



Environmental Impact Assessment (EIA) : The Wind Energy and Concentrating Solar plants project in JORDAN

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INTRODUCTION

The Environmental Impact Assessment (EIA) is an assessment of the possible impact -positive or negative- that a proposed project may have on the environment, together consisting of the natural, social and economic aspects.

EIA is a study of the potential impacts /risks which might be caused by a proposed project on the environment and/or ecosystem.



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Project Description

- The WECSP project is aiming at establishing of station of two renewable energies systems, wind energy and concentrated solar power (CSP) pilot plants and interconnected them with the electricity grid of medium voltage.



Project Site Location

- The wind and CSP power plants will be installed in Al Shobak which is about 200km south of Amman the capital of Jordan.
- The size of the site is approximately 500m X 500m, The land is nearly flat, and the system will be connected to the medium voltage grid (33 kV).



Project Facilities and Plants

1. Wind Energy System: the wind turbine capacity of 1.65MWe. The wind turbine is a three bladed, horizontal axis unit. The area of the wind plant's base is 100m^2 .
2. CSP Energy System: the CSP with a capacity of 1.0 MWe. The height of the CSP is approximately 6m, and its area is $40,000\text{m}^2$.



EIA Methodology

1. Identifying Valued Environmental Components (VECs) which include:

- Socio-Economic Conditions
- Water Resources
- Biodiversity
- Archaeology
- Public Health and Occupational Health and Safety.



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EIA Methodology

2. A description of the existing environment which is focusing on the above mentioned valued environmental components .
3. Identifying the Environmental legal requirements for this project, that should be considered prior commencing any construction activity.



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EIA Methodology

4. Providing the client with measures and actions that should be taken to mitigate the potential of any adverse effects of the project on the environment and to harness the beneficial effects.



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Legal Framework

1. Environment Protection Law, No.52, year 2006.
2. Regulation of Environmental Impact Assessment (EIA), No.37, Year 2005.
3. Regulation of Organizing and Management of the Ministry of Energy and Mineral Resources, No. 26, year 1985.
4. General Electricity Law, No. 64, year 2002.



5. Renewable Energy and Energy Efficiency Law No. 13, year 2012.
6. Law of Public Health, No. 47 Year 2008.
7. Regulations of protection of birds, wildlife, and hunting (34/2003).
8. Antiquities Law, No.21, Year 1988 and its amendment.



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Legal Framework

9. Transport Law, No. 89, Year 2003.
10. Law of Traffic, No.49, Year 2008.
11. The Law of Civil Defense, No.18, Year 1999 and its amendments.
12. Water Authority's Law No 18/1988.



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13. Groundwater Monitoring By-law, No.85, year 2002.
14. Management of Solid Waste, No. 27, Year 2005.
15. Regulation for Protection of Air, No.28, Year 2005.
16. Instructions-“Prevention and Protection from Noise”, Year 2113.



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Legal Framework

17. The Law of Labor, No.8, Year 1996 and its amendment.
18. law of agriculture, No. 44, year 2002.
19. Law of Crafts and Industries No.16, Year 1953.
20. The Law of Natural Resources Management, No.12, Year 1968.



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Recommendations :

I) Socio-Economic Conditions

1. Employment

- It is highly recommended to give priority to qualified local contractors to execute the construction works related to the project.
- It is highly recommended to give priority to qualified local people in recruitment for skilled and non-skilled jobs in the project.

2. Visual impact

- Project administration commitment will be necessary to maintain the beauty and cleanliness of the site and surrounding area.



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II) Socio-Economic Conditions

3. Business prosperity

- It is recommended that the project workers and related staff get supplies, food and beverages, and spare parts from local stores.
- It is recommended to use local vehicle maintenance workshops during all phases of the project.

4. Stress on infrastructure

- Strict instruction shall be given to the drivers in this project to comply with the rules of road traffic (internal and external).
- To protect the roads, trucks which will be used for construction and equipment transporting should have a gross weight within the axial permissible load.



