwe.[1]

In addition to wind turbines, the project converts electricity from 10 solar panel units using expected 59 inverters.[7] The number of inverters can be changed after the completion of project construction. The annual electricity generation from these turbines and solar panel units are estimated to be 65.7 GWh. This energy is converted to 34.5 kV at the site Mustafa Kemal Pasa switchyard and connected to the national grid.[2]

Table 13. Characteristics of the wind turbine**Table 14Technical characteristics of GE 2.75- 100**

Design Limits	
Rotor Diameter	100 m
Cut-in Wind Speed	3.0 m/s
Cut-out Wind Speed	25 m/s
Rated Power Output	2.5 MW
Minimum ambient temperature operation	-15 °C / -20°C
Maximum ambient temperature operation	+ 40 °C
Minimum Humidity	5 g/m³
Maximum number of grid-induced disconnections per year	30
Maximum altitude with no deareting	1000 m
Tower	
Type	Tubular Steel Tower
Hub Height	85 m
Yaw System	
Yaw rate	0.5 °/sec
Rotor	
Diameter	100 m
Number of rotor blades	3
Swept area	7854 m²
Rotor speed range	5-14 min⁻¹
Rotational Direction	Clockwise looking downwind
Maximum speed of the blade tips	73.6 m/s
Orientation	Upwind
Speed regulation	Pitch-controlled
Aerodynamic brake	Blades in feathering position
Cone angle	3°
Inclination angle of rotor axis	4°
Rotor Blades	
Length (blade root – tip)	48.7 m
Pitch System	
Principle	Single blade pitch control
Main Gearbox	
Rated Power	2750 kW
Type	Multi-stage system
Lubrication	1 mechanical and 1 electrical pump

Brake System	
Primary brake system	Single blade pitch control
Secondary brake system	Single blade pitch control
Holding brake	Hydraulically driven brake caliper on high-speed shaft
Generator	
Type	Permanent magnet generator
Rated output	2640 KW
Rated speed	1650 min⁻¹
Rated voltage	710 V
Apparent Power	2808 kVA
Frequency at rated output	110 Hz
Protection Class	IP54
Insulation Class	F
Function type	S1
Standard	EN 60034-1
Converter System	
Type	Voltage source converter
Rated voltage, line slide	690 V +/-10 %
Rated frequency	50 Hz / 60 Hz
Protection class of the electronics	IP54

[7] Gunaydin Equipment List Document

turbines[1]

Power	
Rated Power	2,750 kW
Rated Wind Speed	13.5 m/s
Cut-in Wind Speed	3.0 m/s
Cut-out Wind Speed	25 m/s
Rotor	
Diameter	100.0 m
Swept Area	7,853.98 m^2
Number of Blades	3
Rotor Speed	4.7 – 14.8 rpm
Blade Material	Glass-fiber reinforced plastic
Gearbox	
Type	Combined spur / Planetary gear
Stages	3
Ratio	1:117
Generator	
Type	Synchronous, permanent magnet
Voltage	690 V
Grid Connection	Via converter
Grid Frequency	50/60 Hz
Control and Protection System	
Power Limitation	pitch
Speed Control	Variable via microprocessor, active bladepitch control
Second brake system	Disk brake
Yaw control system	4 electric gear motor(s)
Tower	
Hub Height	85.0 m
Type	Steel tubular
Shape	conical
Corrosion protection	Multi-coated

Solar units include Monocrystalline photovoltaic (PV) modules which are converting to incident light from the rear side together with the front site into electricity, providing higher output power, lower temperature coefficient, less shading loss, as well as enhanced tolerance for mechanical loading. DC electrical energy generated from solar panels is converted into AC electricity through inverters. The metal construction system, which acts as a carrier in the solar power plant, is used for the PV modules to receive optimum energy from the sun.[8]

The technical details of the solar panels cannot be provided at this stage, as the addition of the solar panels was done under a turnkey contract. The Technical Specification prepared by the project developer includes a table outlining the quality tests and acceptable test results for the company that will carry out the installation of solar panels. This specification has been submitted to the VVB, and the technical details of the solar panels can be verified during the next verification period. .[9]

In the project's Technical Specification, it is stated that the qualification tests for PV modules will be conducted in accordance with international standards. Initially, 48 modules will be selected at random and tested in an independent laboratory, with the test results expected to fall within the limits specified. Bifacial PV modules are required to undergo performance measurements under Standard Test Conditions (STC), ensuring rear-side irradiation of at least 3 W/m^2. The testing process is to commence without delay, and all individual test results, including relevant reports, will be evaluated based on the pass/fail criteria outlined in the relevant tables.

[8] Equipment Information Document
[9] Gunaydin- Hybrid Technical Specifications

The required sample sizes for each test, as defined by ISO 2859-1, will be strictly followed, with inspection levels and test conditions carefully adhered to. Additionally, parameters such as temperature, humidity, and test duration will be maintained within the established limits, ensuring that all PV modules meet the required technical and performance standards before submission to the employer.

A.6. Scale of the project

For the purpose of applying UNFCCC methodologies for quantification of GHG reductions, '*small scale*' is defined as Renewable Energy Project with installed capacity less than equal to 15 MWe or 45 MWth[10]. Therefore, project is considered to be a '*large scale*' project with 20 MWe.

A.7. Funding sources of project

Partial equity and loans are used for project funding. No public funding /ODA is used for the project.

A.8. Assessment that project complies with 'gender sensitive' requirements

- *Does the project reflect the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?*

As stated in Gold Standard Gender Policy document, "foundational gender sensitive certificiation" which ismandatory for every project requires compliance with the gender 'do no harm' safeguard, gender-gap analysis and gender sensitive stakeholder consultations. Although the project is a renewable energy project and does not have negative impacts on men and women, it complies with the criteria mentioned. Moreover,

Turkey has ratified ILO convention 100 and 111[1] and discrimination based on gender is illegal in Turkey. The project try to align with the national gender strategy. So, the project does not involve and is not complicit in any form of discrimination based on gender difference.

- *Does the project align with existing country policies, strategies, and best practices?*

The project aims to create new employment and income opportunities within the scope of SDG 8. While doing this, a gender-equal strategy is implemented by creating employment opportunities for both man and woman without discrimination. According to the Woman Empowerment Strategy Paper and Action Plan prepared by the Ministry of Family and Social Policies (2018), there are 21 targets classified under 5 main fields in order to enhance participation of women to the society.[1] In this action plan regarding the years 2018
– 2023, economy and employment-oriented strategies are represented for women since the labor force activity of women is not at desired level compared to the EU countries. According to 2017 statistics tabulated in the report, labor force activity of women is declared as 33.6%[1] and it is aimed that this percentage will be41% in 2023.[1] Accordingly, the project shows parallelism with the national strategies developed for women.

- *Does the project address the questions raised in the Gold Standard Safeguarding Principles &Requirements document?*

[10] https://www.goldstandard.org/project-developers/standard-documents

Yes, the project considers all questions indicated in the Gold Standard Safeguarding Principles & Requirements. Please see Section D for assessment questions, justifications and mitigation measures.

- *Does the project apply the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines?*

All stakeholders were invited to the Local Stakeholder Meeting was held on 21/02/2012 in Yaylakoy Village Room. The meeting was held with 15 local participants. However, there was no attendance of females to the meeting which requires the set of another meeting at village mosque. In that meeting there were three adult females and one child.

The site visit for the last verification of the previous crediting period and new validation was conducted in the same date which is on 11/03/2020. Since there was no comment/grievance received about previous crediting period during the site visit, another LSC was not considered as necessary.

A local stakeholder meeting was held within the scope of the preparation of the EIA report regarding the design change and the addition of solar panels to the project. For details of the meeting, please see section E.1.

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

The UNFCCC approved baseline and monitoring methodology ACM0002, version 20.0 was applied for the project activity. Following tools have been used:

- Tool for the demonstration and assessment of additionality, Version 07.0.0
- Tool to calculate the emission factor for an electricity system, Version 07.0
- Tool to determine the remaining lifetime of equipment, Version 01
- Tool 11: Assessment of the validity of the original/current baseline and update of the baseline at

the renewal of the crediting period, Version 3.0.1

  - The tool offers 2 steps. The first step provides an approach to evaluate whether the currentbaseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.

  - Although there is no change in national/sectoral policies affecting project implementation (Step 1.1), investment and technology (Step 1.3), the current situations such as margin calculations (Step 1.2) and parameters not monitored (Step 1.4) have been changed. Therefore, Step 2 has been applied. Please see revised parameters and baseline emission calculations in Section B.6.3. and B.6.4.

B.2. Applicability of methodology

Project meets the applicability criteria defined by the selected methodology, which is ACM0002, ver 20.0:

- The project activity is a greenfield, grid connected renewable electricity generation project.
- The project activity is the installation of wind power plant.

- The project does not involve capacity addition, a retrofit of (an) existing plant(s) or a replacement of (an) existing plant(s).

- Project activity does not involve switching from fossil fuels to renewable energy sources at the site of project activity.

- The project does not involve combined heat and power generation activity.

- The geographic and system boundaries for the relevant electricity grid can be clearly identified andinformation on the characteristics of the grid is available.

Since there exists no delineation of project electricity system or connected electricity systems by DNA, following criteria has been used to determine the existence of significant transmission constraints:

- In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of more than 5 percent between the systems during 60 percent or more of the hours of the year.
- The transmission line is operated at 90% or more of its rated capacity during 90% percent or more of the hours of the year.

Since the project output is fed to the Turkish electricity grid which does not involve any distinct electricity systems that applies different price, first criteria defined above is not applicable. Also, since the transmission line between the proposed projects and nearest substation is built within the scope of the project and there exist no information on grid capacity utilization, second criteria is also inapplicable. Based on assessment above, it is difficult to conclude with a significant transmission constraint or grid boundary. Since there is no dispatch grid system in Turkey, the project boundary is considered as the National Electricity Grid of Turkey according to applied tool. The geographical and physical boundaries of the Turkish grid and location of the power plants are well identified as given diagram below.

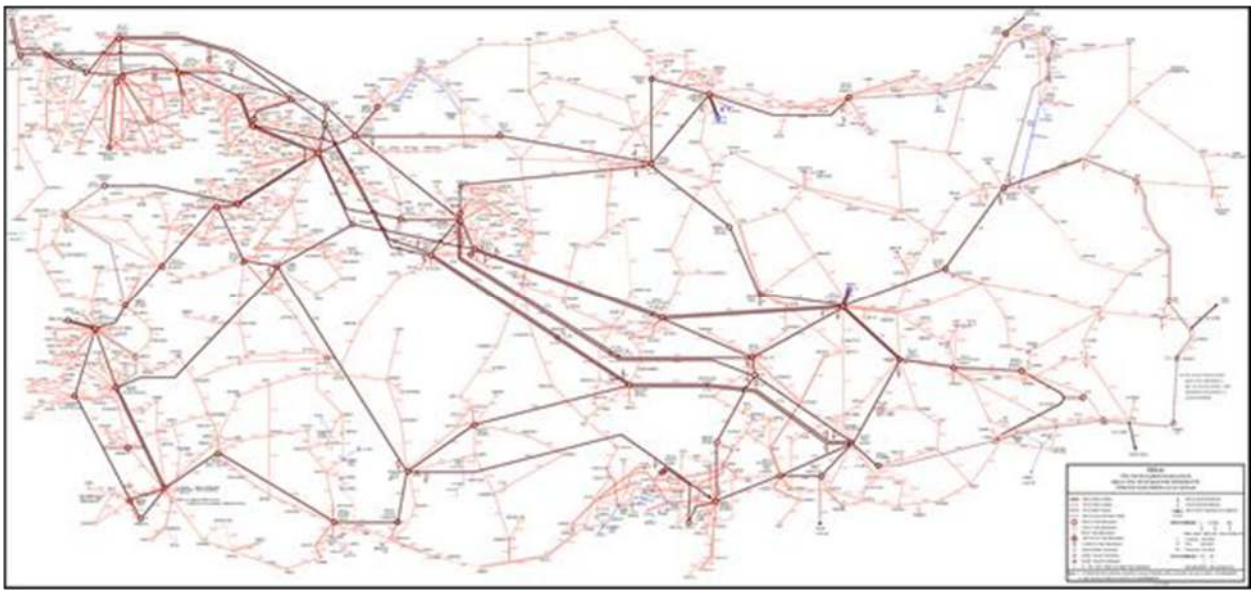

Figure 5. Turkish electricity grid

As per ACM0002 methodology Section 2.2.9, the applicability conditions included in the tools used shall also be discussed.[1]

- Tool 01 Tool for the demonstration and assessment of additionality: The project uses relevant tool together with ACM0002 methodology. No new methodology is used.
- Tool 07 Tool to calculate the emission factor for an electricity system: This tool is applicable and used for the calculation of OM, CM and CM since the project activity includes grid power plants and supplies electricity to the grid.

Tool 01 Tool to determine the remaining lifetime of equipment: This tool is used to determine the remaining lifetime of baseline or project equipment. Average lifetime of turbines is assumed as 25 years.

B.3. Project boundary

The project boundary is considered as the National Electricity Grid of Turkey according to applied tool. The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the power plant is connected to.

