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**Annex 4 : Ecological Baseline
(Flora & Fauna) Study
(Red Sea Governorate and El-Menya Governorate)**

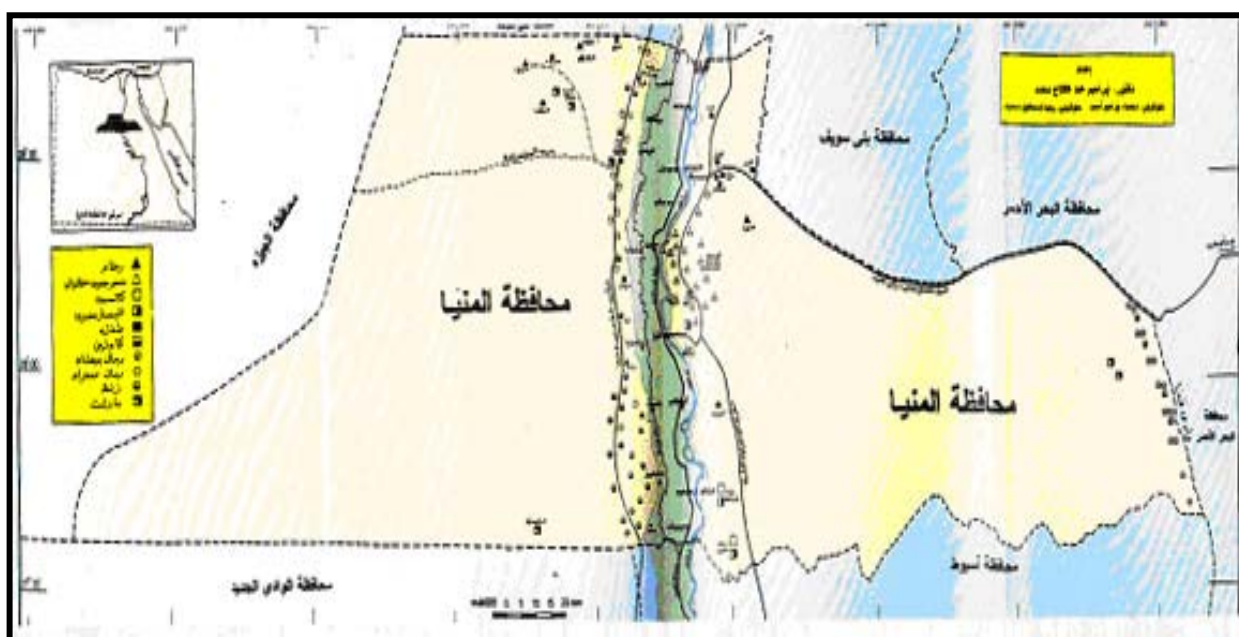
FINAL REPORT

ECOLOGICAL BASELINE OF FLORA AND FAUNA

OF THE PROPOSED PROJECT "SAMALOUT /

GULF OF SUEZ 500KV TRANSMISSION LINE"

MENYA GOVERNORATE



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List of Contents

	Page No
INTRODUCTION	3
PLANTS AND VEGETATION:	3
FISHES	4
AMPHIBIANS AND REPTILES	4
WILD LIFE ALONG THE RIVER NILE BANK	6
BIRDS	27
MAMMALS	29
CONCLUSIONS	38
REFERENCES	39

Introduction

Menya Governorate is considered one of the leading governorates through Egypt's ancient and modern history. It was gifted by a distinguished location among the governorates of the northern Upper Egypt region. Such location reflected both negatively and positively on the features of the inhabitation growth of the governorate. Menya lies between the two longitudes 30° 28', 31° 32' east and the two latitudes 27° 40', 28° 45' north. Its area is estimated to be about 32,279 km², stretching to about 135 km in length. Menya population, according to the estimated census dated 1-1-2005, is about 4,490,000. The inhabited area is estimated to be about 2,400 km², representing 7.5% only of the total area, upon which lives more than 4 million people. It's worth mentioning that Menya is the second biggest populated governorate, after Giza, among Upper Egypt governorates capital. Menya is surrounded by Beni Sweif from the north Giza and El Wady El Gedeed from the west, Red Sea governorate from the east, and Assuit from the South. Menya is connected with the other governorates through regional roads and national rail way.

Project identification:

In order to evacuate the energy generated at Gulf of Suez area, EETC is planning to interconnect the Transmission line in the Gulf of Suez and Gabal El-Zait areas with Samalout substation located at the Nile Valley by installing double circuit 500kV transmission line of approximately 280 km. The line route starts at Samalout 500kV substation in desert area, then it goes through agriculture area until the Nile river. When it crosses the Nile, it goes through desert area till Gabal El-Zait. The desert area of the line route is approximately 89% of the total length of the line (approx 248 km), while the remaining 11% is agriculture area (approx 32km). There are three proposed alternatives for the route at Samalout segment, Figure (1). The main differences are:

- 1- The first route crosses the Nile River at 600 mt distance
- 2- The second route crosses the Nile River at 600 mt distance and succeeded to avoid the housing blocks
- 3- The third route crosses the Nile River at 900 mt distance, and there is a mining area located at the eastern side of the Nile.

The proposed selected route is the second one since it crosses the Nile at minimal distance, avoids all houses blocks and far from the pollution caused by the mining area.

