

Study Committee C3

POWER SYSTEM ENVIRONMENTAL PERFORMANCE

10390_2022

Biodiversity Accommodation in the Burullus Power Plant Project Selection and Preservation of a Potential Protected Offset Area

Eng. Marwa Mansour Hussein
Egyptian Electricity Holding Company

Motivation

- The project of the Burullus Power Plant was located within the Burullus Protectorate, declared as protected area by the Ministerial Decree no. 1444/1998, with boundaries that included a wetland of international importance under the Ramsar Convention, and designated both as an Important Bird Area (IBA) and an important Plant Area (IPA).
- The power plant area was identified as Critical Habitat based on a Critical Habitat Assessment (CHA) conducted in May 2016. Accordingly, a Biodiversity Action Plan (BAP) was developed for the area, which included a set of mitigation, management and monitoring measures, as well as EEHC commitment to offset the area lost to construction of the Burullus Power Plant (BPP).
- A study was undertaken to select and preserve an offset area and place it under the management of EEAA Northern Protectorates Department. The study was conducted on two phases. The first was completed in August 2017 and shortlisted six proposed potential offset areas including El-Showeila region located in Matrouh Governorate on the Western Mediterranean Coast.
- This Paper aims to present the outcomes of the second phase, which concluded in the selection of El-Showeila as an offset area for the Burullus Protectorate. However, as the main objective was to offset the Burullus coastal habitats that would be lost to the construction of the Burullus Power Plant and ensure the presence of viable habitat for three of the four Burullus Critical Habitat triggering species, marine surveys were not included in this study

Method/Approach

- The methodology adopted in this study included exhaustive literature review, analysis of satellite images, field visits, interviews with local stakeholders and extensive and intensive ecological and socio-economic surveys of El-Showeila offset area carried out by a multi-disciplinary team.
- Data gathered through literature review and field surveys were combined and analyzed, giving a comprehensive overview of the ecological and socioeconomic baseline conditions of El-Showeila offset area, including ecosystems, habitats, species diversity, land uses and livelihood activities.
- This methodology has proved that the El-Showeila area was not only appropriate to offset the area that was lost due to the construction of the Burullus Power Plant, but its preservation would also provide a net gain to the biodiversity in Egypt.
- The area hosts habitats of similar or even higher value than the Burullus coastal habitats, with a larger number of habitats and species diversity. Moreover, three of the four Burullus Critical Habitat triggering species are present or likely to be present.
- This measure was the most appropriate for setting biodiversity accommodation in this project in order to achieve all requirements of international standards specially IFC and National standards.

Overall assessment of the proposed offset areas

Ranking Criteria	Proposed offset areas value					
	El Showeila	Ras El Hekma	Lake Idku Coastal Area	Motubas	Lake Manza la E. Extension	Port Fouad Salina
Similarity of habitats and biodiversity	13/24	13/24	21/24	23/24	15/24	10/24
Presence of CH triggering species / features	17/23	17/23	18/23	19/23	19/23	15/23
Biodiversity added value of the area	8/8	7/8	2/8	1/8	6/8	5/8
Naturalness of the area	4/4	4/4	3/4	1/4	3/4	2/4
Current and future land uses	2/8	2/8	8/8	4/8	6/8	8/8
Location and extension of the proposed offset area	4/8	5/8	5/8	8/8	6/8	7/8
Overall value	48/75	48/75	57/75	56/75	55/75	47/75
Suitability index (%)	64.0	64.0	76.0	74.6	73.3	62.6
Ranking	4	4	1	2	3	6

Discussion

Results of the assessment showed that the proposed offset area of Lake Idku Coastal Area was the most indicated with a suitability index of 76%, followed by Motubas (74.6%). This ranking seems to be rational given that the two areas are the most ecologically similar to El Burullus and showed the highest compliance to the key ranking criteria. However, this should be regarded as **indicative** and the other proposed areas should not be discarded as each area includes a set of advantages and disadvantages.

Conclusion

In fact, the El Showeila offset area fulfills the criteria proposed for protected area selection in Egypt's Protectorate Area System Plan as follows:

1. The area supports high biological diversity (species and habitats).
2. Importance for endangered, endemic, or restricted range specie.
3. Presence of rare, restricted or threatened habitats.
4. Presence of habitats that are not or are poorly represented in existing Protected Areas in Egypt.
5. Esthetic landscape value.

Study Committee C3

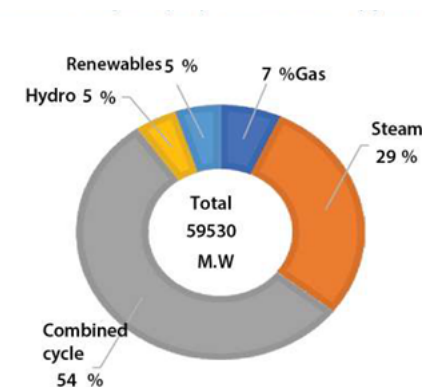
POWER SYSTEM ENVIRONMENTAL PERFORMANCE

10390_2022

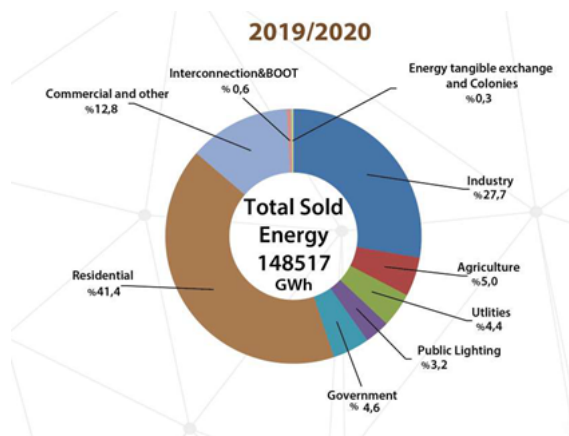
Biodiversity Accommodation in the Burullus Power Plant Project Selection and Preservation of a Potential Protected Offset Area