The flow diagram of the project boundary is illustrated below:

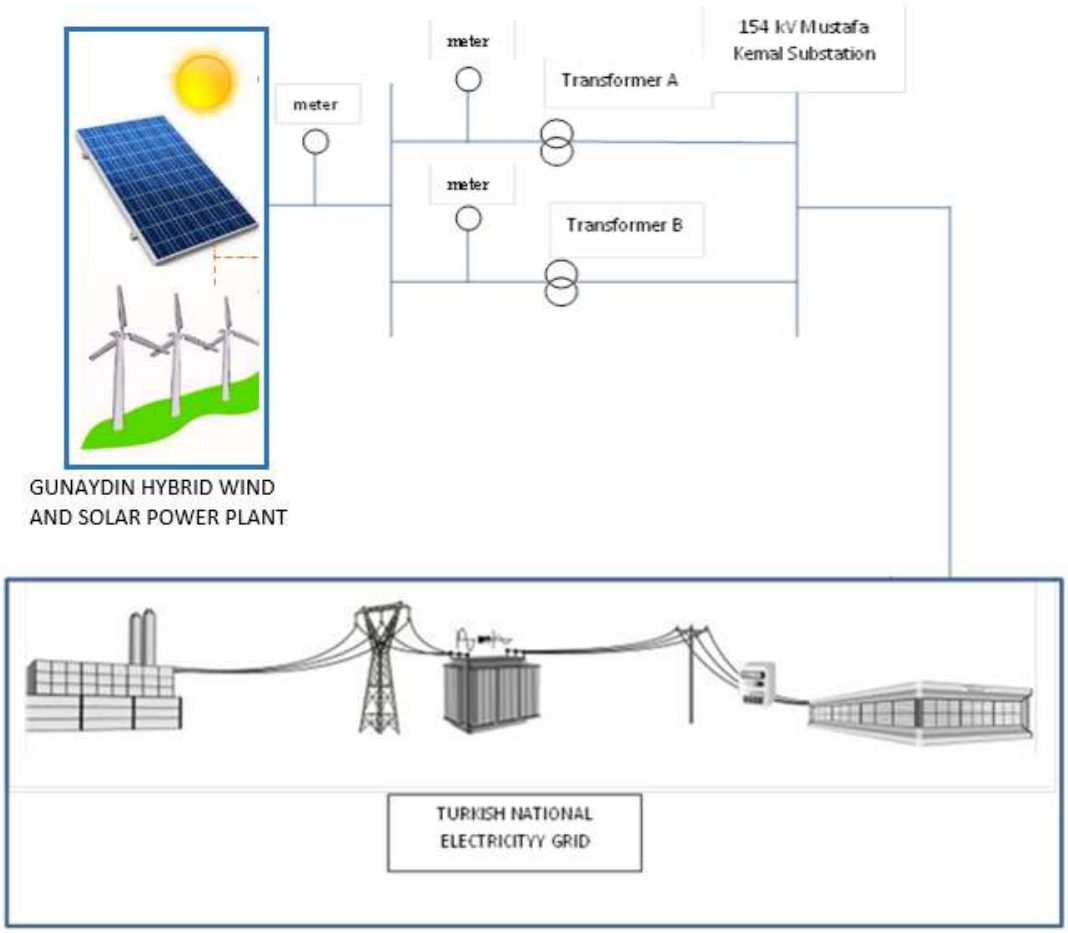

Figure 6. The flow diagram of the project boundary

For the purpose of GHG mitigation/sequestration following table shall be completed (delete if notrequired)

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Electricity generation by thegrid connected power plants	CO_2	Yes	Major emission source
		CH_4	No	Minor emission source. Excluded for simplification
		N_2O	No	Minor emission source. Excluded for simplification
Project scenario	Project scenario	CO_2	No	Zero emission electricity generation from renewableresources. Emissions from diesel generator are excluded for simplification as it is a minor emission source.
		CH_4	No	Zero emission electricity generation from renewable resources.
		N_2O	No	Zero emission electricity generation from renewable resources.

B.4. Establishment and description of baseline scenario

According to the Tool 11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, Version 3.0.1, there are some requirements:

- The tool offers 2 steps. The first step provides an approach to evaluate whether the currentbaseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.

- Although there is no change in national/sectoral policies affecting project implementation (Step 1.1), investment and technology (Step 1.3), the current situations such as margin calculations (Step 1.2) and parameters not monitored (Step 1.4) have been changed. Therefore, Step 2 has been applied.

According to the methodology, baseline scenario was identified as “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources”.

Turkish electricity generation is mainly composed of thermal power plants and the share of renewable resources; especially hydroelectric power plants have decreased significantly in recent years whereas shareof wind power plants are still very low. Since Turkey is an advanced developing country, there is anincreasing demand for electricity which is fully expected to continue in the foreseeable future.

The trend in Turkey to date and given historically slow development of alternative energy resources is to build an increasing number of thermal power plants in the future to satisfy the annual growth in energy consumption demand. Turkey as an advanced developing nation has looked at dealing with energy security by developing and constructing high capacity coal and natural gas power plants. The development of thermal power plants has been also encouraged by the large natural resource

availability in Turkey, especially the abundance of economically accessible lignite.

In the absence of the project activity, the same amount of electricity is required to be supplied via either the current power plants or by increasing the number of thermal power plants thus increasing GHG emissions.

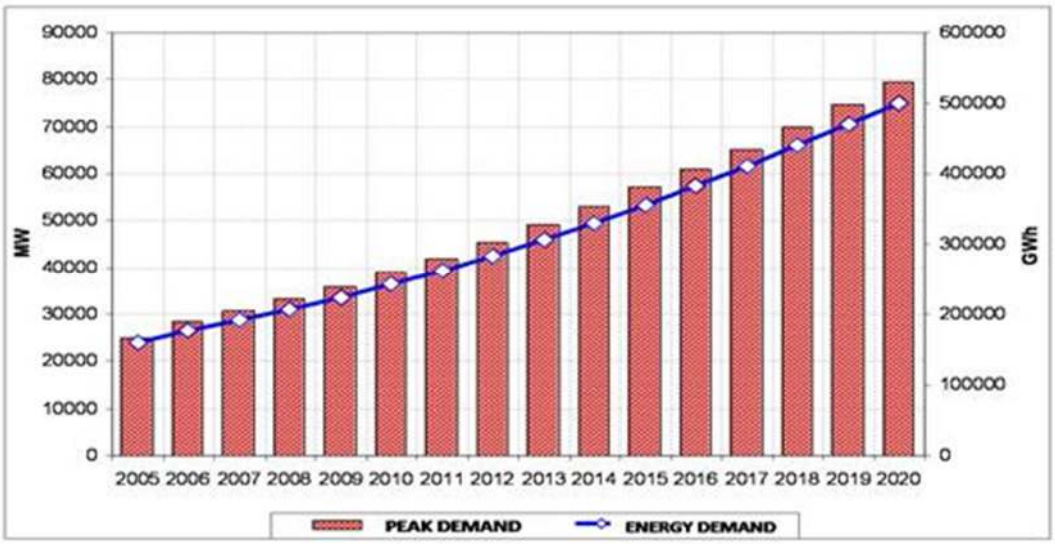

Figure 7. Peak Load and consumption projection for Turkish electricity system between 2005-2020[1]

According to the Ministry of Energy and Natural Resources statistics [1] , share of WPPs together with geothermal power plants could hardly reach 6.6% in 2019whereas share of Coal and natural gas are 37.3% and 29.8%, repectively. When we look at the annual development of Turkey's gross generation in recent years we see that grid is dominated by thermal power plants and which is boosted by increasing energy demand in parallel to increase population and per capita income. Hence, baseline of Turkey's electricity gridwill continue to be dominated by fossil fuel power plants which is seen as the quickest solution in short term to meet the demand and enable energy security in supply side.

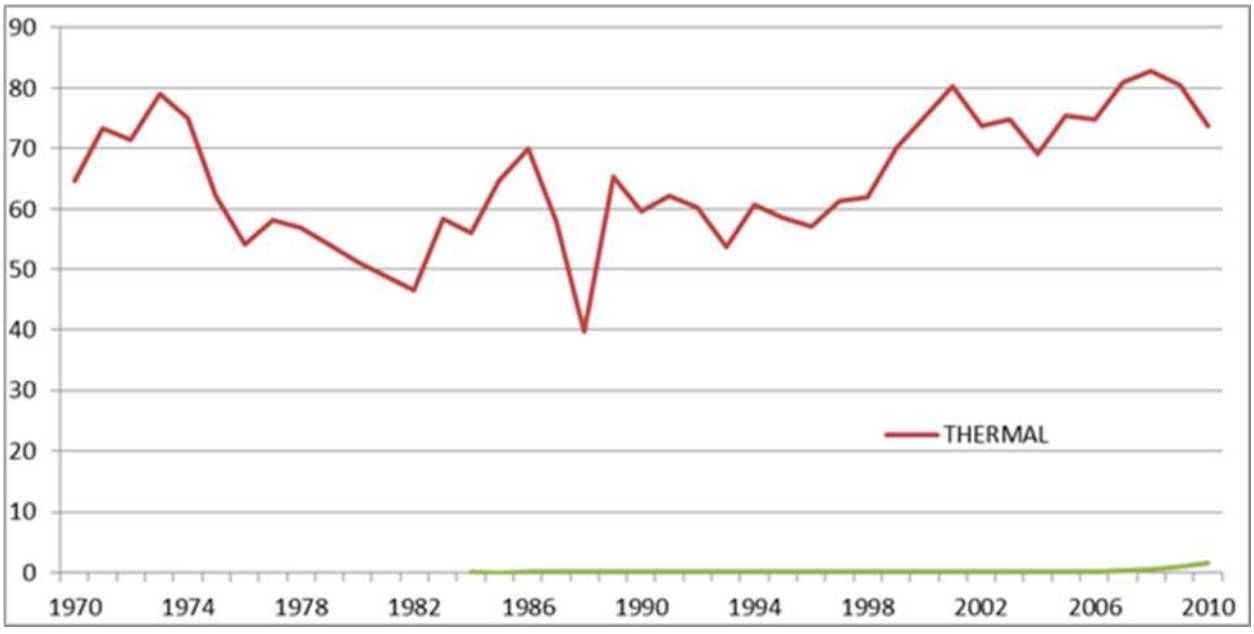

Figure 8. Annual Development of Turkey's Gross Generation Capacity

B.5. Demonstration of additionality

According to the applied methodology (ACM0002), the baseline scenario for the project is defined as "generation of equal amount of electricity by the power plants connected to the grid". The emission factor for the baseline scenario was calculated according to the combined margin approach defined by the selected methodology. After the addition of solar panel units under the design change, the project is expected to generate approximately 65.7 GWh of electricity and reduce approximately 36,262 tCO2 emissions by substituting the electricity that would have to be supplied through the National grid in the absence of project activity.

Solar panel units were added to the project to generate the maximum amount of electricity allowed by the generation license. As stated in the amended license document, the project's annual electricity generation capacity has been increased to 65.7 GWh. In line with the license, the installed capacity of the project remains the same in terms of electrical power (20 MWe), while its mechanical capacity is 40.4114 MWm When the financial analysis is made with these auxiliary units added to the project, it is seen that the equity IRR value of the project is still below the benchmark.

The additionality of the proposed project has been assessed according to the tool applied to demonstrate additionality as shown in the following steps.[11]

Step 1 - Identification of Alternatives to the project activity consistent with current laws and regulations

Sub-step 1a - Define alternatives to the project activity:

The most realistic and reliable alternatives to the project activity are:
1. Proposed project not undertaken as a VER project activity
2. Continuation of the current situation-supply of equal amount of electricity by the newly built grid connected power plants

The first alternative, which is the implementation of the project without carbon revenue is not financially attractive.The Second alternative (Scenario 2) is the baseline scenario and implementation of the proposed project as a VER activity would be additional to this scenario.

Outcome of Step 1a

Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is alternative 2 above and therefore reduces the emissions.

Sub-step 1b.Consistency with mandatory laws and regulation

The following applicable mandatory laws and regulations have been identified:

[11] Tool01 Methodological tool for the demonstration and assessment of additionality Version 07.0.0

1. Electricity Market Law
2. Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy18
3. Energy Efficiency Law
4. Forest Law
5. Environment Law

The resultant alternatives to the project as outlined in Step (1a) are in compliance with the applicable laws and regulations.[1]

Outcome of Step 1b

Mandatory legislation and regulations for each alternative are taken into account in sub-step 1b. Based on the above analysis, the proposed project activity is not the only alternative amongst the project participants that is in compliance with mandatory regulations. Therefore, the proposed VER project activity is considered as additional.

Step 2 - Investment analysis

The investment analysis has been done in order to make an economic and financial evaluation of the project. No public funding or ODA are available in Turkey for finance of this type of projects. Proposed project has been financed through company own resources. Loans may be utilized in next steps of the investment depending on the market conditions and availability of financial resources. For investment analysis, loan conditions have been determined considering the proposals submitted by financiers and market rates.

Sub-step 2a - Determine appropriate analysis method

There are three options for the determination of analysis method which are:

- Simple Cost Analysis
- Investment Comparison Analysis and
- Benchmark Analysis

Since Project generates economic benefits from sales of electricity, the simple cost analysis is not applicable. Also, since the baseline of the project is generation of electricity by the grid, no alternative investment is considered at issue. So, it has been decided to use benchmark analysis for evaluation of the project investment.