Objective

The main purpose of this study is to record the main environmental impact from the proposed project (electrical Transmission line) on the natural ecosystems (Fauna and Flora) that are may impacted during and after the implementation of this project.

River Nile bank

The Nile Valley is typical river oasis. The narrow cultivated valley is bordered by escarpments of limestone. The river runs closest to the eastern cliff boundaries at the Qena bend. Adjoining the river's western flood plain just south of the latitude of Cairo is the Faiyum Depression with its 1700 km² of fertile land. The depression receives its water mostly from the Nile via Bahr Yusef canal, which is a natural branch of the Nile in addition to a number of man-made canals.

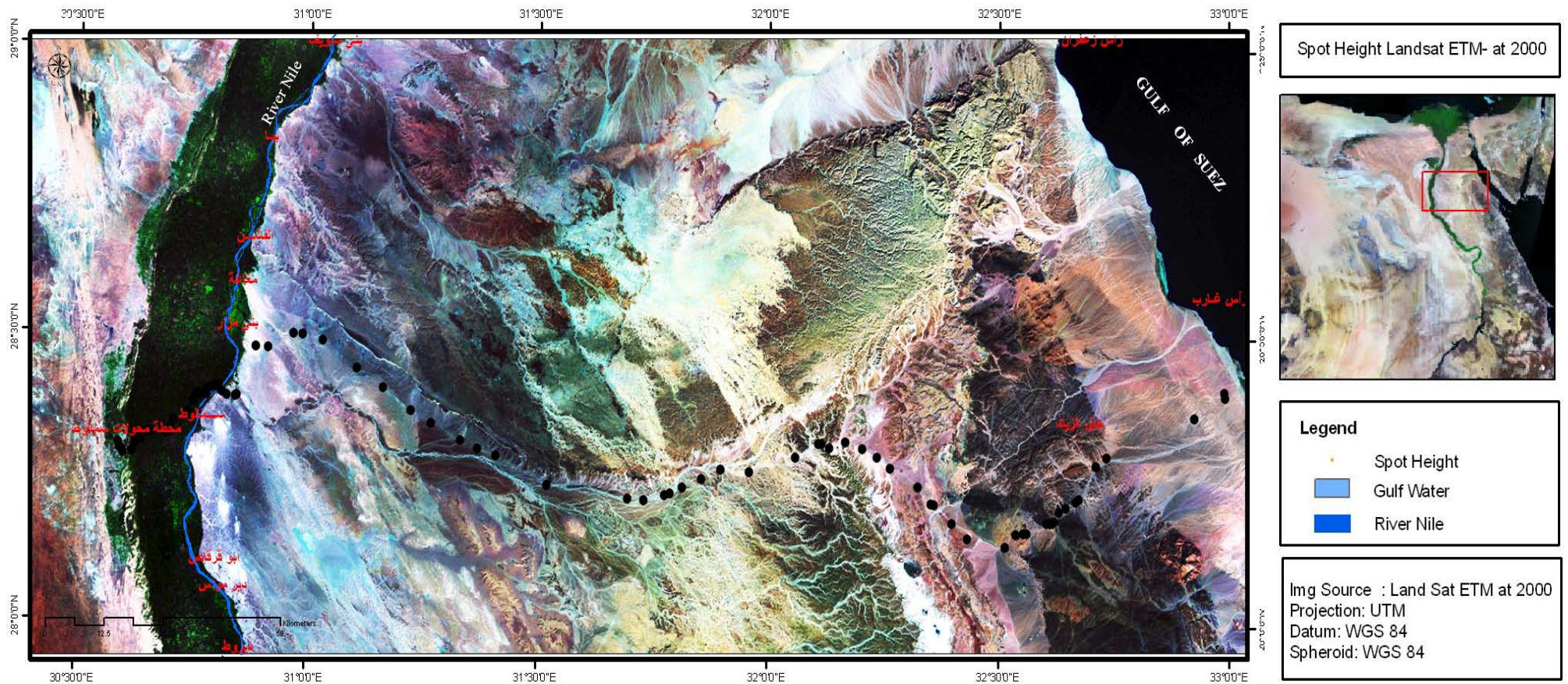


Figure (1): Map shows the proposed study area with transmission line geographic coordinates

With thousands of years of intensive human activities, the modern Nile Valley is essentially a man-made ecosystem. Animals now inhabiting the region are those that are able to tolerate human activities or those that can avoid contact with man. The intensive cultivation and the widespread use of agrochemicals have eliminated many of the native animals of the region.

Plants and vegetation:

River Nile Bank ecosystem is usually divided into 3 habitats; slope, water-edge and open-water of the Nile Bank. Each of these habitats has its specific flora.

Slopes of the Nile

A total of 69 species were recorded in this habitat: 45 annuals and 24 perennials. The unique species are: *Plantago major*, *Amaranthus hybridus*, *Coriandrum sativum*, *Gnaphalium luteo-album*, *Lathyrus marmoratus*, *Phalaris paradoxa*, *Sisymbrium irio*, *Sonchus macrocarpus* and *Trifolium resupinatum*. The common species are: *Phragmites australis*, *Arthrocnemum macrostachyum*, *Sarcocornia fruticosa*, *Suaeda vera*, *Salsola kali*, *Senecio glaucus* subsp. *coronopifolius* and *Sonchus oleraceus*. The rare species are: *Paspalidium geminatum*, *Atriplex halimus*, *Ipomoea carnea*, *Ranunculus sceleratus*, *Cichorium endivia* subsp. *pumilum*, *Hordeum marinum*, *Medicago polymorpha* and *Anagallis arvensis*.