continued

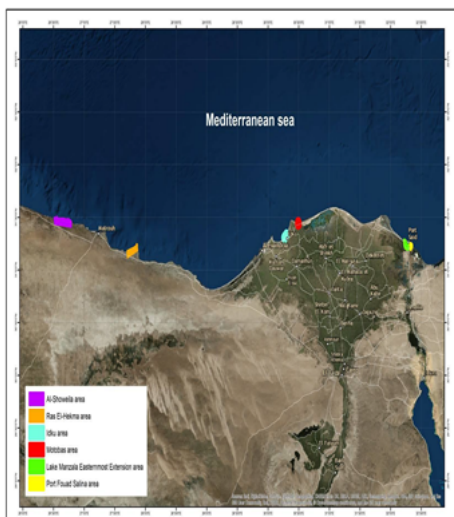
Total Installed Capacity by Generation Type %



Total Sold Energy on all Voltages Classified to Usage (GH/h)



Location of Proposed Offset Areas



Modification of The Burullus Protected Area boundaries according to Decree 330/2018



Biodiversity Accommodation in the Burullus Power Plant Project Selection and Preservation of a Potential Protected Offset Area

continued

Final Ranking of the Six Proposed Offset Areas Showing the Advantages and Disadvantages of Each Area Rank

Offset areas proposed	Advantages	Disadvantages
Lake Idku Coastal Area	<ul style="list-style-type: none"> - Located in the same eco-region. - Habitats similar to those previously present in the Burullus Power Plant site. - Presence of Lake Idku IBA in the area. - No current or future land uses. 	<ul style="list-style-type: none"> - Relatively small area with no adjacent protectorate area. - Presence of nearby industrial disturbing activities. - Biodiversity might be affected by industrial and other human activities.
Motubas	<ul style="list-style-type: none"> - Small area adjacent to Burullus protectorate area. - Close to Lake Burullus IBA and Ramsar Site. - Habitats very similar to those lost due to construction of the Burullus Power Plant. - No current land uses. 	<ul style="list-style-type: none"> - Presence of a declared industrial area. - Degraded habitats.
El-Manzala Easternmost Extension	<ul style="list-style-type: none"> - Adjacent to Ashtom El Gamil Protectorate Area. - The area itself is part of Lake Manzala IBA. - Relatively few current and future land uses. 	<ul style="list-style-type: none"> - Terrestrial habitats are reduced or seriously affected. - Relatively large area. - Absence of coastal sand formations and dunes which constituted large part of the Burullus Power Plant site.
El-Showeila	<ul style="list-style-type: none"> - High biodiversity value. - Located in the Western Mediterranean coast whose habitats are underrepresented in the Protectorate Areas Network of Egypt. - Presence of species of concern absent from El-Burullus. - Relatively few land use mainly composed of semi-wild rain-fed croplands. 	<ul style="list-style-type: none"> - Located in an eco-region somehow different from El-Burullus. - No nearby IBA wetlands. - Relatively large area. - Tourism development is among the area future priorities.
Ras El-Hekma	<ul style="list-style-type: none"> - High biodiversity value. - Land use mainly composed of semi-wild rain-fed croplands. - Located in the Western Mediterranean coast (whose habitats are underrepresented in Egypt's Protected Areas Network). - Presence of species of concern absent from El-Burullus. 	<ul style="list-style-type: none"> - Located in an eco-region somehow different from El-Burullus. - No nearby IBA wetlands. - Relatively large area. - Current land use is relatively high. - Tourism development is among the area future priorities.
Port Fouad Salina	<ul style="list-style-type: none"> - Relatively small area but able to provide food and shelter to avifauna. - High biodiversity value in terms of avifauna richness. - Presence of avian species absent from the Burullus area. - Formerly part of El-Mallaha IBA which is relatively close. 	<ul style="list-style-type: none"> - Modified habitats, very different from those of El-Burullus. - Absence of sand formations and dunes.

Final Boundaries of El-Showeila Proposed Protected Area



Conclusion

- The present paper indicates the work that proved El-Showeila is not only appropriate to offset the area that was lost due to the construction of the Burullus Power Plant, but its preservation would also provide a net gain to the biodiversity in Egypt.
- The area is more than 80 times larger than the Burullus area required to be offset and the proposed core zone alone is almost 10 times bigger.
- El-Showeila hosts habitats of similar or even higher value than the Burullus coastal habitats, with a higher number of habitats and species diversity and three of the four Burullus Critical habitat triggering species are present or likely to be present.
- The proposed protectorate area would cover 133.1 km² and would be managed under International Union for conservation of Nature and Natural Resources (IUCN) Category VI: Protected area with sustainable use of natural resources.
- It is also recommended to organize the activities within the protected area according to three interrelated protective zones, the core zone, the buffer zone and the transition zone.
- The chosen location was considered within the acceptable boundary to all nearby industrial zones to reduce the need to construct additional transmission lines and to minimize the financial cost of the energy availability in these regions, while also minimizing the electricity transmission losses.