Sub-step 2b: Option III. Apply benchmark analysis

For benchmark analysis, figure defined by World Bank for similar project types have been used which has been given as 15% by a report generated in June 19, 2017. [12] For the proposed project, in order to reach this equity IRR values, average electricity tariff must be above 8.85 $c/kWh in the absence of carbon revenue and assuming that initial investment figures are

[12] World Bank Document for IRR Benchmark.pdf

realized so that the investment will become reasonable.[13]

Sub-step 2c. Calculation and comparison of financial indicators

Table 16. Main financial parameters used for investment analysis

Parameters	Unit	Initial Project	Capacity Addition (1st Design Change)[14]	Final/Current Design(2nd Design Change)[14]
Installed Capacity	MWe	12.5	20.0	20.0[1]
Grid Connected output	MWh	36.7	55.5	65.7[1]
Capital Investment	Million $	18.6	27.9	42,30
Income tax rate	%	20	20	25[15]
Expected Tariff	$ Cents/kWh	7.3	7.3	7,70[16]
Operation&MaintenanceCost	$/Year	680	897	1.367
Equity IRR	%	11.57	12.00	9,96%

Turbine Agreement for capacity extension (Investment decision date for the initial wind power plant)	20/12/2011[17]
EPC Agreement (Investment decision date for the hybrid system)	11/12/2023

Equity IRR has been calculated according to the tool as stated in the applied methodology and using pre-tax IRR as the benchmark used is also real pre-tax equity IRR. Electricity tariff has been used as $7.70 Cent/kWh[16]. Annual generation has been taken as 65.7 GWh as stated in the generation license. Investment decision date for the design change with the addition of solar panel units as an auxiliary source has been identified as the date of EPC Agreement. Calculation and estimations have been made conservatively therefore equity IRR value represents the most optimistic scenario in terms of capital investment and electricity generation. On the other hand

[13] GS1178_PDD_version 9
[14] Confidential Gunaydin Financial Model_Final Capacity.xlsx
[15] https://www.resmigazete.gov.tr/eskiler/2022/04/20220415-1.htm
[16] https://seffaflik.epias.com.tr/electricity/electricity-markets/day-ahead-market-dam/market-clearing-price-mcp
[17] GS 1178 PDD version 15

electricity tariff is expected to increase so that the investment becomes attractive however as given below, expectations have not been realized yet due to the market conditions.

Expected return on investment for these types of projects should be above 15% as per WB document however, expectation of many investors is returns around 25% for successful investments for some investment funds. Even if we consider the minimum benchmark equity IRR which is 15%, for proposed project, in order to reach this equity IRR values, average electricity tariff must be above 8.85 $c/kWh in the absence of carbon revenue and assuming that initial investment figures are realized so that the investment will become reasonable.

The IRR value calculated before the addition of solar panels within the scope of the design change was 12%. With the addition of solar panels, this IRR value decreased to 9.96 %. When the carbon revenues are included in the cash flow, equity IRR increases to 10.09 % and the project becomes more attractive and viable for the investors. Carbon revenue has a significant effect in this respect in terms of decreasing the period for return on investment and risk of investment decision. The project is still financially feasible due to expected revenue from carbon credit sales, which helps balance the lower profitability. The main idea is to reach committed electricity generation. Adding solar panels ensures expected electricity generation targets and brings reputational benefits, highlighting the project's commitment to renewable energy and sustainability

The electricity sales price is taken from Epiaş's website where past and current sales prices are given. It can be seen that the prices realized here are in some cases even lower than the guaranteed price.[16]

For the proposed project, in order to reach the benchmark equity IRR values, average electricity tariff must be above 8.85$ c/kWh so that the investment will become reasonable. Considering that control wind power plants on generation period is limited, expectation that the floor electricity prices will increase is the risk for investors whereas realization of this expectation will increase the premium. Carbon revenue has a significant affect in this respect in terms of decreasing the period for return on investment and minimizing investment risk.

Sub-step 2d - Sensitivity Analysis

Sensitivity analysis has been carried out for three main parameters identified which constitute all income and expenses of project effecting project return;

- Investment Cost
- Operating Cost
- Electricity Sales revenue

In the sensitivity analysis, fluctuations of 5%, 10%, and 15% in the investment cost, operating cost, and electricity income parameters, along with the corresponding changes in IRR values, can be seen in the table below.

Table 17. Sensitivity analysis for proposed project (before design change) without carbon revenue

% Fluctuation	-15	-10	-5	0	5	10	15
Investment Cost	15.85	14.37	13.09	12.00	11.04	10.20	9.45
Operating Cost	12.86	12.57	12.28	12.00	11.71	11.43	11.14
% Fluctuation	**-15**	**-10**	**-5**	**0**	**5**	**10**	**15**
Electricity Income	8.33	9.53	10.75	12.00	13.27	14.58	15.91

The sensitivity analysis table below has been obtained for the final design of the project with the solar panel addition (20 MWe).

Table 18: Sensitivity analysis for proposed project (after extension) without carbon revenue

% Fluctuation	-15	-10	-5	0	5	10	15
Investment Cost	11.97	11.03	10.63	9.96	9.29	8.62	7.95
Operating Cost	11.01	10.66	10.31	9.96	9.61	9.26	8.91
% Fluctuation	**-15**	**-10**	**-5**	**0**	**5**	**10**	**15**
Electricity Income	4.65	6.42	8.19	9.96	11.77	13.54	15.31

Moreover, to reach the benchmark Equity IRR stated as 15% as per WB Report, there should be some fluctuations on parameters, namely, investment cost, operation cost and electricity sales revenue.

These fluctuations are tabulated below:

Table 19. Percentage changes to reach the benchmark equity IRR after capacity addition

	% Fluctuation
Investment cost	-21.0%
Operating cost	-28.0%
Electricity income	+19%

Sensitivity analysis has been carried out according to the conditions when the investment decision is given hence for 65.7 GWh generation and 7.7$ c/kWh guaranteed price.[17]

Outcome of Step 2:

The investment and sensitivity analysis shows that the VER revenues will improve the financial indicators of the Project remarkably. To meet the 15% IRR benchmark, the electricity price would need to rise by over 15% - 19% from the assumed level. Given that the current feed-in tariff is already much higher than the general market price, a further increase is unlikely. Therefore, achieving a 15% rise in the feed-in tariff seems improbable. Moreover, even with a 15% increase in electricity prices, the project's IRR would still fall short of 15%.

Step 3. Barrier analysis

This step is not applied as the additionality is demonstrated in previous steps.

Step 4. Common Practice Analysis

According to the "Tool for the demonstration and assessment of additionality", Version 07.0.0", the common practice shall provide an analysis of any other activities that are similar to the Project Activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing etc.

Common practice Version 03.1has been followed.[18]

Step 1: calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

The total capacity of the proposed project is 20.0 MWe. Therefore, the applicable output range is from 10.0 MW to 30.0 MW

Step 2: Identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

(a) The projects are located in the applicable geographical area;
(b) The projects apply the same measure as the proposed project activity;
(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

[18] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf/history_view

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Applicable geographical area has been selected as the whole host country.Projects which apply the same measure as the proposed project have been determined and wind (main source) and solar (secondary source) energy projects are selected as the same energy source type of projects. All of the selected plants deliver the same service which is the electricity generation.

The list of wind project facilities with solar energy as a secondary source was taken from EMRA's official page.[19]

Facility Name	City	Facility Type	Source Type	Installed Capacity (MWE)
ALİAĞA RES	İZMİR	Wind	Main Source	120
		Solar	Secondary Source	0
YUNTDAĞ RES	İZMİR	Wind	Main Source	60
		Solar	Secondary Source	0
ÇANAKKALE RES	ÇANAKKALE	Wind	Main Source	29.9
		Solar	Secondary Source	0
ALAÇATI RES	İZMİR	Wind	Main Source	16
		Solar	Secondary Source	0
KOCATEPE RES	AFYONKARAHİSAR	Wind	Main Source	88
		Solar	Secondary Source	0
UMURLAR RES	BALIKESİR	Wind	Main Source	36.4
		Solar	Secondary Source	0
SAYALAR RES	MANİSA	Wind	Main Source	57.2
		Solar	Secondary Source	0
İNTEPE RES	ÇANAKKALE	Wind	Main Source	55.7
		Solar	Secondary Source	0

[19] https://lisans.epdk.gov.tr/epvys-web/faces/pages/lisans/elektrikUretim/elektrikUretimOzetSorgula.xhtml

ÇAMSEKİ RES	ÇANAKKALE	Wind	Main Source	63.1
		Solar	Secondary Source	0
KUYUCAK RES	MANİSA	Wind	Main Source	50.1
		Solar	Secondary Source	0
KELTEPE RES	BALIKESİR	Wind	Main Source	29.9
		Solar	Secondary Source	0
BAĞLAR RES	KONYA	Wind	Main Source	100
		Solar	Secondary Source	0
TATLIPINAR RES	BALIKESİR	Wind	Main Source	131.8
		Solar	Secondary Source	0
DİLEK RES	KAHRAMANMARAŞ	Wind	Main Source	27.5
		Solar	Secondary Source	0
HAVZA RES	SAMSUN	Wind	Main Source	48
		Solar	Secondary Source	0
ELMALI RES	MERSİN	Wind	Main Source	27
		Solar	Secondary Source	0
BAFA RES	AYDIN	Wind	Main Source	45
		Solar	Secondary Source	0
ZİNCİRLİ RES	KAYSERİ	Wind	Main Source	12
		Solar	Secondary Source	0
AKDAĞ RES	KONYA	Wind	Main Source	23
		Solar	Secondary Source	0
KUYULUKOYAK RES	KONYA	Wind	Main Source	16
		Solar	Secondary Source	0
GÜNDOĞDU RES	BURSA	Wind	Main Source	9
		Solar	Secondary Source	0
KURTİNİ RES	MERSİN	Wind	Main Source	14
		Solar	Secondary Source	0
KURTKAYASI RES	KAYSERİ	Wind	Main Source	48.6
		Solar	Secondary Source	0
ELMALI RES	MERSİN	Wind	Main Source	9
		Solar	Secondary Source	0
PİTANE RES	İZMİR	Wind	Main Source	4.8

		Solar	Secondary Source	0

All power plants that have same capacity, within the range 10.0 MWe to 30.0 MWe has been listed in the table below and provided common practice excel sheet. Properties of the power plants are also indicated in this excel sheet.[20]

No	**Plant**	**Installed Capacity (MWe)**	**Main Source**	**Secondary Source**	**Project Status as of 18/04/2014**
1	Çanakkale RES	29.9	Wind	Solar	GS Certified
2	Alaçatı RES	16	Wind	Solar	No registiration
3	Keltepe RES	29.9	Wind	Solar	GS Certified
4	Dilek RES	27.5	Wind	Solar	GS Certified
5	Elmalı Res	27	Wind	Solar	GS Certified
6	Zincirli RES	12	Wind	Solar	GS Certified
7	Akdağ RES	23	Wind	Solar	No registiration
8	Kuyulukoyak RES	16	Wind	Solar	No registiration
9	Kurtini RES	14	Wind	Solar	No registiration

Step 3: within the projects identified in Step2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all}

14

Projects are already registered in voluntary carbon standards listed in the common practice excel sheet with their reference website links.

Therefore;

Nall = 4

[20] Fiba Gunaydin Common Practice excel sheet latest version

Step 4: within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number Ndiff

It has been determined that all wind and solar power plants within the applicable range except 4 projects are validated within voluntary carbon standards. Among the power plants taken into consideration that projects have a different financial model.

Therefore; Ndiff = 4

Step 5: calculate factor F=1-Ndiff/Nall representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

F=1-Ndiff/Nall=1-(4/4) = 0 (< 0.200)

Nall – Ndiff = 4 – 4 = 0 (< 3)

According to "Tool for the demonstration and assessment of additionality", Version 07.0.0, if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3, then the proposed project is a "common practice".

For the proposed project, F=0 and Nall-Ndiff=0, therefore, the proposed project is not a common practice within the applicable geographical area. Hence, the proposed project is additional.

Given the fact that all there is no plants similar to the proposed project and built without carbon revenue, the proposed type of project should not be considered as a common practice in Turkey.

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

1 – Affordable and Clean Energy (SDG 7): The project promotes clean and sustainable energy production and use. It is expected to create 65.7 GWh clean energy per annum.

"By 2030, increase substantially the share of renewable energy in the global energy mix." [1]

2 – Decent Work and Economic Growth (SDG 8): The project creates employment opportunities for all. All employees will get compulsory training and also trainings required for specific positions. The project is expected to create 9 permanent opportunities during operation period.

"By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value."

"Increase in national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national

legislation, by sex and migrant status".[1]

3 – Climate Action (SDG 13): The project contributes to SDG Target 13 with an expected amount of 36,262 tonnes of CO2e, which represent direct and quantifiable impact on climate security. The project is also expected to reduce SO2 and NOx emissions by 344.3 tonnes/ yr and 72.5tonnes / yr, respectively.[21]

"Improve education, awareness-raising and human and institutional capacity on climate change mitigation,adaptation, impact reduction and early warning."[1]

[21] Conf_CM_ER_Gunaydın Excel File

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

SDG 7: Affordable and Clean Energy (Ensure access to affordable, reliable, sustainable and modern energyfor all)

The baseline for the project is no project, thus leading to generation in the relevant grid which is dominated by fossil fuel and this is one of the methodological reason for choosing simple OM method to calculate emission factor. The clean energy generated by the project is calculated based on the amount of electricitygenerated by the project per annum. The project is expected to generate 65.7GWh of clean energy per annum and contributes to share of low-cost / must-run sources. Hence, contribution of the project could befollowed via indicator "Renewable energy share in the total final energy consumption" and following target: ''By 2030, increase substantially the share of renewable energy in the global energy mix". This project increases the renewable energy sharing of global energy mix and contribute to improved air quality by reducing air pollution.

SDG 8: Decent Work and Economic Growth (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all):

Project contributes to decent work and economic growth could be expressed as following target and indicator:
"By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.": The project promotes job opportunities for all.

"Increase in national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status": Training (including H&S) & Other Certification processes required by certain necessary professionswill be provided to employees to protect human health & rights and develop. Hence, project contributes awaraness of labour rights and safety precautions.

SDG13 : Climate Action (Taking urgent action to combat climate change and its impacts):
The project leads to mitigation of 36,262tCO_2 per annum. It is also expected to reduce SO_2 and NOx emissions by 344.3 tonnes/ yr and 72.5tonnes / yr, respectively. The project contributes to the target of SDG 13 which could be expressed via following indicator:

"Improve education, awareness-raising and human and institutional capacity on climate change mitigation,adaptation, impact reduction and early warning": The project's contribution is done through training and awareness raising of local people and setting good example by investing to the climate friendly technology.