Water-edges of the Nile

A total of 59 species were recorded: 19 annuals and 40 perennials including 6 hydrophytes. The unique species are: *Clerodendrum acerbianum*, *Sida alba*, *Medicago intertexa* var. *ciliaris*, *Rorippa palustris*, *Setaria verticillata* and *Setaria viridis*. The common species are: *Phragmites australis*, *Sarcocornia fruticosa* and *Azolla filiculoides*. The rare species are: *Halocnemum strobilaceum*, *Inula*, *crithmoides*, *Cynanchum acutum*, *Suaeda maritima*, *Centaurea calcitrapa*, *Sphaeranthus suaveolens*, *Tamarix tetragyna* and *Ammi visnaga*.

Open-water of the Nile Bank

A total of 14 species were recorded in this habitat. The common species are: *Phragmites australis*, *Eichhornia crassipes*, *Ceratophyllum demersum*, *Azolla filiculoides* and *Echinochloa stagnina*. The rare species are: *Arthrocnemum macrostachyum*, *Sarcocornia fruticosa*, *Lemna perpusilla*, *Potamogeton crispus* and *Salsola kali*.

Among the noteworthy species in this habitat are two species that cause severe infestation to the water ditches of Egypt:

1-*Phragmites australis*. An emergent aquatic that is a boon and bane to man. It causes severe infestations to the water bodies that hinders the navigation and lead to the fragmentation of the water body. It plays also an important role in increasing the silting process in shallow drains. On the other hand the plant had a long history of use by man as building material for houses and rafts (e.g. Egypt), as thatching (e.g. England), fodder (e.g. Egypt and other countries). It can be used also as paper pulp and source of bioenergy. Australian and German scientists found this plant to be an effective biological filter for wastewater renovation. The plant also is a source of organic matter and safe refuge for the fish and rests for the birds particularly during winter.

2- *Potamogeton pectinatus*. It is the most dominant submerged plant in the River Nile, tolerant to wide salinity variations but with a tendency or better growth in

slightly brackish water .It is also a common aquatic plant in inland waters of Egypt, where it inhabits both stagnant and running waters .This plant usually dies off in autumn, leaving the rhizomes and winter turions to persist in mud till the next spring when new plants start to sprout.

Many other species were found in the Nile Bank and are considered as noteworthy species because they have economic uses. These species are:

- *Eruca sativa* Mill. جرجير
- Raphanus raphanistrum* L. فجل
- *Trifolium alexandrinum* L. برسيم
- *Malva parviflora* L. خبيزه
- *Sida alba* L. ملوخية ابلبيس
- *Mentha longifolia* (L.) نعنع
- *Sonchus oleraceus* L. جعضيض
- *Allium roseum* L ز بصل

Fishes

This activity is of relatively small importance in Menya due to the limitation of water surfaces that are represented only in the Nile and its branches (Serry canal-Bahr youssef - Ibrahemya canal- other small canals). The areas committed to the main canals include 36 area, all of which are in Bahr youssef, Sery canal and Ibrahemya canal of total area of about 6465 feddans.

As for fish farms, they don't exceed 84 farms. The number of fishing boats are about 1314 boat, the number of licensed fishermen is about 1383 in 2005 according to the data of the authority of fish wealth in Menya.

The occurrence of different habitats along the Nile Bank resulted in a large variety of fish species inhabiting these ecosystems. *Tilapia zillii* is widely distributed in this habitat on account of its high tolerance to environment; while *Oreochromis niloticus* was the second common species of cichlids as well as *Clarias gariepinus* *Sarotherodon galilaeus* and another cichlid, *Hemichromis bimaculatus*, avoid salty water. Their occurrence was restricted to areas of low chlorosity. The introduced species *Gambusia affinis* shows a similar wide distribution.

Fishermen use usually traps to catch fish along the Nile Bank, which are set among aquatic vegetation, such as *Phragmites*, *Potamogeton* and *Ceratophyllum* beds. In open water free from vegetation, the traps are either fixed to the bottom by bamboo sticks or in rows among an artificially made barrier. The barrier is usually made from bamboo sticks with gaps at intervals into which the traps are placed.

The traps which are very commonly used to catch mainly *Tilapia*, may also catch mullet fishes. The mesh bars of the traps usually range from 14 to 30 meshes in 50 cm. On the other hand, the traps are used to catch fishes which are trapped behind an artificial muddy barrier. Traps with relatively narrow meshes are set in openings through the muddy barrier.

Size of Fishing.

The total amount of fish reaches about 3837 tons with an increase of about 400 ton to 2003. The number of licenses increased to 1383 fishermen during 2005. The following table illustrates the amount of fish and its kinds. As shown in the table, Bolti fish is the dominant kind in the governorate, followed by besarya then Labis.

The data of fish production indicates that the governorate contributes with a very little share (0.5%) of the total country's production of fish. Such thing is worth attention and working on increasing the production through preventing the contamination of water paths, improving the shipping boats and establishing fish farms in cages along the river banks, as well as using the islands in the Nile to establish fish farms in cages and tanks. It is worth mentioning that at the mean time, the industrial artificial fish incubators, east of the Nile, is being expanded to produce bolti fish as well as El-Mabrouk fish to deliver it to the Ministry of irrigation to fight weeds in canals and drains.

