NOTIFICATION

Peshawar Dated the 25/07/2025

No. SO(ENVT)/CCFE&WD/1-8/EPC-2025: In exercise of powers conferred under Clause xxii of Section 7 of the Khyber Pakhtunkhwa Environmental Protection Act, 2014, (Khyber Pakhtunkhwa Act No. XXX of 2022), the Khyber Pakhtunkhwa Environmental Protection Council (EPC) in its 3rd Meeting held on 13.05.2025 has been pleased to approve the following guidelines for General Environmental Approval (GEA);

GUIDELINES FOR SOLAR POWER PLANTS FROM 500 KW UP TO 01 MW

Glossary

S.NO	Term	Definition
1	**Agency**	Khyber Pakhtunkhwa Environmental Protection Agency
2	**Environment**	(a) Air, water and land; (b) All layers of the atmosphere; (c) All organic and inorganic matter and living organisms; (d) The ecosystem and ecological relationships; (e) Buildings, structures, roads, facilities and works; (f) All social and economic conditions affecting community life;
3	**Tropical environment**	The humid and seasonal wet areas
4	**Sustainable Development**	Development that meets the needs of the present, without compromising the ability of future generation to meet their own needs.
5	**Impact on Environment**	Any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

6	**Mitigation Measure**	Measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure
7	**Flora and fauna**	The plants and Animals
8	**GIS**	Geographic information system required for site Selection & Assessment for Environmental Approval
9	**Remote areas**	Areas that are far away from cities
10	**Cumulative impacts**	Those impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred. to as developments") when added to other existing, planned, and/or reasonably anticipated future ones.
11	**Indigenous species**	Specie that found in a certain ecosystem due to natural processes such as natural distribution.

1. Introduction:

Power is a very important factor to economic growth, poverty reduction, and social development. To upgrade citizen's quality of life, regular use of electricity in residential, commercial, agricultural, and industrial sector are creating an increasing demand for electricity. However, power crisis has been created in consequence of inadequate generation, which was not in line with demand. Recognizing this fact, present government has prioritized this sector and initiated diversified development programs. To generate power in consistent with the demand-quick, short, medium, and long-term programs have been initiated. All over the world it is widely accepted that, a sustainable power supply cannot be established depending only on perishable fossil fuel source. Rapid economic and social advancement is placing an increasing demand for energy need. The growing awareness of environmental impacts of project development and the need for sustainable development particularly has made solar energy a more viable option in most Tropical environment.

1. Types of solar system:

A. Commercial Solar Power Projects

B. Social Solar Power Projects

Commercial projects will mainly run on the basis of business from the service charges to be provided by the beneficiaries. Social Projects will be based on grants and will be developed

as the government's commitment to its people. Following projects are identified under Commercial and Social Sector Solar Power Projects:

Commercial Projects:

- Setting up Solar Parks in the vacant & fallow government & privately owned lands
- Setting up solar mini-grid in the off grid areas, through Private Sector;
- Installation of solar roof-top in the residential and commercial buildings;
- Setting up of solar power system in the industrial establishments;
- Setting up of solar projects in the government and semi-government owned buildings.
- Replacement of diesel powered irrigation pumps by the solar irrigation pumps;

Social Projects:

- Solar electrifications in the Rural Health Centers;
- Solar electrifications in the educational institutions at remote areas;
- Solar electrifications in the Union Information Service Centers;
- Solar electrifications in the religious institutions, which do not have electricity connections;
- Solar electrifications in the railway stations at remote areas;
- Solar electrifications in the government offices in off grid areas;

2. Objectives of the Guidelines:

These guidelines are designed to ensure that all potential environmental issues pertaining to the construction, operation and closure of solar power facilities are adequately well assessed and addressed. Also, these guidelines will assist in sustainable project planning, permitting, and implementation for both project developers and regulators. This guideline aims to provide directions to project proponents, developers and regulators for the appropriate identification, assessment and evaluation of all potential environmental issues pertaining to solar energy projects.

3. Project Justification

The project proponent shall provide necessary and adequate information on the justification of the project. This shall include a summary of the report of the Project's feasibility study; the need, value and sustainability (social, cultural and economic) of the Project. Such justification shall expressly define the benefits of the Project to its intended end-users and indicate the over-riding advantages or positive impact of the Project over its anticipated environmental impacts. The justification may also include the rationale for selecting the Project amongst various available options or alternatives and any socio-economic factor's justifying the Project.