Emission factor has been calculated in a conservative as requested by the methodology. For this crediting period, a new emission factor has been calculated considering the most up-to-date data availeble of the years 2016 – 2018. Basic assumptions made are;

- Emission factor will remain same over the crediting period,
- Emission factor of fuels sources is "0" or the lowest value in the references when there is no information.

For calculation of the emission factor of Turkish Grid, "Tool to Calculate the Emission Factor for an Electricity System", has been used.

Since the share of low-cost / must-run sources is below 50%, method (d) is eliminated. Also due to insufficient data available, methods (b) and (c) are not considered and thus (a) simple OM method is used in calculations. The following table is used for demonstrating the share of low cost/must run resources.

Simple Adjusted OM equation becomes equivalent to the equation for (a) Simple OM method (option A). In another meaning options to calculate operating margin reduced to two options which are Simple OM_Option A and Simple OM_Option B and equations of both of them given below. In the last case for operating margin calculation, due to availability of necessary data Simple OM_Option B was used for the emission reduction calculations of this project.

Simple OM_Option A, equation:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \, x \, EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Simple OM_Option B, equation:

$$EF_{grid,OMsimple,y} = \frac{\sum_m FC_{i,m,y} \, x \, NCV_{i,y} \, x \, EF_{CO2,i,y}}{\sum_m EG_{m,y}}$$

$m \quad m,y$

Where:

$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)
m = All power units serving the grid in year y except low-cost/must-run power
unitsy = The relevant year as per the data vintage chosen in Step 3
$FC_{i,m,y}$ = Amount of fuel type i consumed by power unit m in year y (Mass or volume unit)
$NCV_{i,y}$ = Net calorific value (energy content) of fuel type i in year y (GJ/mass or volume unit)$EFCO_{2,i,y}$ = CO_2 emission factor of fuel type i in year y ($t\ CO_2/GJ$)

The methodology has been applied in a conservative manner. Tools addressed by the applied methodology have been used to calculate baseline, project and leakage emissions. The equations used are:

Emission Factor

EFgrid, BM, y = ΣmEGm,y . EF ELm,y / ΣmEGm,y
$EF_{grid,\ CM,\ y}$ = (W_{OM} . $EF_{grid,\ OM,\ y}$) + (w_{BM} . EFgrid, BM, y) Where:
$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y ($t\ CO_2/MWh$) $EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y ($t\ CO_2/MWh$)
$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y ($t\ CO_2/MWh$) m = Power units included in the build margin
Y = Most recent historical year for which electricity generation data is available W_{OM} = Weighting of operating margin emission factor (per cent)
W_{BM} = Weighting of build margin emission factor (per cent)

Baseline Emission BEy = EGPj, y . EFgrid,CM,y Where:
BEy = Baseline emissions in year y ($t\ CO_2$ /yr)
$EG_{Pj,\ y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculatedusing the latest version of the "Tool to calculate the emission factor for an electricity system" ($t\ CO_2/MWh$)

PD = Power density of the project activity (W/m^2)

These emissions shall be accounted for as project emissions by using the following equation: PEy = PEFF,y
+ PEGP,y + PEHP,y

Where:

PEy = Project emissions in year y ($t\ CO_2$ /yr)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y ($t\ CO_2/yr$)
$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y ($t\ CO_2e/yr$)
$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y ($t\ CO_2e/yr$)
The proposed project activity involves the generation of electricity by a wind power plant, therefore parameters $PE_{GP,y}$ and $PE_{HP,y}$ are not applicable. According to the applied methodology: "For all

renewable energy power generation projectactivities, emissions due to the use of fossil fuels for the backup generatorcan be neglected."Since the project is classified as a renewable energy project, parameter $PE_{FF,y}$ is neglected.

Therefore;
PEy = 0

Leakage Emissions:

The energy generating equipment is not transferred from or to another activity. Therefore leakage is also considered as "0".
LEy = 0

Emission Reductions:

Emission reductions are calculated as follows: ERy = BEy -
PEyWhere:
ERy = Emission reductions in year y (t CO_2 /yr) BEy = Baseline emissions in year y (t CO_2/yr) PRy = Project emissions in year y (t CO_2e/yr)
Since PEy =

0,ERy = BEy

Total SO2 emission related to electricity generation is about 1558 kt (=1558 Gg) and NOx emission is about 328 kt for 2017 according to National Inventory of Turkey (latest data available). Considering that electricity generation in 2017 is 297,277.5 GWh, SO2 emission per MWh is calculated as 5.24 kg/MWh and NOx emission per MWh is 1.10 kg/ MWh. Detailed calculation is represented in the excel sheet.

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

Relevant SDG Indicator	7.2.1 "Renewable energy share in the total final energy consumption" 13.3.2 Number of countries that have communicated the strengthening ofinstitutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"
Data/parameter	$FC_{i,y}$

Unit	Tons or 1000 m3 for gases
Description	Amount of fuel type i consumed by power plant/unit m, k or n (or in theproject electricity system in case of FCi,y) in year y or hour h

Source of data	TEIAS web page https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri III – Electricity Production / Consumption / Losses 2018 (TRDF6F.xls)
Value(s) applied	See Annex 4
Choice of data or Measurement methodsand procedures	Data from Grid Operator has been used.
Purpose of data	Data used for OM calculation
Additional comment	-

Relevant SDG Indicator	7.2.1 "Renewable energy share in the total final energy consumption" 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"
Data/parameter	EGy
Unit	MWh
Description	Net electricity generated by power plant/unit m, k or n (or in the projectelectricity system in case of EGy) in year y
Source of data	For gross generation electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must run powerplants in year y : https://www.teias.gov.tr/tr/iii-elektrik-enerjisi-uretimi-tuketimi-kayiplar-0 (Türkiye Brüt Elektrik Enerjisi Üretiminin Üretici Kuruluşlar ve Birincil EnerjiKaynaklarına göre Yıllar İtibariyle Gelişimi (2006-2017) For net generation and imported electricity: http://www.teias.gov.tr/sites/default/files/2019-10/82.xls (İthal EdilenElektrik Enerjisinin Yıllar İtibariyle Aylık Dağılımı (2009-2018)
Value(s) applied	183,767,486 MWhin 2016 205,532,639 MWhin 2017 202,323,104 MWh in 2018 591,623,228 MWh between 2016 - 2018
Choice of data or Measurement methodsand procedures	Data from Grid Operator has been used
Purpose of data	Data used for emission reduction calculation (for calculation of OM, Net-to-Gross electricity ratio and share of low-cost must-run sources)
Additional comment	-

Relevant SDG Indicator	7.2.1 "Renewable energy share in the total final energy consumption" 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"
Data/parameter	EFCO2, i, y
Unit	tCO2/GJ
Description	CO2 emission factor of fuel type i used in power unit m in year y
Source of data	For EF of fossil fuels, IPCC values at the lower limit have been used.
Value(s) applied	**Fuel Source** / **EF(tCO2/TJ)** Coal 89,5 Lignite 90.9 Fuel Oil 75.5 Diesel 72.6 LPG 61.6 Naphtha 69.3 Natural Gas 54.3
Choice of data or Measurement methodsand procedures	According to the applied tool, IPCC default values at lower limit of 95% confidence interval can be used. Although, the actual emission reduction is expected to be higher due to high EF of fuels consumed in existing power plants, IPCC values have been used for conservativeness as requested by themethodology.
Purpose of data	EF calculations
Additional comment	-

Relevant SDG Indicator	7.2.1 "Renewable energy share in the total final energy consumption" 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"
Data/parameter	$\eta_{m,y}$
Unit	-
Description	Average net energy conversion efficiency of power unit m in year y
Source of data	Default values provided Annex I of the "Tool to calculate the emissionfactor for an electricity system"
Value(s) applied	See Annex 4
Choice of data or Measurement methodsand procedures	Data source is selected as per the applied tool.
Purpose of data	Data used for BM calculation

Additional comment	-

<table>
<tr><td>Data/parameter:</td><td>NCVi,y</td></tr>
<tr><td>Unit</td><td>GJ/t</td></tr>
<tr><td>Description</td><td>Net calorific value (energy content) of fossil fuel type i in year y</td></tr>
<tr><td>Source of data</td><td>TEIAS web page http://www.teias.gov.tr/sites/default/files/2019-10/75.xls (Türkiye Termik Santrallarında Kullanılan Yakıtların Isı Değerlerinin Üretici Kuruluşlara Dağılımı (2006-2018)</td></tr>
<tr><td>Value(s) applied)</td><td>
<table>
<tr><th>Fuel Source</th><th>NCV (Tj/kt) (1000m³ for gas)</th></tr>
<tr><td>Coal</td><td>23.7</td></tr>
<tr><td>Lignite</td><td>7.0</td></tr>
<tr><td>Fuel Oil</td><td>44.0</td></tr>
<tr><td>Diesel</td><td>44.3</td></tr>
<tr><td>LPG</td><td>0</td></tr>
<tr><td>Naphtha</td><td>0</td></tr>
<tr><td>Natural Gas</td><td>37.0</td></tr>
</table>
</td></tr>
<tr><td>Choice of data or measurement methodsand procedures</td><td>Data has been calculated from Grid Operator’s (TEIAS) statistics</td></tr>
<tr><td>Purpose of data</td><td>Data used for BM calculation</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

B.6.4. Ex ante estimate on of outcomes linked to each of the three SDGs

1 – Affordable and Clean Energy (SDG 7):
The project is expected to generate 65.7 GWh of clean energy per annum and contributes to share of low- cost / must-run sources.

2 – Decent Work and Economic Growth (SDG 8):

The project is expected to create 30 job opportunities during construction period. In the operation period, 9 permanent opportunities will be present and these positions will be filled from local people as much as possible. Although the job opportunities were planned to include both men and women positions, there was no woman employee working directly in the field. However, there are women working for the project in the headquarter of FIBA Group. Additionally, FIBA Group was listed among “Woman-friendly 100 Companies” in 2019[2].

[2] All employees will attend trainings on first aid and health & safety. For positions that require specific skills (such as high voltage equipment) staff will either be trained or certified staff will be recruited. Training details can be found in the monitoring plan.

3 – Climate Action (SDG 13):

As per the tool, the following six steps for calculation of emission reductions have been applied:

Step 1: Identify the relevant electricity systems

According to the ‘‘Tool to calculate the emission factor for an electricity system’’, Version 07.0, a project electricity system has to be defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity, and that can be dispatched without significant transmission constraints. Therefore, in this project activity the project electricity system includes the project site and all power plants attached to the Interconnected Turkish National Grid, which has a gross generation about 304,801.9 GWh by 2018.
For imports from connected electricity systems located in another host country (ies), the emission factor is taken as “0” tCO2/MWh as requested by the methodology.

Step 2: Choose whether to include off-grid power plants in the project electricity system

(optional) Option I has been chosen by the project developer hence only grid power plants are included

in calculations. **Step 3: Select a method to determine the operating margin (OM)**

The Simple Operating Margin (OM) emission factor (EFgrid, OM, y) is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all the generating plants serving the system, excluding low-cost/must-run power plants. As electricity generation from solar and low cost biomass facilities is insignificant and there are no nuclear plants in Turkey, the only low cost /must run plants considered are hydroelectric, wind and geothermal facilities.

The tool gives two options for the calculation of $EF_{grid, OM, y}$;

- **Ex-ante option**

A 3-year generation-weighted average, based on the most recent data available at the time of submission of the VER-PDD to the VVB for validation, without the requirement to monitor and recalculate the emissions factor during the crediting period, or

- **Ex-post option**

The year in which the project activity displaces grid electricity, with the requirement that the emissions factor to be updated annually during monitoring.

For this project the ex-ante approach is selected. Data for calculating the three year average is obtained from the period 2016-2018, the most recent data available at the time of PDD submission to the Validation Verification Body (VVB).

Step 4: Calculate the operating margin emission factor according to the selected method.

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit netelectricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost
/ must run plants / units. The Simple OM has been calculated using option B which is based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system. Option B has been selected since;

- Generation and CO_2 data for individual power units are not available
- Only renewable are considered as low cost/must run resources
- Off-Grid power plants are not included in calculations.

As fuel consumption and average efficiency data for each power plant / unit are not available, Option B is used for simple OM calculation. Under Option B, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must run power plants / units, and based on fuel type(s), and total fuel consumption of the project electricity system,as follows:

$$EF_{Grid,OM\ simple,y} = \sum FC_{i,y} * NCV_{i,y} * EF_{CO2,i,y} / EG_y \quad (1)$$

where:

$EF_{grid,\ OM,\ y}$ Simple operating margin CO_2 emission factor in year "y" (tCO_2/GWh)
$FC_{i,\ y}$ Amount of fossil fuel type "i" consumed in the project electricity system in year "y" (mass orvolume unit)
$NCV_{i,\ y}$ Net calorific value (energy content) of fossil fuel type "i" in year "y" (GJ / mass or volume unit)
$EF_{CO2,\ i,}$ CO_2 emission factor of fossil fuel type "i" in year "y" (tCO_2/GJ)
EGy Net electricity generated and delivered to the grid by all power sources serving the system, notincluding low-cost / must run power plants / units, in year "y" (MWh)
x All fossil fuel types combusted in power sources in the project electricity system in year "y"
y Either the 3 most recent years for which data is available at the time of submission of the CDM-PDD to the VVB for validation (ex-ante option) or the applicable year during monitoring (ex post option), following the guidance on data vintage in step 2.