Amphibians and Reptiles:

Four species of amphibians and 34 species of reptiles are known from the Nile Valley. Characteristic amphibians include *Bufo regularis*, *Ptychadena mascareniensis* and *Rana ridibunda*.

Common reptiles include *Hemidactylus turcicus*, *Chalcides ocellatus*, *Coluber florulentus*, *Natrix tessellata*, *psammophis sibilans*, *Telescopus dhara*, and *Naja haje*. *Mabuya quinquetaeniata*, *Chameleo africanus*, *Varanus niloticus*, *leptotyphlops cairi*, *Psammophis sibilans*, *Matrix tessellata*, *Dasypeltis scabra*, *Crocodylus niloticus*, *Trionyx triunguis*, and *Ptychadena masareniensis*, are restricted to this habitat in Egypt.

Birds:

Common breeding birds of the Nile Valley include 66 species (Goodman *et al.* 1989). At least 14 of these are not known to breed outside that habitat. Characteristic species include *Egretta ibis*, *Elanus caeruleus*, *Milvus migrans*, *Falco tinnunculus*, *Gallinula chloropus*, *Hoplopterus spinosus*, *Rostratula benghalensis*, *Streptopelia senegalensis*, *Centropus senegalensis*, *Tyto alba*, *Merops orientalis*, *Galerida cristata*, *Hirundo rustica*, *Motacilla flava*, *Prina gracilis*, *Corvus corax*, *Passer domesticus*, and others.

The Nile Valley with its abundance of water and food available for birds, provide an important, relatively, easy and safe route for trans-Saharan, palearctic migration. Huge numbers of individuals of many species utilize this route during both spring and autumn migrations. The region also provides wintering habitats for large populations of many palearctic migratory species (Goodman *et al.*, 1989).

Mammals:

Rodents form the largest mammalian group of the area, being represented by many species and the most common species – besides of course the normal cats and dogs- are the Field Rat *Arvicanthis niloticus* and the Black Rat *Rattus rattus*, which are nocturnal and feed on vegetables and seeds. Burrows are shallow and usually under shrubs.

The Red Fox *Vulpes vulpes* was recorded in areas around the Nile Bank. Individuals and their tracks were seen throughout the area, where it seems to inhabit date and fruit groves, cultivated areas and suburban gardens, commonly seen during daylight hours. It feeds on birds, rodents and insects. This fox belongs to subspecies *aegyptiaca* which is widespread around drains of Nile Delta and Valley. However, wild carnivores have suffered a great deal of decline in the recent years as a result of secondary poisoning with pesticides widely used to control *Arvicanthis niloticus* and other rodent pests.

The Giant Musk Shrew; *Crocidura flavescens deltae* العرسة , was also recorded in many areas around the Nile Bank.

Wild life along the River Nile Bank

Table 3. Plants and vegetation

Species
<i>Echinochloa colona</i>
<i>Anagallis arvensis</i>
<i>Chenopodium murale</i>
<i>Malva parviflora</i>
<i>Polypogon monspeliensis</i>
<i>Reichardia tingitana</i>
<i>Sonchus oleraceus</i>
<i>Frankenia pulverulenta</i>
<i>Avena fatua</i>
<i>Hordeum murinum</i> subsp. <i>leporinum</i>
<i>Melilotus indicus</i>
<i>Schismus barbatus</i>
<i>Eruca sativa</i>
<i>Lolium perenne</i>
<i>Senecio glaucus</i> subsp. <i>coronopifolius</i>
<i>Setaria verticillata</i>
<i>Sisymbrium irio</i>
<i>Brassica tournefortii</i>
<i>Calendula aegyptiaca</i>
<i>Conyza bonariensis</i>
<i>Emex spinosa</i>
<i>Gnaphalium luteo-album</i>
<i>Trigonella laciniata</i>
<i>Urospermum picroides</i>
<i>Beta vulgaris</i>
<i>Carex divisa</i>
<i>Cyperus difformis</i>
<i>Echinochloa crusgalli</i>
<i>Hordeum marinum</i>
<i>Juncus bufonius</i>
<i>Lolium multiflorum</i>
<i>Portulaca oleracea</i>
<i>Rumex dentatus</i>
<i>Trifolium alexandrinum</i>
<i>Trifolium resupinatum</i>
<i>Orobanche crenata</i>
<i>Chenopodium album</i>
<i>Chenopodium ambrosioides</i>
<i>Cichorium endivia</i> subsp. <i>pumilum</i>
<i>Spergularia marina</i>
<i>Chrysanthemum coronarium</i>
<i>Eclipta alba</i>
<i>Amaranthus viridis</i>
<i>Ranunculus sceleratus</i>
<i>Lotus arabicus</i>
<i>Amaranthus hybridus</i>
<i>Anethum graveolens</i>

