SOREN KROHN
SK@SKPOWER.NET
+1-202-468-2902

Extra Slides: Practical use of ESIAs in Wind Farm Procurement




Design and Cost of Mitigation Scheme 1

- This is an issue of weighing competing interests against one another politically and economically (including conflicts of interest between ESIA stakeholders)

- Wind projects have far less environmental and social footprint than most other generating technologies

- There are lots of industry lessons learned and best practice principles, do not try to reinvent the wheel; this may be your first wind project, but it is not the first the world

Design and Cost of Mitigation Scheme. Whose Problem?

...DEPENDS ON PROCUREMENT MODEL

1. If developer finds site: Developers' problems to solve within regulatory and administrative framework – if it exists!

2. Preselected site: Government's / national utility's problems, both for design and excess cost, because they selected the site.

   If competitive procurement, you must structure the solutions method in advance, with a pass/fail criterion. Otherwise you get non-comparable bids & adverse selection, the lowest cost bid, is likely the poorest solution, ending up being the most expensive!

   (Two examples: Birds; Wind shade from future wind farms)

Design and Cost of Mitigation Scheme

- Developer use of time:
  - Environmental issues, 5% of siting effort
  - Social issues, 5% of siting effort + up to 90% of other efforts!

- How do we translate ESIAs into something operational in the procurement process?
  - We need operational recommendations to begin with
  Get an experienced consultant who understand the economics end technology of wind power on your team
  - We need a complete ESIA i.e. if a bird study is needed, we normally need both spring and autumn migration.
  Otherwise we get non-comparable bids!