For the calculation of the Simple OM, the amount of fuel consumption ($FC_{i,\ y}$) and heating values of fuels are taken from website of TEIAS , the official source of related data. Fuel consumption values for the relevant years are given in table below:

Table 16. Amount of fuels used for electricity generation[2]

Fuel Type	Fuel Consumption ($FC_{i,y}$)			
	2016	2017	2018	Total 2016-2018
	Ton or 1000 m3 (for gas)			
Hard Coal	19,642,410	21,139,104	24,981,829	65,763,343
Lignite	60,213,772	64,412,257	73,533,486	198,159,515
Fuel Oil	526,674	317,724	225,297	1,069,695
Diesel Oil	306,393	197,219	11,776	515,388

LPG	0	0	0	0
Naphtha	0	0	0	0
Natural Gas	18,954,093	22,954,854	19,568,140	61,477,087

The NCV of the fuels consumed have been calculated using data from the TEIAS web page. The emission factors required for calculation of CO_2 emission coefficient have been obtained through IPCC 2006 guidelines for GHG inventories for fuels. If we sum up all emissions from each fuel type, then the total emissions in 2016-2018 is **393,805,926** tCO_2.

Table 17. Calculation of total emission generated (2016-2018)

Fuel Type	**Net Calorific Value (NCVi,y)**	**Emission Factor ($EF_{CO2,i}$)[2]**	**Total Fuel Consumption 2016 - 2018 (FCi,y)**	**Total Emissions 2016 - 2018**
	Gj/t or Gj/1000 m^3 (for gas)	**tCO_2/Gj**	**Ton or 1000 m^3 (for gas)**	**tCO_2**
Hard Coal	23.71	0.0895	65,763,343	139,549,870
Lignite	6.97	0.0909	198,159,515	125,471,483
Fuel Oil	44.01	0.0755	1,069,695	3,553,991
Diesel Oil	44.34	0.0726	515,388	1,659,161
LPG	0.00	0.0616	0	0
Naphtha	0.00	0.0693	0	0
Natural Gas	37.02	0.0543	61,477,087	123,571,422
TOTAL				**393,805,926**

Net electricity generated and supplied to the Grid by thermal plants has been calculated using data obtained from the TEIAS web page. The ratio between gross and net generation has been calculated first, and assuming that the same ratio is valid for thermal plants; gross generation by thermal power plants has been multiplied by this ratio in order to find net generation by thermal plants. The calculation of EFgrid,OM, y requires the inclusion of electricity imports with an emission factor of 0 tCO2/GWh. By including the imports in the electricity production this requirement is fulfilled. Summing up this with the imported electricity, total supply excluding low cost / must run sources are determined as given in table below.

Table 18. Gross/Net electricity generation by Turkish Grid (2016-2018)

Year	**Internal Consumption**	**Gross Thermal Generation**	**Net Thermal Generation**	**Import**	**Net Electricity Generated (EGy)**
	GWh	**GWh**	**GWh**	**GWh**	**GWh**
2016	4.5%	185,798.10	177,437.19	6,330.30	183,767.486
2017	4.4%	212,138.46	202,804.37	2,728.27	205,532.639

2018	4.7%	209,683.48	199,846.22	2,476.89	202,323.104
Average		**Total**	**580,087.77**	**11,535.46**	**591,623.23**

[1]

Having calculated the total fuels emissions and net generation by thermal power plants as given in previoustwo tables, The EFgrid, OM ,y, is calculated by simply dividing total emission by total net thermal electricity generation as defined in equation (1) above;

EFgrid, OM, y = **393,805,926** tCO_2 / **591,623,230** GWh = **0.666 tCO_2/MWh.**

In calculating the EFgrid, OM ,y, data for NCV has been calculated using weighted average values for each fuel.

Step 5: Calculate the build margin (BM) emission factor

In terms of vintage of data, project participants can choose between one of the following two options to calculate EFgrid,BM,y:

Option 1. For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the VVB for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the VVB . For the third crediting period, thebuild margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2. For the first crediting period, the build margin emission factor shall be updated annually, ex post,including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

In this PDD, Option1 is chosen to calculate the build margin emission factor. The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistentwith the data vintage selected above:

(a) Identify the set of five power units, excluding power units registered as CDM project activities, that

started to supply electricity to the grid most recently (SET5-units) and determine their annual electricitygeneration (AEGSET-5-units, in MWh);

Five Power Unit started the supply electricity to the grid most recently has been tabulated below:

Table 19. Most recently power units[2]

Name of Plant	Type of Fuel	Commissioning Date	Generation Capacity(GWh)
SELİMİYE HES	HEPP	31/12/2018	6,63

YENİHİSAR RES	WPP	30/12/2018	75,00
DÜZCE BİYOKÜTLE ENERJİ ÜRETİM TESİS	BIOMASS	28/12/2018	84,00
CERİT RES	WPP	28/12/2018	299,59
SWISSOTEL TERMİK KOJENERASYON SANTRALİ	NG	28/12/2018	6,62
			Total: 471,8

(b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEGtotal, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEGtotal (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) (SET≥20%) and determine their annual electricity generation (AEGSET-≥20%, inMWh);

For determination of plants that comprise 20% of the system's generation,net generation in year 2018 which is 299,682 GWh[1]has been taken as reference and its 20% has been determined as about 49,270.5 GWh. Since 20% of the most recent year's generation does not fall partly on capacity of a plant, total capacity included in BM calculation is 55,873.0 GWh

(c) From SET5-units and SET≥20% select the set of power units that comprises the larger annual electricity generation (SETsample); Identify the date when the power units in SETsample started to supply electricity to the grid. If none of the power units in SETsample started to supply electricity to the grid more than 10 years ago, then use SETsample to calculate the build margin. In this case ignore steps (d), (e) and (f).

SET≥20% is selected as (SETsample) because the set of power units that comprises the larger annual electricity generation. There is no power units in SETsample started to supply electricity to the grid more than 10 years ago. Therefore the steps (d), (e) and (f) are ignored.

The Build Margin emission factor EFgrid, BMs, y is calculated as the generation-weighted average emissionfactor of a sample of power plants "m" for a specific year, as follows:

EFgrid, BM, y = ∑EG,m,y . EFEL,m,y / ∑EG,m,y (2)

Where:

EFgrid,BM,y	Build margin CO2 emission factor in year "y" (tCO2/MWh)
EGm,y	Net quantity of electricity generated and delivered to the grid by power unit "m" in year "y"(MWh)
EFEL,m,y	CO2 emission factor of power unit "m" in year "y" (tCO2/MWh)
m	Power units included in the build margin
y -	Most recent historical year for which power generation data is available

"Tool to Calculate the Emission Factor for an Electricity System" has been used for plant efficiency data although this approach is very conservative. Since tool does not contain any specific data for plants with LPG, Naphtha etc. all of the plants consuming liquid fuels have been considered as open cycle plants. Plants using lignite and coal have been assumed as using subcritical technology, whereas natural gas plants have been assumed as combined cycle plants. The assumptions have been based on TEIAS statistics which gives heating values of fuels consumed in thermal power plants and corresponding electricity generation which shows that values used are very conservative compared to actual situation.[2]

Table 20. Calculation of emission factors

Fuel Type	**Emission Factor ($EF_{CO2,i}$)**	**Generation Efficiency[2] ($\eta_{m,y}$)**	**Emission Factor of Power Unit ($EF_{EL,m,y}$)**
	tCO_2/Gj	**%**	**tCO_2/MWh**
Coal	0.0895	50.0%	0.644
Lignite	0.0909	39.0%	0.839
Fuel Oil	0.0755	48.5%	0.560
Diesel Oil	0.0726	48.5%	0.539
LPG	0.0616	48.5%	0.457
Naphtha	0.0693	48.5%	0.514
Natural Gas	0.0543	62.0%	0.315

The build margin emission factor has been determined for the most recent capacity additions as shown in table below. The Build margin emission factor in the last column has been determined by multiplying each EF value with the corresponding electricity generation value for that fuel and dividing it by the total generation by the most recent capacity additions.

Table 21. Most recent capacity additions corresponding to 20% by fuel source

Fuel Type	Electricity Generated (EGm,y)					Emission Factor of Power Unit (EF EL,m,y)	Emission bySource
	2015 (MWh)	2016 (MWh)	2017 (MWh)	2018 (MWh)	TOTAL (2015-2018)	tCO_2/MWh	tCO_2
Coal	1,067.1	1.092,2	1.346,1	224,00	3.729,4	0.644	2,403.2
Lignite	436.9	1.436,4	4,9	2.316,71	4.194,9	0.839	3,519.8
Fuel Oil	0	0,0	1.210,3	93,24	1.303,5	0.560	730.5
Diesel Oil	0	0,0	0,0	0,00	0,0	0.539	0,0
LPG	0	0,0	0,0	0,00	0,0	0.457	0,0
Naphtha	0	0,0	0,0	0,00	0,0	0.514	0,0
Natural Gas	878.1	5.066,1	10.917,4	1.147,29	18.008,8	0.315	5,678.0
Renewable (Biomass, wastes, Hydro, wind, geothermal)	7,258.2	6.212,7	6.209,8	11.581,38	31.262,1	0.000	0,0
Total	**9,640.2**	**13.807,4**	**19.688,5**	**15.362,61**	**58.498,7**	**-**	**12,331.5**

List of Plants built using VER revenue (those excluded in BM calculation) are submitted to VVB.[2]

Finally, by summing up the weighted EF values, overall build margin emission factor have been calculatedas:

$EF_{grid, BM, y}$ = 12,331.5 tCO_2 / 58,498.7 MWh = 0.211 tCO_2/MWh

Step 6: Calculate the combined margin (CM) emission factor

As per the , weighted average baseline emission factor is calculated as follows;

$EF_{grid, CM, y}$ w_{OM}* $EF_{grid, OM, y}$ + w_{BM}* $EF_{grid, BM, y}$ (3)

Where:

$EF_{grid,BM,y}$ Build margin CO_2 emission factor in year "y" (tCO_2/MWh) as calculated from equation (2) above.

$EF_{grid,OM,y}$ Operating margin CO_2 emission factor in year "y" (tCO_2/MWh) as calculated fromequation (1) above.

w_{OM} Weighting of operating margin emissions factor (%)

w_{BM} Weighting of build margin emissions factor (%)

The default values of the weights, wOM and wBM, as recommended by the selected methodology are 0.5 for both components. These default values have been used in calculating CM emission factor together without rounding the values of EFOM and EFBM.

Based on the formula above (3), baseline emission factor is

calculated as;$EF_{grid, CM, y}$ = 0.75 *0.666 + 0.25 * 0.211 = 0.552
The combined margin emission factor is therefore 0.552 tCO_2/MWh.
Emission factor will remain same during the first crediting period as recommended by the

methodology.The ex-ante emission reductions (ERy) are calculated as follows:

$ER_y = BE_y - PE_y$

Where:
ERy = Emission reductions in year y (tCO2)
BEy = Baseline emissions in year y (tCO2)
PEy = Project Emissions in year y (tCO2)

Baseline emissions

Baseline emission is calculated according to the formula
BEy = EGy x EFy

Where:
EGy = Net electricity delivered to the grid by the project activity in year y excluding transmission losses of the grid.
EFy = Emission factor calculated according to selected methodology

Project emissions

The proposed project activity involves the generation of electricity by a wind power plant which has does not cause any significant emissions. Therefore project emissions are considered as "0".

PEy = 0

Leakage
The energy generating equipment is not transferred from or to another activity. Therefore leakage is also considered as "0".
LEy = 0
As a result: Total Emission Reduction is;
ERy = BE y

B.6.5. Summary of ex ante estimates of each SDG outcome

Years	Estimation of baseline emissions in tonsof CO_2e[19]	Estimation of projectemissions in tons of CO_2e	Estimation emission reductions in tonsof CO_2e
2020 (05/08/2020 - 31/12/2020)	13,755	0	13,755
2021	33,695	0	33,695
2022	30,632	0	30,632
2023	30,632	0	30,632
2024	30,893	0	30,893
2025	36,262	0	36,262
2026 (01/01/2026 – 30/11/2026)	33,182	0	33,182
Total	209,051	0	209,051
Total number of crediting years	7 years		
Annual average over the crediting period of estimated reductions (tons of CO_2e)	36,262	0	36,262

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

<table>
<tr><td>Relevant SDG Indicator</td><td colspan="5">SDG 7 - Indicator 7.2.1 – “renewable energy share in the total final energyconsumption”
SG Principle 4.1.2 Climate</td></tr>
<tr><td>Data / Parameter</td><td colspan="5">EGfacility, y</td></tr>
<tr><td>Unit</td><td colspan="5">MWh</td></tr>
<tr><td>Description</td><td colspan="5">Net Electricity generated and delivered to the grid by the power plant in yeary</td></tr>
<tr><td>Source of data</td><td colspan="5">EPIAS</td></tr>
<tr><td>Value(s) applied</td><td colspan="5">Estimated annual generation forming the basis for emission reduction calculation is 65,700 MWh</td></tr>
<tr><td>Measurement methodsand procedures</td><td colspan="5">Generation data is recorded by two metering devices continuously. These records provide the data for the monthly invoicing to TEIAS. Generation is recorded via remote reading system. The quantity of electricity supplied by the project plant/unit to the grid (ISVM) and the quantity of electricity delivered to the project plant/unit from the grid (UECM) are measured. Net generation is calculated via subtracting energy delivered by the project activity to the grid for internal consumption from electricity fed to the grid.
<table>
<tr><td>Manufacturer</td><td>Device Model</td><td>Serial Number</td><td>Calibration</td><td>Accuracy Class</td></tr>
<tr><td></td><td></td><td></td><td rowspan="2">17/12/2020[22]</td><td></td></tr>
<tr><td>EMH (back up)</td><td>LZQJ-XC</td><td>9798880</td><td>0.5 S</td></tr>
<tr><td>EMH (main)</td><td>LZQJ-XC</td><td>5944140</td><td>30/07/2017[23]</td><td>0.5 S</td></tr>
</table></td></tr>
<tr><td>Monitoring frequency</td><td colspan="5">Continuous measuring, monthly recording</td></tr>
</table>

[22] Final Ver Report 919 Gunaydin Wind v03.1
[23] Teiaş First Index Protocol Document

QA/QC procedures	Two calibrated meters backup each other. Maintenance and calibration of the metering devices are made by TEIAS. If there is a significant difference between the readings of two devices, maintenance and tests of the meteringdevices and the associated equipment are done before waiting for the periodical maintenance. The meters should comply with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (http://www.epdk.gov.tr/web/elektrik-piyasasi-dairesi/44). Generation of theplant is cross checked from TEIAS – EPIAS web site which is accessible using a password provided to electricity generation companies. EPIAS records willbe taken in consideration while calculating EGfacility, y. Meters at the site willbe used for crosscheck. There is no problem of calibration of device and reading of electricity generation data. In addition, main metering device and back up meter has been renewed on the date of 30/07/2017as stated in the Teiaş Meter Change Protocol Document As per the regulations, main metering device should not requirecalibration before 10 years (till 30/07/2027).
Purpose of data	Emission reduction calculations
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**SDG13 : Climate Action *13.2.1. Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverseimpacts of climate change, and foster climate resilience and low greenhouse gas emissions development*** **Principle 3.4.3 Release of Pollutants**
Data / Parameter	Air Quality
Unit	tons
Description	Reduction of SO_2 and NO_X emissions due to implementation of project activity that would o thewise be emitted by thermal power plants
Source of data	Electricity generated by Gunaydin Hybrid Wind and Solar Power Plant and NOX and SO_2 emission data fromGHG inventory of Turkey will be used as reference in calculation of the emission reduction.
Value(s) applied	Total SO_2 emission related to electricity generation is about 1558 Gg for 2017 according to National Inventory of Turkey. Considering that electricitygeneration in 2017 is 297,277.5 GWh, SO_2 emission per MWh is calculated as 5.24 kg/MWh. Total NOx emission related to electricity generation is about 328 Gg for 2017according to National Inventory of Turkey. Considering that electricity generation in 2017 is 297,277.5 GWh NOx emission per MWh is calculated as 1.10 kg/MWh. The project is also expected to reduce SO2 and NOx emissions by 344.3 tonnes/ yr and 72.5tonnes / yr, respectively.