III) Water Resources

- **Appropriate Liquid Waste Management**
 - A completely isolated septic tank will be built to collect domestic wastewater resulted from workers during all project phases and it will be emptied and moved to the nearest wastewater treatment plant near the project site as required.
 - For the liquid waste that can result from machinery and vehicles as a result of maintenance work. The maintenance of these machines and vehicles must be in special places and it should not be within the project site.
 - Install diversion system where appropriate to divert rainwater runoff as a kind of flood protection action.



IV) Water Resources

- **Appropriate Solid Waste Management**
 - Solid waste resulting from site preparation, construction and rehabilitation will be used a fill material in the site if appropriate. While the remaining will be collected in special places far from the wadis so as not to change the wadis' streams and to prevent washing away by rain water into close wadis.



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V) Biodiversity - Construction Phase

1. Flora

- Limit construction activities within the project site.
- Collect all wastes, solid and liquid, in sealed containers to be disposed in proper disposal sites.



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V) Biodiversity - Construction Phase

2. Fauna

- Prohibit workers from hunting and produce awareness materials such as:
 - 1) Interpretation signs
 - 2) Training manuals and material
 - 3) Publications such posters, brochures
 - 4) Report any accident to inform ministry of environment for records.
- Collect all wastes in sealed containers to be disposed in proper disposal sites to prevent feral and wild animals from using the solid waste sites for feeding.



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VI) Biodiversity - Operational phase

1. Fauna

- Prohibit workers from hunting.
- Report any accident to inform ministry of environment.

2. Flora

- Collect all wastes in sealed containers to be disposed in proper disposal sites.



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VII) Archaeology

- Caution should be considered during construction activities in order to reduce the potential indirect negative impacts on archaeological and heritage sites.
- In addition to the above, and during the construction phase, it is essential to provide strict instructions to the contractor to pause construction works in case of discovering any antiquities or archeological items. Such discoveries should be reported to the nearest Public Security Center.



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VII) Public and Occupational Health

Air Quality:

- Water trucks should be employed to wet the construction areas and service roads to minimize dust emissions;
- All vehicles carrying bulk materials into or out of the site will be covered to prevent dust emission;
- Any storage on site of aggregate or fine materials will be properly enclosed and screened so that dust escape from the site is avoided;



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VII) Public and Occupational Health

Air Quality:

- Engines will be switched off when not in use to minimize exhaust emissions. All vehicles will be properly maintained to reduce air emissions;
- Good housekeeping or 'clean up' arrangements should be employed so that the site is kept as clean as possible; and
- There should be daily inspections of the working areas and immediate surrounding areas to ensure that any dust accumulation or spillages are removed/cleaned up as soon as possible.



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VII) Public and Occupational Health

Noise

- All machinery must be maintained periodically to minimize noise generation from such machinery.
- All equipment used in operation phase must be maintained and take measures to prevent the vibrations caused before the installation in the construction phase in order to reduce the resulting noise.
- Ear protection equipment should be used in areas that have potential source of noise.



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VII) Public and Occupational Health

Accidents Impact

- Transportation of equipment should be carried out in the times to avoid peak times, 6:30 and 16:30 and minimize the movement of machinery within the cities and following the traffic laws.
- Drivers should be instructed to follow safety instructions, the traffic law and to abide with the road speed limits.



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VII) Public and Occupational Health

Accidents Impact

- The need for traffic signals for the project to facilitate compliance with traffic safety matters.
- Drivers must have knowledge of first aid in the event of any accident.
- Compliance with instructions and the requirements of civil defense.



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VII) Public and Occupational Health

Personal Protection Equipment

- Personal protection equipment (protective clothing, helmets, etc.) should be available for all workers in the project.
- Assigning safety supervisor during the operational phase to train new employees to use personal protection tools.



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VII) Public and Occupational Health

Medical Care and Health Insurance

- Employees and workers in the project will be provided with medical insurance according to the laws and regulations and will be also subjected to primary and periodical medical checkups.



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Conclusion

The Environmental Impact assessment for this project is sufficient enough and no need for further assessments as long as recommendations mentioned above are implemented.



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THANK YOU

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