Table 4. Checklist of zooplankton species recorded along the River Nile bank

<u>Rotifera</u>
<i>Anuraeopsis fissa</i> (Gosse)
<i>Asplanchna girodi</i> De Guerne
<i>Asplanchna priodonta</i> Gosse
<i>Asplanchna sieboldi</i> Leydig
<i>Brachionus angularis</i> Gosse
<i>Brachionus budapestinensis</i> Daday
<i>Brachionus calyciflorus</i> Pallas
<i>Brachionus caudatus</i> (Barrois & Daday)
<i>Brachionus falcatus</i> Zacharias
<i>Brachionus plicatilis</i> (Müller)
<i>Brachionus quadridentatus</i> Hermann
<i>Brachionus rubens</i> Ehr.
<i>Brachionus urceolaris</i> (Müller)
<i>Cephalodella gibba</i> Ehr.
<i>Colurella adriatica</i> Carlin
<i>Colurella obtusa</i> Haver
<i>Filinia longiseta</i> Ehr.
<i>Harringia rouseleti</i> Beauchamp.
<i>Hexarthra oxyuris</i> Hudson
<i>Keratella cochlearis</i> Gosse
<i>Keratella quadrata</i> Müller
<i>Keratella tropica</i> Apstein
<i>Keratella vulga</i> Ehr.
<i>Lecane arcuata</i> Harring
<i>Lecane bulla</i> Gosse
<i>Lecane closterocera</i> Schmarda
<i>Lecane luna</i> Müller
<i>Lecane lunaris</i> Ehr.
<i>Philodina roseola</i> Ehr.
<i>Polyarthra ramata</i> Skorikow
<i>Polyarthra vulgaris</i> Carlin
<i>Proalides</i> sp.
<i>Rotatoria</i> sp.
<i>Synchaeta oblonga</i> Ehr.
<i>Synchaeta pectinata</i> Ehr.
<i>Testudinella patina</i> Hermann
<i>Trichocerca cylindrica</i> Imhof
<i>Trichocerca gracilis</i> Tessin
<i>Trichocerca pusilla</i> Jennings
<i>Trichocerca inermis</i> Linder

Copepoda*Acanthocyclops americanus* March*Acanthocyclops exilis* Coker*Acanthocyclops vernalis* Fischer*Apocyclops panamensis* March*Schizopera nilotica**Tachidius descipes* Geisb*Thermocyclops crassus* Fischer*Thermocyclops decipinis* Kieker*Thermocyclops neglectus* Sars*Nauplius larvae**Copepodid stages***Cladocera***Alona intermedia* Sars*Alonella nana* Baird*Bosmina longirostris* Muller*Ceriodaphnia reticulata* Jurine*Chydorus ovalis* Kurz*Chydorus sphaericus* Muller*Daphnia similis* Claus*Diaphanosoma brachynrum* Lieven*Diaphanosoma mongolianum**Diaphanosoma excisum* Sars*Ilyocryptus agilis* Kurz*Macrothrix laticornis* Jurine*Macrothrix rosea* Jurine*Moina micrura* Kruz*Oxyurella longicaudis* Birge

Table 5: Checklist of benthos species recorded along River Nile bank

Species
<u>Arthropoda</u>
<i>Corophium orientale</i> (Schellenberg)
<i>Gammarus lacustris</i> (Fabricius)
<i>Gammarus aequicauda</i>
<i>Gammarus orinicornis</i>
<i>Mesanthura</i> sp.
<i>Palaemon elegans</i>
<i>Tandipos tentans</i> (Meigen)
Nymph of <i>Neurocordula</i> sp.
Nymph of <i>Ischneura</i> sp. (Pinhey)
Nymph of <i>Enallaga vansomerni</i>
<i>Micronecta plicata</i> (Costa)
<i>Lethocerus niloticus</i> (Stal)
<i>Sternolophus solieri</i> (Lapouge)
Aquatic spiders
<u>Annelida</u>
<i>Branchiura sowerbyi</i> (Beddard)
<i>Limnodrilus hoffmeisteri</i> (Claparede)
<i>Limnodrilus udekemianus</i> (Claparede)
<i>Limnodrilus claparedeianus</i> (Ratzel)
<i>Potamothrix hammoniensis</i> (Mich)
<i>Chaetogaster limnaei</i> (K. Von Beak)
<i>Helobdella conifera</i> (Moore)
<i>Salifa perspicax</i> (Blanchard)
<i>Glossiphonia</i> sp.
<u>Mollusca</u>
<i>Melanoides tuberculata</i> (Müller)
<i>Theodoxus niloticus</i> (Reeve)
<i>Buliuns truncatus</i> (Audouin)
<i>Gyraulus ehrenbergi</i> (Beck)
<i>Physa acuta</i> (Draparanud)
<i>Cleopatra bulimoides</i> (Olivier)
<i>Bellamyia unicolor</i> (Olivier)
<i>Lanistes carinatus</i> (Olivier)
<i>Biomphalaria alexandrina</i> (Ehr.)
<i>Hydrobia ventrosa</i> (Montagu)
<i>Succinea cleopatra</i> (Pallary)
<i>Corbicula consobrina</i> (Cailliaud)
<i>Corbicula fluminalis</i> (Müller)

Table 6. Fish species at the study site in the River Nile.