Measurement methodsand procedures	The net electricity supplied by the Project will be continuously measured andrecorded by EPIAS; and will be keot by the Project Owner. NO_X and SO_2 emission data from GHG inventory of Turkey will be used as reference in calculation of the emission reduction.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To calculate the baseline emission value; and also to monitor the contributionto SDG 13 (Take urgent action to combat climate change and its impacts)
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**SDG 8: Decent Work and Economic Growth - *8.8.1 Frequency rates of fataland non-fatal occupational injuries, by sex and migrant status*** **Principle 3.6.1: Labour Rights**
Data / Parameter	Quality of Employment
Unit	Number of personnel certified/trained during operation phase
Description	Contribution to quality of employment by ensuring that the staff is trainedand certified for the required positions
Source of data	Training Records (including H&S) & Other Certificates required by certainprofessions, if necessary
Value(s) applied	Some of the trainings & workshops that may be given to the respective employees are: For operation period • Climbing wind turbine • Basic trainings for the erection of the wind turbineWPP Rescue Training • First aid • Training of working aloft • Defensive driving • Fire extinguishing Since the maintenance of the solar panels is the responsibility of the subcontractor, it was not deemed necessary to provide a training by the project developer.
Measurement methodsand procedures	All employees will attend trainings on first aid and health & safety. For positions that require specific skills (such as high voltage equipment) staff willeither be trained or certified staff will be recruited.
Monitoring frequency	Annually
QA/QC procedures	The training programmes help increase the efficiency of the workforce and provides employees skilled at their job. This not only helps the company but to self-improvement of individual employees.
Purpose of data	To monitor the contribution to SDG 8 and Principle 3.6.1.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**Principle 4.3.4 Release of pollutants**
Data / Parameter	Water Quality and Quantity

Unit	-

Description	Appropriate disposal of wastewater as required by the Law on Water Pollution Control
Source of data	Assessing collection methods during site visits and checking waste disposalrecords.
Value(s) applied	Values stated in the disposal records (dates and frequency of disposal, disposal company/institution information, etc.). Collection methods and waste disposal records will be checkhed during site visits.
Measurement methodsand procedures	There will not be any significant activities on ambient water sources during the operational and contraction phases of project. Also IFC wastewater and ambient water quality guidelines are applicable to the project. The guideline states that if sewage from the industrial facility is to be discharged to a septicsystem, treatment to meet applicable national or local standards for sanitary wastewater discharges is required. The wastewater from the septic tank will be transported to a treatment plant where it will be treated to meet the standards in according with guidelines and national regulations.[2]
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor Principle 4.3.4.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**Principle 4.3.11 Endangered Species**
Data / Parameter	Biodiversity
Unit	-
Description	Ensuring that the project creates no disturbance to the regional habitat
Source of data	Assessments during site visits
Value(s) applied	Current situation about the bird carcase obtained by interviewers from people at the site and/or locals
Measurement methodsand procedures	Since the monitoring obligation for birds and bats has been terminated by Directorate of Nature Conservation and National Parks (DMKP), this monitoring parameter will not be monitored by ornithology reports anymore.Instead, it will be monitored by interviews done during the site visits.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor Principle 4.3.11.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**Principle 4.3.4 Release of pollutants**
Data / Parameter	Soil Condition
Unit	-
Description	Proper management of soil use and wastes
Source of data	Disposal records either kept at the site or taken from official bodies
Value(s) applied	Information on solid waste disposal area and disposal method
Measurement methodsand procedures	Recyclable and non-recyclable wastes will be stored temporarily and will be disposed by the Manyas Municipality. Appropriate management of all wastein line with regulations
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor Principle 4.3.4.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**Principle 4.3.5 Hazardous and Non-hazardous Waste**
Data / Parameter	Other Pollutants
Unit	-
Description	Proper management of waste oil
Source of data	Assessing disposal methods during site visits and checking waste oil disposalrecords.
Value(s) applied	Amount of waste oil generated and disposed during operation
Measurement methodsand procedures	Waste oil from equipment will be collected properly in line with the relevantregulation and disposed via accredited abatement companies. Waste oil will be disposed in line with regulation # 26952 on control of wasteoils[1] . Within the scope of design change, solar panels were constructed in the project facility. The disposal of scrap materials, including those generated from PV modules, will be managed in compliance with the provisions of the Regulation on Waste Management [24](dated 02.04.2015, No. 29314; amended 23.03.2017, No. 30016). All scrap materials will be classified, temporarily stored in designated areas, and transported to licensed recycling facilities.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor Principle 4.3.5.

[24] https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=20644&MevzuatTur=7&MevzuatTertip=5

Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**SDG 8: Decent Work and Economic Growth - *8.5.1 Average hourly earningsof female and male employees, by occupation, age and persons with disabilities* Principle 3.6.1: Labour Rights**
Data / Parameter	Quantitative employment and income generation
Unit	Number of locally recruited staff
Description	Ensuring that the staff will be employed locally as much as possible if technical capability for the positions are met by locals.
Source of data	Statement of Employment records to be provided by the Project Owner
Value(s) applied	The project is expected to create 9 permanent opportunities during operationperiod.
Measurement methodsand procedures	Statement of employment records will be checked to confirm the number oflocally employed staff. .
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to SDG 8 and Principle 3.6.1.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	**SDG 7: Energy – 7.2.1 Renewable energy share in the final energy consumption** **Principle 4.1.2 Climate and Energy**
Data / Parameter	Balance of payments and investment
Unit	-
Description	Project has started generating electricity and contributing balance of payments.
Source of data	Through comparing electricity generated by proposed project and natural gas that would be used to produce the same amount of electricity by a thermal power plant.
Value(s) applied	Source for NG price https://www.igdas.istanbul/perakende-satis/
Measurement methodsand procedures	Approximately consumption of 13,909 million m^3 of natural gas is expectedto be avoided corresponding to € 2,600,498 annually.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to SGD 7 and Principle 4.1.2
Additional comment	-

B.7.2. Sampling plan

No sampling plan is necessary.

B.7.3. Other elements of monitoring plan

Monitoring is a key procedure to verify the real and measurable emission reductions from the proposed project. To guarantee the proposed project's real, measurable and long-term GHG emission reductions, the monitoring plan is established.

Net electricity generation is measured and recorded via meters sealed by TEIAS for billing purposes. Therefore, no new additional protocol is needed for monitoring emission reduction. Power Plant Manager, is responsible for the electricity generated, gathering all relevant data and keeping the records.

: Generation data is used to prepare monitoring reports which are used to determine the vintage from the project activity. These reports are submitted to the duly authorized and appointed Validation Verification Body (VVB)before each verification period.

VER Team Members is expected to include the following staff :
Plant Manager: Responsibility for running the plant and compliance with VER monitoring plan
Accounting Manager: Responsible for keeping data about generation and consumption.and
Carbon Consultant: Responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

Installation of meter and data monitoring are carried out according to the regulations by TEIAS. Two metering devices (one of them used as spare) are used for monitoring the electricity generated by the power plant. Readings are be done using main metering devices and spare metering device is used for comparisononly. Data from metering devices is recorded by TEIAS monthly (through remote reading).

Two calibrated meters backup each other. Maintenance and calibration of the metering devices are made by TEIAS. If there is a significant difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment are done before waiting for the periodical maintenance. The meters should comply with EPDK regulations which define the accuracy class of the meters as 0.2 or
0.5 depending on the capacity of the circuit as given in document in link (http://www.epdk.gov.tr/web/elektrik-piyasasi-dairesi/44). EPIAS records will be taken in consideration while calculating net electricity generation by the plant. ISVM (Electricity fed to the grid) and UECM (Electricity consumed from the grid) data given in the EPIAS records are used for emission reduction calculations. Meters at the site will be used for crosscheck.

All data is kept for at least two years after the crediting period for QA/QC purposes.

Calibration of the metering devices is made by TEIAS and sealed before the commissioning of the powerplant. The meters are calibrated by TEIAS when there is an inconsistency between two devices.

There was no need to prepare a new monitoring plan for the solar panels added within the scope of design change.

To mitigate the dust generation at the project site during construction, regular watering activities were carried out. These efforts aim to suppress dust formation and minimize its impact, addressing stakeholder

concerns and meeting safeguards reporting requirements.[25]

SECTION C.

C.1. Duration of project

C.1.1. Start date of project

Start date of project activity is determined as 20/12/2011, date of turbine agreement.[2]

C.1.2. Expected operational lifetime of project

The total operational lifetime of the project is about 49 years as per the license issued.

[25] EIA Report

C.2. Crediting period of project

C.2.1. Start date of crediting period

The first crediting period was conducted between the dates 01/12/2012 – 30/11/2019 (both dates included).

The start of second crediting period is 01/12/2019, however emission reductions has been claimed from 05/08/2020 which is the date of renewal submission. It can be seen in the Final Verification Report dated 17/08/2023.[21]

C.2.2. Total length of crediting period

Total length of the crediting period is 7 years. This is the second crediting period started on 01/12/2019 and will be end on 30/11/2026 (both dates included). After this crediting period, there will be 3rd and last crediting period.

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

Safeguarding principles	Assessment questions	Assessment of relevance to theproject (Yes/potentially/no)	Justification	Mitigation measure (if required)
3.1. Human Rights	The project does not respect internationally proclaimed human rights and is not complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights.	No	Turkey has ratified European Convention on Human Right on 10/03/1954[2]. Therefore, the project is not expected to violate the rules regarding human rights.	No mitigation measure is required for this indicator.
	The project does not discriminate with regards to participation and inclusion.	No	Turkey has ratified European Convention on Human Right on 10/03/1954.	No mitigation measure is required for this indicator.

			Therefore, the project is not expected to violate the rules regarding human rights.	
3.2. 1 Gender Equality and Women's Rights	Is there a possibility that the project might reduce or put at risk women's access to or control of resources, entitlements and benefits?	No	Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality and promotes women's employment[2].	No mitigation measure is required for this indicator.
	Is there a possibility that the project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality and promotes women's employment.	No mitigation measure is required for this indicator.
	Is there a possibility that the project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels,	No	Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality and promotes women's employment.	No mitigation measure is required for this indicator.

	or societal discrimination)?			
	Does the project take into account gender roles and the abilities of women or men to benefit from the project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?	Yes	The project outputs serve everyone without regarding gender. It provides electricity for all.	No mitigation measure is required for thisindicator.
	Does the project design contribute to an increase in women's workload that adds to their care responsibilitiesor that prevents them from engaging in other activities?	No	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides genderequality and promotes women's employment.	No mitigation measure is required for thisindicator.
	Would the project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their fullparticipation in design and implementation oraccess to opportunities and benefits?	No	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides genderequality and promotes women's employment.	No mitigation measure is required for thisindicator.
	Would the project potentially limit women's ability	No	Turkey has ratifiedILO convention 100, 111, 122 and	No mitigation measure is required for this

	to use, develop and		142, which	indicator.

	protect natural resources, taking into account different roles and priorities of womenand men in accessing and managing environmental goods and services?		provides gender equality and promotes women's employment.	
	Is there a likelihoodthat the proposed project would expose women andgirls to further risksor hazards?	No	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides genderequality and promotes women's employment.	No mitigation measure is required for thisindicator.
3.2.2 Gender Equality and Women' sRights	The project is not directly or indirectly contribute sexual harassment and/or any forms of violence against women – address the multiple risks ofgender-based violence, including sexual exploitation or human trafficking.	No	Turkey has ratifiedEuropean Convention on Human Right on 10/03/1954, which inludes the right to life as well as prohibition of torture, slavery, discrimination andforced labor.	No mitigation measure is required for thisindicator.
	The project is not directly or indirectly contribute slavery, imprisonment, physical and mental drudgery, punishment or coercion of	No	Turkey has ratifiedEuropean Convention on Human Right on 10/03/1954, which inludes the right to life as well as prohibition of torture, slavery,	No mitigation measure is required for thisindicator.

	women and girls.			

			discrimination and forced labor.	
	The project is not directly or indirectly contribute restriction of women's rights or access to resources(natural or economic).	No	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides genderequality and promotes women's employment.	No mitigation measure is required for thisindicator.
	The project is notdirectly or indirectly contribute recognise women's ownership rights regardless of marital status – adopt project measures where possible to supportto women's access to inherit and own land, homes, and other assets or natural resources.	No	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides genderequality and promotes women's employment.	No mitigation measure is required for thisindicator.
3.2.3 Gender Equality and Women' sRights	Where appropriatefor the implementation of the project, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women inthe identified tasks/activities.	Yes	The project promotes equal participation of man and women. Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides gender equality.	No mitigation measure is required for this indicator.