Example: Area Bird Study Zoning: Gulf of Suez, Egypt

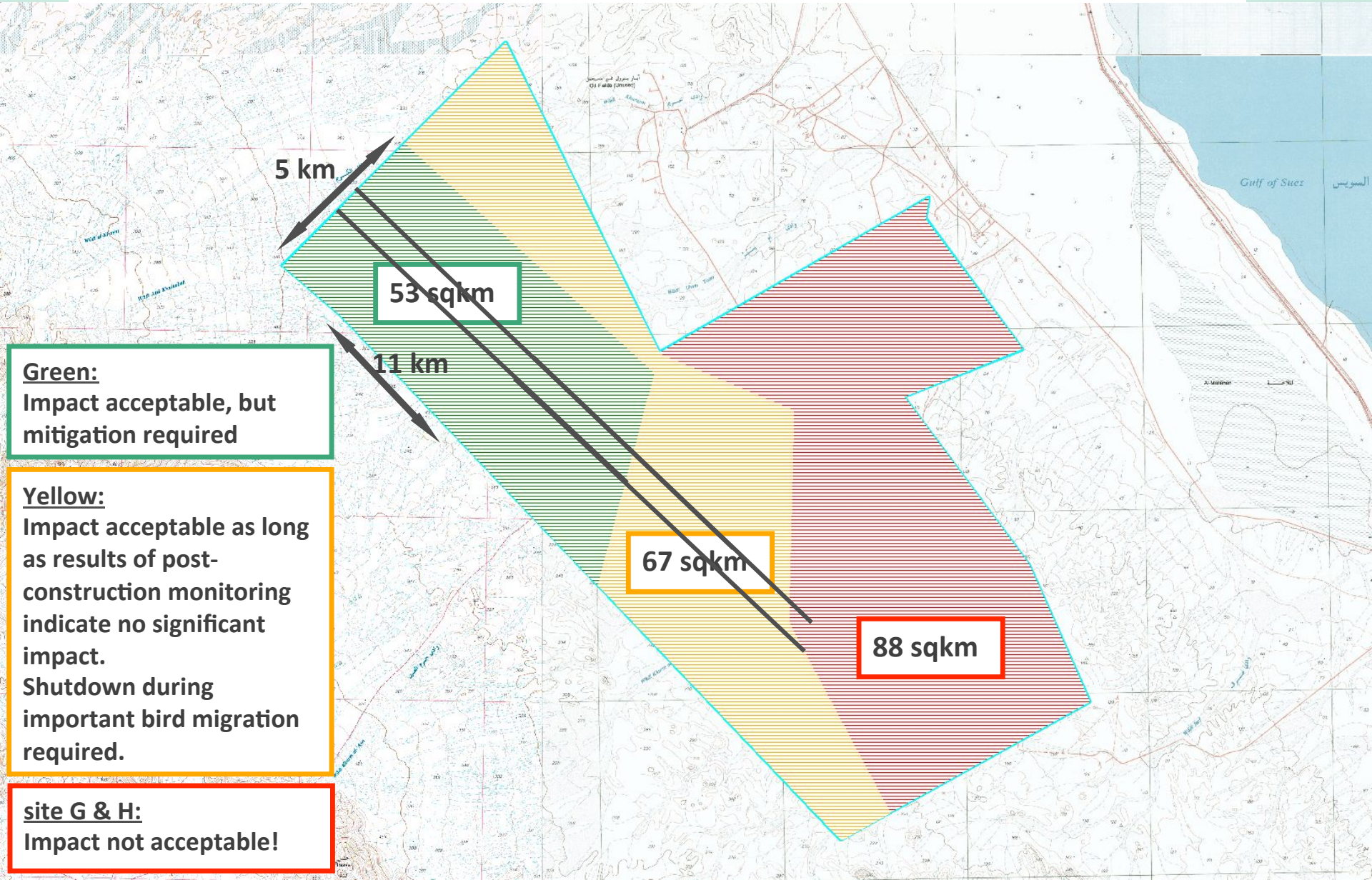
IMPORTANT BIRD MIGRATORY ROUTE – SOME VALUABLE SPECIES INVOLVED

1. 53 Km2 is specified as “Green”:
No environmental restrictions to implement Wind Farms. But bidder must implement escape corridor or shutdown on demand

2. 67 Km2 is specified as “Yellow”:
Implement Wind Farms with the environmental constraints:
(max tip height 120 m for wind turbines, paint blades with aviation markings, no lattice towers, shutdown on demand of wind farm during bird migration is an obligation)

3. 88 Km2 is specified as “ Red”:
Not allowed to implement wind farms in this area.

Impact Assessment: Recommendations



Green:
Impact acceptable, but mitigation required

Yellow:
Impact acceptable as long as results of post-construction monitoring indicate no significant impact.
Shutdown during important bird migration required.

site G & H:
Impact not acceptable!

(Operational!) Mitigation Measure Options

Government chose between these options:

- Shutdown on demand for 10 weeks during spring migration (10% energy loss)
- Shutdown on demand (1-2% energy loss probable, based on 1-year study only)
- Bird corridor, 1 km wide (0% energy loss, but loss of 15-20% of valuable windy land, and shutdown needed in yellow zone anyway)

Solution Model Adopted in PPA & Associated Agreements

Selected option, Mitigation management, Residual risk allocation

- Shutdown on demand the selected option – cost & efficiency (1-2% energy loss probable, based on 1-year study only)
- Shutdowns cannot be ordered by NREA, the New and Renewable Energy Authority who owns an adjacent wind farm, and cannot be ordered by EETC, the electricity offtaker, conflict of interest!
- EEA, Egyptian Environmental Authority will administer the scheme, and hire a team of ornithologists for the spring season and for a post commissioning survey. Orders will be given directly to the dispatch center, not to the wind farm owner.
- EETC, the electricity offtaker will compensate bidders for deemed electricity generation – same as grid interruption rule.

Mitigation Measure Options

MOST OF THESE REQUIREMENTS ARE STANDARD INDUSTRY BEST PRACTICE

These requirements were made mandatory for all bidders (over and above consultants' recommendations) in order to avoid evaluation of bids, i.e. pass/fail criteria:

- Max tip height 120 m for wind turbines
- Paint blades with aviation markings (color issue…)
- No lattice towers
- As little lighting as possible (aviation safety concerns only)
- Long distance – minimum 12 rotor diameters between rows of turbines to allow soaring birds more space to climb (needed with low surface roughness of deserts anyway!)
- Internal MV grid in wind farm: Underground cabling only
- Decommissioning requirements with bond posted towards end

SOREN KROHN, WIND POWER CONSULTANT

SK@SKPOWER.NET

+1-202-468-2902

Thank You.

The World Bank | 1818 H Street, NW | Washington DC, USA
www.esmap.com | esmap@worldbank.org