4. Project Description

The proposed solar energy generation project should be described in details. Description should include a schematic process diagram and a layout of the facility which should be detailed. The facibility study should also report a description of the development in relation to the local

environment as follows:

- Description of the main characteristics of the operational process with diagrams, plans and maps.
- A description of indication of the physical presence and appearance of completed development within the receiving environment.
- The land area to be taken by the development with its location clearly defined on a map.
- The uses to which the land will be put should be described.
- The estimated duration of the construction phase, operational phase and where appropriate, decommission phase should be given.
- The numbers of workers and/or visitors entering the site during construction and operation should be estimated. The access to the site and likely means of transport should be given.
- The means of power evacuation.
- An estimate, by type and quantity, of expected residues and emissions (heat, noise, vibration, light, heat, radiation, air water, and soil contamination/pollution, etc.) resulting from construction and operation phases of the proposed project.
- Manufacturing material of the solar panels like Silicon, Germanium etc be identified, in raw form OR in pure form and disposal methodologies after expiration of solar panels like at least two decades to three decades. EPA would encourage indigenous materials used in Solarization process rather than exports.

5. Description of Project Environment/Baseline Study

A detailed description of the existing environmental status, in terms of the biophysical and human environment, in which the proposed solar power plant is to be sited. The methods and investigations undertaken for this purpose should be disclosed and be appropriate to the size and magnitude of the project. The baseline data (primary and/ or secondary) shall be collected and interpreted to describe the proposed project area. The description shall include, but not limited to, geographic location, topography and elevation, climatic conditions and the ecological characteristics of the project area. **Table 1** below gives a detailed description of some relevant environmental components to be examined while describing the Environment.

Table 1: Environmental Components and Indicators of Existing Environment

S.No.	Environmental Components	Indicators
1.	Climatic variables	Climatic zone Climate variability and Extreme events Climate change projections Solar Radiation Temperature (air and land surface temperature) - pattern, seasonality and trend Rainfall – Pattern, amount, trend Prevailing wind – direction, speed
2.	Topography	Drainage pattern, elevation and slopes this can be presented with a digital elevation model, Specific landform types, etc.
3.	Soil	Type, properties and characteristics
4.	Water	Availability and abundance Water quality Wastewater discharges Waste discharges, etc.
5.	Air	Ambient air quality (for gaseous and particulate pollutants)
6.	Biological	Flora – type, density, exploitation, etc. Fauna – distribution, abundance, rarity, migratory, species diversity, habitat requirements, habitat resilience, economic significance, commercial value, etc. Fisheries – migratory species, species with commercial/ recreational value, etc.
7.	Land Use	Land use pattern, actual and projected, specially designated areas, manmade features, incompatible land use attributes (e.g. public water supply, tourism site, etc.), ESAs – sensitivity (distance, area and significance).
8.	Socio-Economic Factors	Demography details of all project affected communities, economy (employment rate, income distribution), services (types, capacity, and adequacy), housing, etc. cultural

6. Associated and Potential Environmental Impacts

The identification, prediction and evaluation of potential impacts of the project on the environment should be investigated and described. The impacts should be broadly defined to cover all potential effects on the environment.

a. A description of direct impact and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative impact of the project should be addressed.
b. The types of impact in (a) above should be described with regards to human

beings, flora and fauna, soil, water, air, climate, land, cultural and interactions amongst them.

c. Impacts during construction and operation phases should be considered including impacts that might arise from non-standard operating conditions, accidents etc.
d. Predicted impacts should be derived from baseline conditions as to prevail as a consequence of the project.
e. Identification of impacts should be by a systematic methodology such as project specific checklists, matrices, overlays, Ad-hoc, networks, geographic information system (GIS), expert opinion, etc.
f. A brief description of the impact identification method should be described and the rationale for using it.
g. The significance of impacts should be assessed, taking into account appropriate national and international standards where available. Consideration should also be made for magnitude, location and duration of the impacts. The choice of significance assessment should be justified and any contrary opinion elaborated upon.
h. The Feasibility study for solar energy projects should also consider the cumulative impacts that could arise from a combination of the impacts due to other projects, especially impacts that has to do with the human component (socio-economics) of the environment, with those of other existing or planned projects in the surrounding area and including residual impacts.

7. Mitigation Measures for Potential Impacts of Solar Energy Projects

Pakistan supports the slogan of Net Zero emissions leading to a sustainable development, however, potential mitigation measures for solar energy projects include:

a. Conduct pre-disturbance surveys as appropriate to assess the presence of sensitive areas, fauna, flora and sensitive habitats;
b. Plan visual impact reduction measures such as natural (vegetation and topography) and engineered (berms, fences, and shades, etc.) screens and buffers;
c. Utilize existing roads and servitudes as much as possible to minimize project footprint;
d. Site projects to avoid construction too near pristine natural areas and communities;
e. Locate developments away from important habitat for faunal species, particularly species which are threatened or have restricted ranges, and are collision-prone or vulnerable to disturbance, displacement and/or habitat loss;
f. Fence sites as appropriate to ensure safe restricted access;
g. Ensure dust abatement measures are in place during and post construction;
h. Develop and implement a storm water management plan;
i. Re-vegetation with appropriate indigenous species to prevent dust and erosion, as well as establishment of alien species.
j. The Agency encourages solarization panels and materials made of Germanium due to its less environmental impacts rather than Silicon, due to environment friendly as compared to silicon.