	The project introduces	Yes	Turkey has ratified ILO convention	No mitigation measure is

	conditions that ensure the participation of women or men in project activities and benefits based on pregnancy, maternity/paternityleave, or marital status. The project also ensures that these conditions donot limit the access of women or men, as the case may be,to project participation and benefits.		100, 111, 122 and 142, which provides gender equality.	required for this indicator.
3.2.4 Gender Equality and Women' sRights	The project refers to the country's national gender strategy or equivalent national commitment to aidin assessing genderrisks.	Yes	Turkey has ratifiedILO convention 100, 111, 122 and 142, which provides gender equality. It also shows parallelitywith national strategies prepared for women employment by creating opportunities for all.	No mitigation measure is required for this indicator.

3.3 Community Health, Safety and Working Conditions	The project avoids community exposure to increased health risks and does not adversely affect thehealth of the	No	Turkey has ratifiedILO convention 155 and about work safety and precautions[1]	Staff will be trained during operation phases. Trainings that may be given are listed below: For operation period

	workers and the community.			•Climbing wind turbine •. Basic trainings for the erection of the wind turbine Health and Safety Management System •Analyzing and Assessment of Risk •. WPP Rescue Training •First aid •Training of working a loft •Defensive driving •Fire extinguishing
3.4.1 Cultural Hertiage, Indigenous Peoples, Displacement and Resettlement	Does the project area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible formsof culture (e.g., knowledge, innovations, or practices)?	No	No sites, structures, or objects with historical, cultural,artistic, traditionalor religious values or intangible forms of culture were observed in the project area.[1]	No mitigation isrequired for thisindicator.
3.4.2 Cultural Hertiage, Indigenous Peoples, Displacement and Resettlement	Does the project require or cause thephysical or economic relocation of peoples (temporaryor permanent, full or partial)?	No	For the project resettlement is not required. [1]	No mitigation isrequired for thisindicator.
3.4.3 Cultural Hertiage,	Does the project require any change	Yes	Although most of the turbines are	Land acquisition was done

Indigenous Peoples, Displacement and Resettlement	to land tenure arrangements and/or other rights?		located on treasury land, onlyT2 and T3 are places on privately-owned land. Therefore, the company acquired those lands from the owners. **2**	according to the Turkish Expropriation Laws and Regulations.
	For projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?	No	Land acquisition was done according to the Turkish Expropriation Laws and Regulations.	No mitigation is needed for this indicator.
3.4.4 Cultural Hertiage, Indigenous Peoples, Displacement and Resettlement	Are indigenous peoples present in or within the area of influence of the project and/or is the project locatedon land/territory claimed by indigenous peoples?	No	No indigenous people was identified. The closest settlementis Yaylakoy which is 1 km far from the project site.	No mitigation isrequired for thisindicator.
3.5. Corruption	The project does not engage in, contribute to or reinforce corruption of anykind.	No	Turkey has ratifiedseveral conventions on bribery and corruption including OECD and UN Conventions[2]	No mitigation isrequired for thisindicator.
3.6.1 Economic Impacts	The project does not involve and is not complicit in anyform of forced or compulsory labour.	No	Turkey has ratifiedILO 87 and 98 conventions.	No mitigation isrequired for thisindicator.

	Workers can establish and join labour organisations.	Yes	Turkey has ratifiedILO 87 and 98 conventions.	No mitigation isrequired for thisindicator.
	Working agreements with allindividual workers are documented and implemented.	Yes	All employee are recruited according to the national legislations.	No mitigation isrequired for thisindicator.
	The Project Developer justifies that the employment modelapplied is locally and culturally appropriate.	Yes	All employee are recruited according to the national legislations.	No mitigation isrequired for thisindicator.
	The project does not employ and is not complicit in anyform of child labour.	No	Turkey is a party of IPEC[2],since 1992 and ratified ILO convention 138 and 182[2].	No mitigation measure is required for thisindicator.
	The Project Developer ensures the use of appropriate equipment, training of workers, documentation andreporting of accidents and incidents, and emergency preparedness and response measures.	Yes	Turkey has ratifiedILO convention 155 and about work safety and precautions.	Staff will be trained during operation phases. Trainings that may be given are listed below: <u>For operation period</u> •Climbing wind turbine •. Basic trainings for the erection of the wind turbine <u>Health and Safety Management System</u>

				•Analyzing and Assessment of Risk •. WPP Rescue Training •First aid •Training of working aloft •Defensive driving •Fire extinguishing
3.6.2 Economic Impacts	The Project Developer demonstrates the financial sustainability of theproject, also including those that will occur beyond the Project Certification period.	Yes	The investment is capital intensive but operating as low cost plant. The costs are verylow compared to thermal power generation technologies. VERrevenues help in shorter return periods for investment. After certification period, depreciation costsare recovered and cost of operating plant will be less costly.	No mitigation needed for thisindicator.

	The project considers economicimpacts and demonstrate a consideration of potential risks to the local economy and how these have been taken into account in project design, implementation,	Yes	The project involved electricity generation fromlocal and renewable sources. Since Turkey is dependent on import fuel (mainly natural gas and coal),	No mitigation is needed for this indicator.

	operation and afterthe project.		project will not generate any riskbut contribute to local economy.	
4.1.1 Climateand Energy	Will the project increase greenhouse gas emissions over thebaseline scenario?	No	Since it is a wind energy and solar power plant, the project is expected to have a positive impact on Climate Change by eliminating fossil fuels. Expected amount of CO2e: 36,262 tonnes.	No mitigation measure is required for this indicator.
4.1.2 Climateand Energy	Will the project useenergy from a localgrid or power supply (i.e., not connected to a national or regionalgrid) or fuel resource (such as wood, biomass) that provides for other local users?	No	Project does not use any local fuel resource. It is connected to the national grid and supply 65.7GWh additional energyto the grid.	No mitigation measure is required for this indicator.
8. Water	Will the project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential,lack of aquatic connectivity or water scarcity?	No	The project doesnot have any expected effectson the natural orpre-existing pattern of watercourses, ground-water and/or the watershed(s). [2]	No mitigation measure is required for this indicator.

4.2.2 Water	Could the project directly or	No	The project does not directly or	No mitigation measure is

	indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?		indirectly cause harm on soil andwater.	required for this indicator.
4.3.1 Environment ,ecology and land use	Does the project involve the use of land and soil for production of cropsor other products?	No	The project is in a rural land mostly belonging to stateand treasury land (except a portion which T2 and T3 are landed) and is not currently usedfor any purpose of settlement or economic Income[2].	No mitigation measure is required for this indicator.
4.3.2 Environment ,ecology and land use	Will the project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion,flooding, drought or other extreme climatic conditions?	Possible	Balikesir province and the project site are in the 1st Degree Seismic Zone according tothe earthquake zones determinedby the General Directorate of Disaster Affairs.[2]	All the design andconstruction works were performed in accordance with relevant regulation.

4.3.3 Environment ,ecology and land use	Could the projectbe negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	The project activity is not relevant to the useof genetically modified organisms or GMOs since it is a renewable energy power plant.	No mitigation measure is required for this indicator.

4.3.4 Environment ,ecology and land use	Could the project potentially result inthe release of pollutants to the environment?	Yes	Waste oil anddomestic wastewater are expected during construction and operation periods.	Waste oil will be collected properly in line with the relevant regulationand disposed via accredited abatement companies. Wastewater generated at thesite will be collected and transported by vacuum truck to the nearest disposal facility.
4.3.5 Environment ,ecology and land use	Will the project involve the manufacture, trade, release, and/or use of hazardousand non-hazardous chemicals and/or materials?	Yes	Hazardous wastes are expected such as waste oils in the operation period.	Handling, storage and disposal of these wastes will be done accordingto the Turkish regulations.
4.3.6 Environment ,ecology and land use	Will the project involve the application of pesticides and/or fertilisers?	No	The project is not relevant since it isa renewable energy project.	No mitigation is needed for this indicator.
4.3.7 Environment ,ecology and land use	Will the project involve the harvesting of forests?	No	There is no forest area in and in the close vicinity of the project area.[2]	No mitigation is needed for this indicator.
4.3.8 Environment ,ecology and land use	Does the project modify the quantity or nutritional qualityof food available such as through crop regime alteration or	No	The project is not relevant since it isa renewable energy project.	No mitigation is needed for this indicator

	export			

	or economic incentives?			
4.3.9 Environment ,ecology and land use	Will the projectinvolve animal husbandry?	No	The project is not relevant since it isa renewable energy project.	No mitigation is needed for this indicator.
4.3.10 Environment ,ecology and land use	Does the project physically affect or alter largely intact or High Conservation Value(HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	There are no national parks, natural parks, natural protectionareas, wildlife protection areas as declared in accordance with the Turkish national legislation.[2]	No mitigation is needed for this indicator.
4.3.11 Environment ,ecology and land use	Are there any endangered species identified as potentially beingpresent within the project boundary (including those that may route through the area)?	No	No endemic, endangered and or threatened flora and fauna species were identified in the project site and itsvicinity. [2]	No mitigation is needed for this indicator.
	Does the project potentially impactother areas where endangered species may be present through transboundary affects?	No	No endemic, endangered and or threatened flora and fauna species were identified in the project site and its vicinity.[2]	No mitigation is needed for this indicator.

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

The stakeholder meeting was held at 14:30 on Tuesday, 21th of February, 2012 in Yaylaköy Village, Manyas District of Balıkesir Province. The meeting was organized in line with the Gold Standard requirements. The stakeholders and the list of invitations are identified accordingly. The meeting covered all agenda items recommended by Gold Standard, as mentioned below:

Agenda
Venue: Village Room of Yaylaköy Village
14:30-14:45 Opening and Introduction of the Günaydın Wind Power Plant
Project14:45 -15:00 Climate Change and Carbon Markets, Global Tan Energy
15:00 -15:20 Explanation of Grievance Mechanisms and Blind SD Exercise and discussion on monitoring15:20-15:50 Q &A
15:50- 16:00 Evaluation and feedback session

Closure
As no females attended the meeting, we gathered together with females in the village mosque right afterthe regular meeting.

For the extension activities a second meeting was held in Yaylaköy meeting hall on 31/10/2013 and the following agenda was followed:
11:00 – 11:05 Opening and Brief Introduction
11:05 – 11:20 Introduction of the Extension
Project11:20 – 11:30 Explanation of
Certification Process 11:30 – 11:45 Question
and Answer Session
11:45 – 12:00 Explanation of Continuous Grievance Mechanism and Closure.
It has been understood that the locals were quite aware of the project activities and they were well informed about the meeting. Villagers collected the comments and requests from the people who were not able to attend the meeting. An elder spokesman was chosen to describe their expectations from the project. Questions and comments raised during the meeting are summarized in the sections below.

The site visit for re-validation and the last verification of the first crediting period was held on the same date which was 11/03/2020. During the site visit, local people including the mukhtar and a village council member were interviewed and asked whether there is any grievance about the project implementation. According to the responses, there are no complaints about the project implementation from local people. Moreover, there has been no change on project design/implementation during the first crediting period and the verification processes were conducted accordingly. Therefore, a new LSC did not conducted regarding the current situation of the project.

The solar panels planned to be added to the project will be put into operation in the same project area, within the license boundary of the project within the scope of the design change. According to Design Change Requirements Section 4.5, since the project area has not changed and the local people in the project area were informed about the project before the addition of solar panels, there was no need to plan another stakeholder consultation meeting. [26]

The grievance mechanism in the project is still valid. The mukhtar in the region where the project is located has the contact information of the facility operator of Gunaydin Hybrid Wind and Solar Power Plant. A grievance/comment notebook is kept for any comments from local people.[27]

[26] https://globalgoals.goldstandard.org/standards/111_V1.1_PAR_Design-change-requirements.pdf
[27] Mukhtar's Letter and Notebook Sample

The local public information meeting was announced in the local newspaper within the scope of the EIA Report. Local people attended the meeting and were informed about the installation of solar panels. There was no negative feedback from the public. As seen in the verification report dated 17/08/2023, since this project is in the second crediting period and the project will not be different from the previous periods, the grievance mechanism is currently based on the existing grievance mechanism mainly using the registry.

Advertisements were placed in a national newspaper (Yeni Mesaj Newspaper, dated 24.01.2022) and a local newspaper in the province (Manyasın Sesi Newspaper, dated 25.01.2022) to inform the public and receive their opinions and suggestions. The adverts of the local public information meeting and the photographs taken during the meeting can be seen below.[28]

The Local Stakeholder Consultation (LSC) meeting was held on 04/02/2022at 14:00 as part of the design change. No negative feedback was encountered during the meeting.

DUYURU
ÇED Sürecine Halkın Katılımı Toplantısı

MANRES Elektrik Üretim A.Ş. tarafından Balıkesir İli, Manyas İlçesi, Yayla Mahallesi Mevkiinde **"20,7500 MWm/20,0000 MWe GÜNAYDIN RÜZGAR ENERJİ SANTRALİNE YARDIMCI KAYNAK GÜNEŞ ENERJİ SANTRALİ (YARDIMCI KAYNAK KAPASİTESİ: 19,9830 MWm/19,9830 MWe, TOPLAM TESİS KAPASİTESİ: 40,7330 MWm/20,0000 MWe)"** projesinin yapılması planlanmaktadır. Söz konusu proje için Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği'nin 9. Maddesi gereğince aşağıda belirtilen tarih ve saatte faaliyetle ilgili halkı bilgilendirmek, görüş ve önerilerini almak için "Halkın Katılımı Toplantısı" düzenlenecektir.