Family	Species	
Characidae	<i>Hydrocynus forskalii</i> (Cuvier, 1819)	كلب السمك
Cyprinidae	<i>Labeo niloticus</i> (Forsk., 1775)	لبيس نيلي
	<i>Barbus bynni</i> (Forsk., 1775)	بني أصلي
	<i>Barbus perince</i> Ruppell 1837	بني برنس
Siluridae	<i>Clarias gariepinus</i> (Burchell, 1822)	حوت
	<i>Bagrus bajad</i> (Forsk., 1775)	بياض
Cyprinodontidae	<i>Aphanius fasciatus</i> (Valenciennes, 1821)	بطريق
Poeciliidae	<i>Gambusia affinis</i> (Baird & Girard, 1853)	جامبوزيا
Atherinidae	<i>Atherina mochon</i> Cuvier, 1829	بساريا
Mugilidae	<i>Mugil cephalus</i> Linnaeus, 1758	بوري
	<i>Liza ramada</i> (Risso, 1826)	طوبارة
Serranidae	<i>Lates niloticus</i> (Linnaeus, 1762)	قشر بياض
Cichlidae	<i>Hemichromis bimaculatus</i> Gill, 1862	هيمكروس مخطط
	<i>Haplochromis bloyeti</i> (Sauvage, 1883)	هابلوكروس قزم
	<i>Tilapia zillii</i> (Gervais, 1848)	بلطي اخضر
	<i>Oreochromis niloticus</i> (L., 1757)	بلطي نيلي
	<i>Oreochromis aureus</i> (Steindachner, 1864)	بلطي ازرق
	<i>Sarotherodon galilaeus</i> (Artemi, 1757)	بلطي جليلي
Gobiidae	<i>Pomatoschistus minutus</i> (Pallas, 1767)	ابو كرش
	<i>Pomatoschistus (Iliinia) microps</i> (Kroger, 1838)	
	<i>Lesueurina lesueurii</i> (Risso, 1810)	ابو كرش

Table 7. Reptiles and amphibians recorded from study Area

Latin name	English name	Arabic name
<i>Acanthodactylus boskianus</i>	Bosc's Fringe-toed Lizard	سقتقر خشن
<i>Acanthodactylus scutellatus</i>	Nidua Fringe-toed Lizard	سقتقر الرمل الكبير
<i>Acanthodactylus schreiberi</i>		
<i>Bufo kassasii</i>	Nile Valley Toad	ضفدع قصاص
<i>Bufo regularis</i>	Egyptian Toad	ضفدع نيلى
<i>Bufo viridis</i>	Green Toad	ضفدع أخضر
<i>Chalcides ocellatus</i>	Ocellated Skink	سحلية دفانة
<i>Chamaeleo africanus</i>	African Chameleon	حرباء أفريقيا
<i>Chamaeleo chamaeleon</i>	Common Chameleon	حرباء
<i>Coluber florulentus</i>	Flowered Snake	أزروود
<i>Eryx jaculus</i>	Javelin Sand Boa	دساس بلدى
<i>Hemidactylus turcicus</i>	Turkish Gecko	برص منزلى
<i>Mabuya quinquetaeniata</i>	Bean Skink	سحلية جراية
<i>Mabuya vittata</i>	Bridled Skink	سحلية جراية مخططة
<i>Malpolon monspessulana</i>	Montpelier's Snake	ثعبان خضارى
<i>Naja haje</i>	Egyptian Cobra	كوبرا مصرى
<i>Natrix tessellata</i>	Diced Water Snake	ثعلبن الماء
<i>Psammophis sibilans</i>	African Beauty Snake	ابو السيور
<i>Ptychadena mascareniensis</i>	Mascarene Frog	جزارع ابو خطين
<i>Rana ridibunda</i>	Lake Frog	جزارع أخضر
<i>Sphenops sepsoides</i>	Audouin's Skink	سحلية نعامة

Table 8. List of the bird species recorded at the study area in the River Nile.

***: Denotes the endemic species, b: breeding species.**

Scientific name	Family	English name
<i>Tachybaptus ruficollis ruficollis</i> ^b	Podicipediae	Little Grebe
<i>Ardea cinerea cinerea</i>	Ardeidae	Grey Heron
<i>Ardeola ralloides</i>	Ardeidae	Squacco Heron
<i>Nycticorax nycticorax nycticorax</i>	Ardeidae	Night Heron
<i>Ixobrychus minutus minutus</i> ^b	Ardeidae	Little Bittern
<i>Egretta alba alba</i>	Ardeidae	Great White Egret
<i>Egretta ibis ibis</i>	Ardeidae	Cattle Egret
<i>Egretta garzetta garzetta</i>	Ardeidae	Little Egret
<i>Anas penelope</i>	Anatidae	European Wigeon
<i>Anas clypeata</i>	Anatidae	Shoveler
<i>Anas querquedula</i>	Anatidae	Garganey
<i>Aythya ferina</i>	Anatidae	Pochard
<i>Aythya nyroca</i>	Anatidae	Ferruginous Duck
<i>Elanus caeruleus caeruleus</i>	Accipitridae	Black-Shouldered Kite
<i>Circus aeruginosus aeruginosus</i>	Accipitridae	Marsh Harrier
<i>Falco tinnunculus tinnunculus</i>	Falconidae	Kestrel
<i>Porphyrio porphyrio madagascariensis</i> ^b	Rallidae	Purple Gallinule
<i>Fulica atra atra</i>	Rallidae	Coot
<i>Charadrius hiaticola tundrae</i>	Charadriidae	Ringed Plover
<i>Charadrius alexandrinus alexandrinus</i> ^b	Charadriidae	Kentish Plover
<i>Hoplopterus spinosus</i> ^b	Charadriidae	Spur-Winged Plover
<i>Calidris minuta</i>	Scolopacidae	Little Stint
<i>Calidris alpina alpina</i>	Scolopacidae	Dunlin
<i>Philomachus pugnax</i>	Scolopacidae	Ruff
<i>Lymnocyptes minimus</i>	Scolopacidae	Jack Snipe
<i>Tringa totanus totanus</i>	Scolopacidae	Redshank
<i>Actitis hypoleucos</i>	Scolopacidae	Common Sandpiper
<i>Larus ridibundus</i>	Laridae	Black-Headed Gull
<i>Larus genei</i>	Laridae	Slender-Billed Gull
<i>Larus fuscus fuscus</i>	Laridae	Lesser Black-Racked Gull
<i>Larus argentatus cachinnans</i>	Laridae	Yellow-Legged Gull
<i>Chlidonias hybrida hybrida</i>	Laridae	Whiskered Tern
<i>Chlidonias leucoptera</i>	Laridae	White-winged Black Tern
<i>Sterna albifrons albifrons</i> ^b	Laridae	Little Tern
<i>Streptopelia senegalensis aegyptiaca</i> [*]	Columbidae	Palm Dove