Section-I

Environmental Assessment Checklist

File No _____

Date _____

General Information

1. Project Name or Title _____
2. Project Proponent (Department, organization, or owner) _____
3. Address _____
4. Telephone _____
5. E-mail _____
6. Representative of the Proponent _____
7. Designation _____
8. Name of the person who conducted this assessment _____
9. Designation _____

Project Information

10. Project Location & GPS Coordinates _____
    a) Khasra No _____
    b) Village/Mouza _____
    c) Tehsil _____
    d) District _____
11. Cost of the Project _____
12. Area of the proposed land for the project
    Total _____ m^2
    Proposed covered _____ m^2
    Open space _____ m^2
13. Brief Project Description _____
14. Design production capacity of the unit _____

15. Number and type of qualification of required staff to run the project? _____

Construction

16. Who owns the proposed land for the project? _____
17. What is the present use of the land? _____
18. Are there any settlements on the land? _____
19. If yes, please specify

    Number of settlements _____
    Will any compensation be paid to them? _____

20. Are there any structures on the proposed site now? ☐ Yes ☐ No
21. Are there any trees on the proposed site? ☐ Yes ☐ No
22. Will any tree be removed? ☐ Yes ☐ No
23. If yes, how many? _____
24. Period of construction (start and end dates) _____
25. Is construction work during the night planned? ☐ Yes ☐ No
26. Is the proposed project located in an ecologically sensitive area? ☐ Yes ☐ No
27. Describe the terrain of the project area:
    - ☐ Flat or Level (Slope < 3%)
    - ☐ Level to moderately steep(Slope 3%-30%)
    - ☐ Moderately steep to mountainous (Slope > 30%)

Mitigation Measures

28. Are there signs of soil erosion or landslide anywhere within 500 m of the proposed site?
    - ☐ Yes
    - ☐ No

    If yes, please describe (where, nature) _____

29. Is there any surface water body (river, canal, stream, lake, and wetland) within 1,000 m of the proposed site?

☐ Yes
☐ No

30. If yes, describe each water body:

31. Name (including type, i.e., river, canal or stream)	32. Dimensions	33. Status and Uses (Is it polluted? Is domesticor other wastewater discharged to it? What are its uses, eg, agriculture, domestic, industrial, washing, fishery

34. Is there any groundwater well on the proposed site or within 500 m of the proposed site?

☐ Yes
☐ No

If yes, describe each well:

Type (Dug well, well, hand pump)	**Location** (Village, road, mohalla, etc. and distance from the site)	**Depth and Yield**	**Uses** (Drinking, agriculture, industrial, livestock)

35. Are there any reserved forest or protected area within 1,000 m of the proposed site?

☐ Yes
☐ No

If yes, please describe?_____

36. What is the present land use in the vicinity (roughly a radius of 500 m) of the proposed site?

	Residential(Thick, Moderate, Sparse)	**Commercial**(Office, Shops, Fuel Stations)	**Open Land** (Parks, Farmlands, unutilized plots, barren	**Industrial**	**Other**
Description					

37. For any agricultural farmland on the proposed site and a radius of 500 maround it, provide the following information:

Main crop(s) and average yield _____
Source of irrigation water_____

Area affected by salinity or water logging _____

38. Roughly, how many houses are within a radius of 500 m of the proposed site?

_____

39. What is the total population of the area? _____

36. What proportion of the houses in the area are *pukka, semi-pukka, and* kucha? _____
What are the main sources of income of the surrounding community?

_____

37. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 1,000 m of the proposed scheme?

☐ Yes
☐ No

If yes, please describe?_____

Section-III **Environmental Management Plan**

1. Constructional Phase:
2. Operational Phase:

Section –IV **Documentation**

1. Location plan of the project
2. Site plan of the project
3. Landownership Documents

4. Copy of lease or rental agreement of land or property
5. Copy of NOC from Irrigation Department (If any)
6. Copy of NOC from Forest Department (If any)
7. Copy of CNIC of the Focal Person/Representative of the proponent
8. Copy of CNIC consultancy Firm/ the person who conducts the Assessment.

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Secretary to Govt. of Khyber Pakhtunkhwa
Climate Change, Forestry, Environment & Wildlife Department

No. SO(ENVT)/CCFE&WD/1-8/EPC-2025:

Copy for information to;

1. All members of Environmental Protection Council (EPC) Khyber Pakhtunkhwa
2. PS to Secretary Climate Change, Forestry, Environment & Wildlife Department, Khyber Pakhtunkhwa

20/8/25

Muhammad Ishaq
Section Officer (Environment)