Halkımıza saygı ile duyurulur.

Toplantı Yeri : Yayla Mahallesi Toplantı Salonu
Toplantı Yerinin Adresi : Balıkesir İli, Manyas İlçesi
Toplantı Tarihi : 04.02.2022
Toplantı Saati : 14:00
Proje Sahibi : Manres Elektrik Üretim A.Ş.
Proje Sahibi Adresi : Kısıklı Cad. Sarkuysan Ak İş Merkezi NO.4 K.1 / A BLOK Üsküdar / İSTANBUL
Tel : +90 216 554 54 00
Fax : +90 216 474 52 52
ÇED Raporunu Hazırlayan Kuruluş: DE Planlama İnşaat Danışmanlık Mühendislik San. ve Tic. Ltd. Şti.
ÇED Raporunu Hazırlayan Kuruluşu Adresi: Evka-3 Mah. 119/7 sok. No:12 Bornova /İZMİR
Tel : 0 232 375 91 54
Fax : 0 232 375 92 36

Resmi ilanlar www.ilan.gov.tr'de (Basın: 1540664)

Figure 9. Advert of the meeting

[28] Gunaydin EIA Report

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Resmî İlanlar www.ilan.gov.tr.'de. BASIN : 1540664

Figure 10. Advert of the meeting

Figure 9. Photos from the meeting

E.2. Summary of comments received

Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
	Yes	The concern was about high voltage lines but it has been explained that transmission line is not high voltage and only impact will be on pole basements. The most feasible transmission line

Is there any chance to make alternative routes for the transmission lines?		route has been planned according to optimised studies by the experts and engineers but the alternative routes according to locals willstill under consideration however the route should be decided the TEIAS.
How the present forest will beaffected from the construction activities?	Yes	The planned construction activities are road construction and turbine basements which are not onforest area. Only impact canbe on pole locations and access road(if necessary). Route for road construction path has not been decided yet. Impact will be minimizedand routes and pole location will be selected accordingly. If road passes through the forest area, then the reforesting costs will be paid in order to compensate the new foresting activities.
Is there going to be any expropriation due to the project?	Yes	There is going to be expropriation. Project is mainly planned to be locatedon treasury land. EMRA is responsible about expropriation. The project owner has no right about theorganization of resettlements.
What are the minimum qualifications required be hired as a security guard for the plant?	Yes	At least, needs to be graduated from middle school and have certificate.
Is there going to be any fences around the projectarea?	Yes	According to the safety requirements, particular polepoints will be fenced, but other than that all area will not be covered with fences.
Is there going to be any noiseproblem due to the turbines?	Yes	The technology which will bedeployed by the project is very new which minimizes the noise.

Summary of Comments in the Extension Meeting

Fourteen stakeholders were present in the capacity addition information meeting. Villagers had been living for over a year close to the project activities and they were content with the conditions. A spokesman summarized their expectations and the locals were quite aware of the importance of such investments both

for the regional and national economy. After the presentations explaining both the capacity addition project and carbon certification process, locals were reminded of the continuous grievance mechanism. Within this prospect locals listed their comments and requests. Below is a summary of comments received. All of the comments were recorded and archived for future referral.
The stakeholder meeting held for the design change of the project was recorded as 24 people in the minutes of the public participation meeting in the EIA report.

E.3. Report on consideration of comments received

Continuous communication with local stakeholders has been kept in the previous crediting period and will be maintained in the second crediting period. There is a logbook left to the mukhtar (on 18/06/2013) for recording the grievances if there are any. However, locals prefer face-to-face communicating due to good and strong communication between mukhtar (Selahaddin Başaran) / project owner. The village is also very close to the project site which enables fast communication. Therefore, there is no written input or grievance in the logbook so far. There is also no grievance received related to the project.

During the local stakeholder meeting, the participants have been informed about the feedback round and its importance to follow up their concerns. Since, no significant concern has appeared during LSC meeting SFR is not planned as a live meeting.

In order to prepare for the feedback round, a summary of the consultation report prepared in Turkish sent to the identified stakeholders and participants through mail or village heads. International offices of Helio International, Mercy Corps and local representative of GS also included in the feedback round via email sent on 25/09/2012.

Soft copies of the project documents made available on the web site of GTE (www.gte.uk.com). Hard copies of the LSC Report and/or Passport were available during the 2-month long feedback round for those who do not have internet access through village heads. SFR has started on 25/09/2012 and ended on 31/12/2012. No comment was received during SFR from locals regarding the project.

The opinions and feedback of the public were received within the scope of the local public information meeting held within the scope of the EIA regarding the solar power plants added to the wind turbine project and no negative feedback was encountered.
The meeting was opened under the moderation of the Deputy Director of Environment, Urbanization, and Climate Change. Questions raised during the meeting were recorded in the Environmental Impact Assessment (EIA) report. The majority of the questions from stakeholders focused on whether the project would affect livestock activities in the region. The project owner stated that during certain periods, local farmers would be allowed to graze their animals in the expanded pasture areas. Additionally, it was confirmed that the project would not affect wetlands. No further comments were made regarding the installation of solar panels.[29]

[29] EIA Report

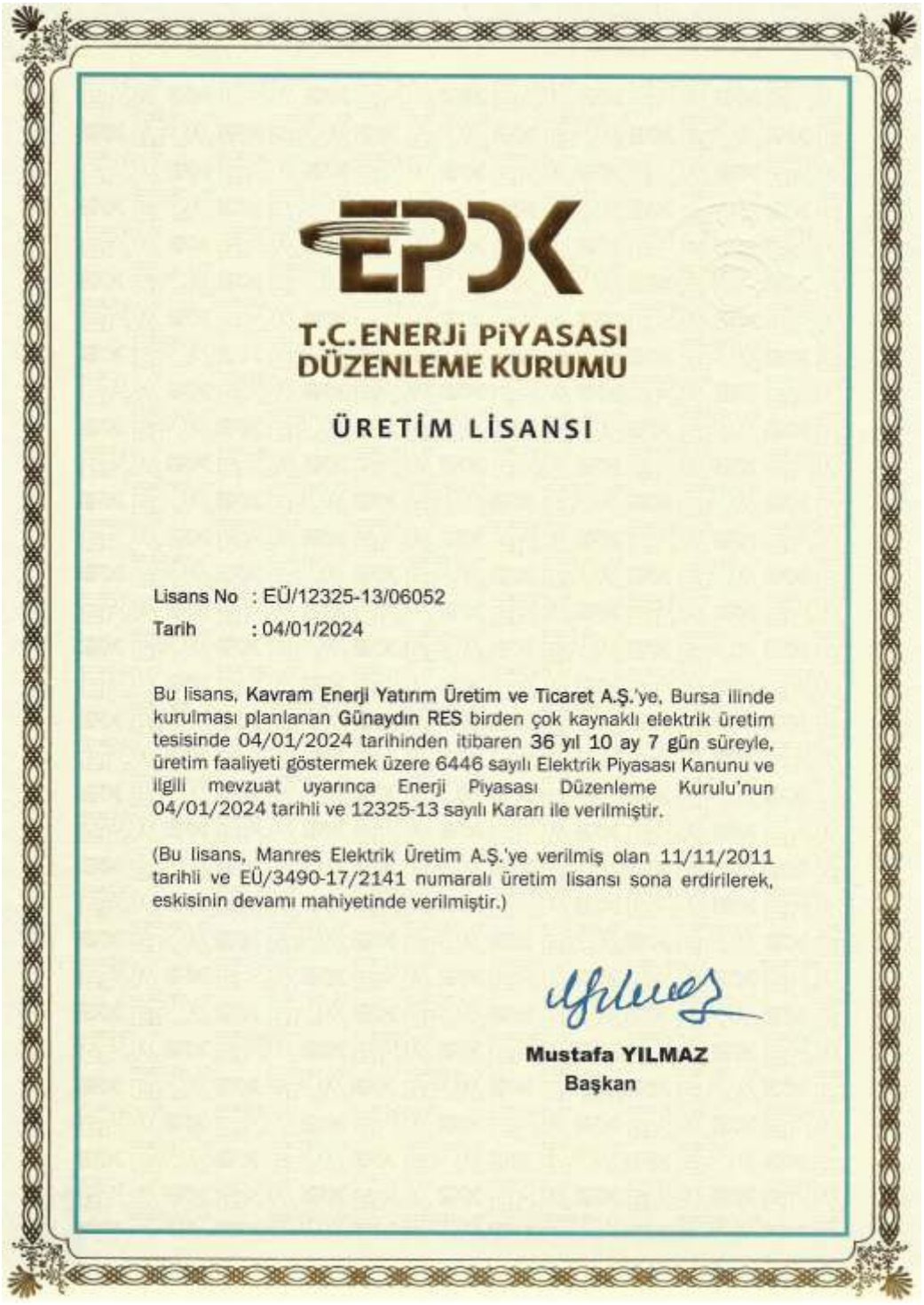
Appendix 1. Contact information of project participants

Organization name	Kavram Enerji Yatırım Üretim ve Ticaret A.Ş.
Registration number withrelevant authority	-
Street/P.O. Box	Kısıklı Caddesi
Building	Sarkuysan–Ak İş Merkezi No:4 A-Blok Kat:1
City	Istanbul
State/Region	N/A
Postcode	34662
Country	Turkey
Telephone	+90 216 554 54 00
Fax	+90 216 474 52 52
E-mail	carbon@fibaenerji.com
Website	www.fibaenerji.com
Contact person	Ataberk Kerpiççi
Title	Carbon Project Specialist
Salutation	Mr
Last name	Kerpiççi
Middle name	-
First name	Ataberk
Department	-
Mobile	-
Direct fax	-
Direct tel.	+90 534 552 58 66
Personal e-mail	ataberk.kerpicci@fibaenerji.com

Organization name	Net Zero Danışmanlık A.Ş.
Registration number withrelevant authority	-
Street/P.O. Box	Dudullu OSB Mah.
Building	DES-1. Cad No:3/28,
City	Istanbul
State/Region	-
Postcode	34775
Country	Turkey
Telephone	+90 216 706 72 20
Fax	-
E-mail	info@netzero.com.tr
Website	www.netzero.com.tr
Contact person	Aleyna Çelik
Title	Project Developer
Salutation	Ms
Last name	Çelik
Middle name	-
First name	Aleyna
Department	Project Development
Mobile	+90 532 290 47 28

Direct fax	-
Direct tel.	-
Personal e-mail	aleynacelik@netzero.com.tr

Appendix 2. Generation Licence



EPDK

T.C. ENERJİ PİYASASI
DÜZENLEME KURUMU

ÜRETİM LİSANSI

Lisans No : EÜ/12325-13/06052

Tarih : 04/01/2024

Bu lisans, **Kavram Enerji Yatırım Üretim ve Ticaret A.Ş.**'ye, Bursa ilinde kurulması planlanan **Günaydın RES** birden çok kaynaklı elektrik üretim tesisinde 04/01/2024 tarihinden itibaren **36 yıl 10 ay 7 gün** süreyle, üretim faaliyeti göstermek üzere 6446 sayılı Elektrik Piyasası Kanunu ve ilgili mevzuat uyarınca Enerji Piyasası Düzenleme Kurulu'nun 04/01/2024 tarihli ve 12325-13 sayılı Kararı ile verilmiştir.

(Bu lisans, Manres Elektrik Üretim A.Ş.'ye verilmiş olan 11/11/2011 tarihli ve EÜ/3490-17/2141 numaralı üretim lisansı sona erdirilerek, eskisinin devamı mahiyetinde verilmiştir.)

Mustafa YILMAZ
Başkan

ASS

Appendix 4. Further background information on ex ante calculationof emission reductions

A. Data used in calculation of OM for Turkish Electricity Grid

Values used in calculation of OM

	NCV (Tj/kt) (1000m^3 for gas)	EF (tCO_2/Tj)	COEF (tCO2/t)
Coal	*23.71*	89.5	2.12
Lignite	*6.97*	90.9	0.63
Fuel Oil	*44.01*	75.5	3.32
Diesel Oil	*44.34*	72.6	3.22
LPG	*0*	61.6	0
Naphtha	*0*	69.3	0
Natural Gas	*37.02*	54.3	2.01

Amount of fuels used for electricity generation

Fuel Type	Fuel Consumption ($FC_{i,y}$)		
	2016	2017	2018
	Ton or 1000 m3 (for gas)		
Hard Coal	19,642,410	21,139,104	24,981,829
Lignite	60,213,772	64,412,257	73,533,486
Fuel Oil	526,674	317,724	225,297
Diesel Oil	306,393	197,219	11,776
LPG	0	0	0
Naphtha	0	0	0
Natural Gas	18,954,093	22,954,854	19,568,140

B. Data Used in calculation of BM for Turkish Electricity Grid

Net calorific values, generation efficiency and emission factor data used in calculations

	A NCV	B EF CO2	D	E (=3.6/D/1000*B)

	(Tj/kt or m^3 for gas)	(tCO_2/Tj)	Generation Efficiency	EF tCO_2/MWh
Coal	22.26	89.50	39.0%	0.826
Lignite	6.78	90.90	39.0%	0.839

Fuel Oil	39.84	75.50	39.5%	0.688
Diesel	42.42	72.60	39.5%	0.662
LPG	46.47	61.60	39.5%	0.561
Naphtha	0.00	69.30	39.5%	0.632
Natural Gas	0.00	54.30	60.0%	0.326