<i>Streptopelia decaocto decaocto</i>	Columbidae	Coilered Turtle Dove
<i>Centropus senegalensis</i>	Cuculidae	Senegal Coucal
<i>aegyptius</i> *b		
<i>Cuculus canorus canorus</i>	Cuculidae	Cuckoo
<i>Ceryle rudis rudis</i> b	Alcedinidae	Pied Kingfisher
<i>Merops orientalis cleopatra</i>	Meropidae	Little Green Bee-eater
<i>Upupa epops epops</i>	Upupidae	Hoopoe
<i>Hirundo rustica rustica</i>	Hirundinidae	Swallow
<i>Riparia riparia riparia</i>	Hirundinidae	Sand Martin
<i>Calandrella rufescens nicolli</i> *b	Alaudidae	Lesser Short Toed Lark
<i>Galerida cristata nigricans</i> *	Alaudidae	Crested Lark
<i>Anthus cervinus</i>	Motacillidae	Red-Throated Pipit
<i>Motacilla flava pygmaea</i> *	Motacillidae	Egyptian Wagtail
<i>Motacilla flava flavissima</i>	Motacillidae	Yellow Wagtail
<i>Motacilla cinerea cinerea</i>	Motacillidae	Grey Pied Wagtail
<i>Lanius collurio collurio</i>	Laniidae	Red-backed Shrike
<i>Sturnus vulgaris vulgaris</i>	Sturnidae	Starling
<i>Corvus corone cornix</i>	Corvidae	Hooded Crow
<i>Prinia gracilis deltae</i> *b	Sylviidae	Graceful Warbler
<i>Scotocerca inquieta inquieta</i>	Sylviidae	Scrub Warbler
<i>Passer domesticus niloticus</i>	Passeridae	House Sparrow
<i>Emberiza calandra calandra</i>	Emberizidae	Corn Bunting
<i>Emberiza schoeniclus intermedia</i>	Emberizidae	Reed Warbler
<i>Milvus migrans</i>		

Table 9. List of the mammals recorded from the River Nile bank

Order	Family	Species	English name	Arabic name
Insectivora	Erinaceidae	<i>Hemiechinus auritus</i>	Long eared hedgehog	قنفذ
	Soricidae	<i>Crocidura flavescens</i>	Giant musk shrew	عرسة
		<i>Crocidura floweri</i>	Flower's shrew	زياب الزهور
Chiroptera	Pteropodidae	<i>Rousettus aegyptiacus</i>	Egyptian fruit bat	خفاش مصري
	Rhinopomatidae	<i>Rhinopoma macrophyllum</i>	Greater mouse-tailed bat	خفاش ابو ديل
	Vespertilionidae	<i>Pipistrellus kuhlii</i>	Kuhl's Pipistrelle	خفاش صغير كولى
Rodentia	Cricetidae	<i>Gerbillus andersoni</i>	Anderson's Gerbil	بيوضى
	Muridae	<i>Psammomys obesus</i>	Fat sand rat	جرذ
		<i>Arvicanthis niloticus</i>	Nile or field rat	فأر الغيط
		<i>Rattus rattus</i>	Black rat	جرذ اسود
		<i>Rattus norvegicus</i>	Brown rat	جرذ المجارى
		<i>Mus musculus</i>	House mouse	سيسى - فأر
		<i>Acomys cahirinus</i>	Cairo spiny mouse	عرسة
Carnivora	Canidae	<i>Canis aureus</i>	Jackal	ابن آوى
	Mustelidae	<i>Vulpes vulpes</i>	Red fox	ثعلب
		<i>Mustela nivalis</i>	Weasel	ابن عرس
	Viverridae	<i>Herpestes ichneumon</i>	Egyptian mongoose	نمس
Felidae	<i>Felis chaus</i>	Jungle cat	قط برى	

Plants and vegetation



Mentha longifolia

نعنع



Saccharum spontaneum

هيش



Sonchus oleraceus

جعضيض



Imperata cylindrica

حلفا



Lemna gibba

عدس المية

Common fish species



Tilapia zillii

بلطى أخضر



Oreochromis niloticus

بلطى نیلی



Oreochromis aureus

بلطى أزرق



Sarotherodon galilaeus

بیطی جلیلی



Clarias gariepinus

قرموط



Lates niloticus

قشر بیاض



Mugil cephalus بوری



Liza ramada طوبار

Amphibians and Reptiles

Plate 1



Bufo regularis

ضفدع نیلی



Ptycadena mascareniensis

جزاع ابو خطین

Plate 2



Bufo kassasii

ضفدع قصاص



Bufo viridis

ضفدع اخضر

Plate 3



Rana ridibunda

جزاع اخضر



Hemidactylus turcicus

برص منزلی

Plate 4



Acanthodactylus scutellatus

سقنقر الرمل الكبير



Chalcides ocellatus

سحلية دفانة

Plate 5



Mabuya vittata

سحلية جراية مخططة



Sphenops sepsoides

سحلية نعامة

Plate 6



Chamaeleo chamaeleon

حرباء



Chamaeleo africanus

حرباء افريقية

Plate 7



Eryx jaculus jaculus

دساس بلدی



Malpolon monspessulanus

ثعبان خضاری

Plate 8



Natrix tessellate

ثعبان الماء



Psammophis sibilans

أبو السبور

Birds along the River Nile



Motacilla flava



Prinia gracilis



Hirundo rustica



Gallinula chloropus

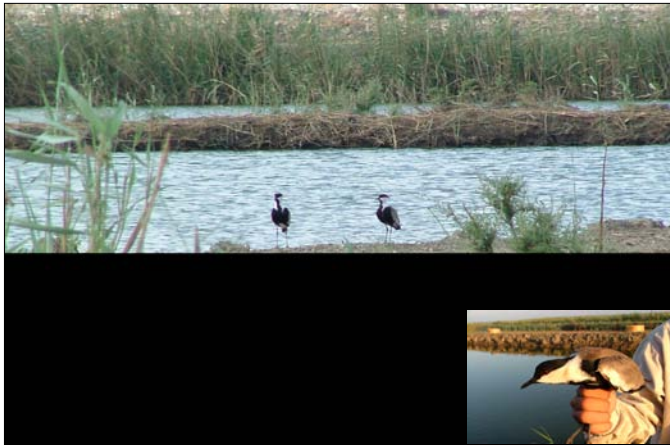


Falco tinnunculus



Elanus caeruleus

Alcedo atthis



Vanellus spinosus

Mammals

Plate 1



Hemiechinus auritus قنفذ طويل الأذن



Crocidura flavescens زئب عملاق

Plate 2



Crocidura floweri

زبلب الزهور



Rousettus aegyptiacus خفاش الفاكهة المصرى

Plate 3



Rhinopoma microphyllum أبو ديل الكبير



Pipistrellus kuhlii خفاش كولى

Plate 4



Gerbillus andersoni بیوضی



Psammomys obesus جرد

Plate 5



Arvicanthis niloticus

فأر الغيظ



جرذ اسود - جرذ المنزل *Rattus rattus*

Plate 6



جرذ نرويجى *Rattus norvegicus*



فأر المنزل *Mus musculus*

Plate 7



Acomys cahirinus فأر ابو شوك القاهرى



Canis aureus ابن آوى

Plate 8



Vulpes vulpes ثعلب أحمر



Mustela nivalis ابن عرس (عرسة)

Plate 9



Herpestes ichneumon نمس مصری



Felis chaus قط بری نیلی

CONCLUSION

Regarding to Environmental laws and the environmental legislations, the most important is law 4/1994, law 48/1982 regarding the protection of the Nile river & surface waters, law 102/1983 regarding natural protected areas.

The aquatic environment of the River Nile passing the project transmission line is characterized by a gradually sloping bed; divided into 3 habitats; slope, water-edge and open-water, and generally they have good water quality. These habitats are biologically rich in biodiversity. **Results of the study** indicated that the construction of the **proposed project will not threaten** the biodiversity, fishes, and natural resources of the sensitive ecosystems of the project site.

Some fishing boats were found in the study site, and when interviewed some fishermen from the region, they reported that the fish production is moderately well, and most of it are of the tilapia species, which are very common in the River Nile. They assured that **no effect from the magnetic field** of the transmission line causing any effect on the fish production.

With many years of intensive human activities, the modern Nile Valley became essentially a man-made ecosystem. In spite of many wild mammals and reptiles were recorded in this area, now most of animals inhabiting the region are those that are able to tolerate human activities or those that can avoid contact with man. The intensive cultivation and the widespread use of agrochemicals have eliminated many of the native and wild animals of the region.

Regarding to the impact of this project along the transmission line, No threatened species, fishes found and sensitive habitats in the study area will affect by the implementation of the project, as well, no protected areas are located on, or in the vicinity of the project area.

During the construction of the transmission line project, dredging and construction could lead to potential impacts on the physical quality of the River Nile water and removal of, or disturbance to, aquatic and desert habitats, flora and fauna. Given that the area of impact is much localized, losses will in many cases temporary and field survey data available do not indicate significant or sensitive habitats, so the impacts of power plant construction on the environment will not considered being significant. In addition, good site management and engineering practices during construction will ensure that any residual impacts are reduced to a minimum.

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