THE TIMES OF INDIA
INDIA

Pench tiger crossing NH-7 raises concern

Vijay Pinjarkar | TNN | Updated: Jul 10, 2019, 5:50 IST

The Indian EXPRESS
Wednesday, July 17, 2019

Trending Globally Trending in India Viral Videos This is Serious

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Wednesday, July 17th 2019

Tiger crosses national highway, jumps over crash barrier, video goes viral

Pench Tiger risks life by crossing highway in broad daylight

Nation Next Newsroom | Jul 10, 2019 20:09

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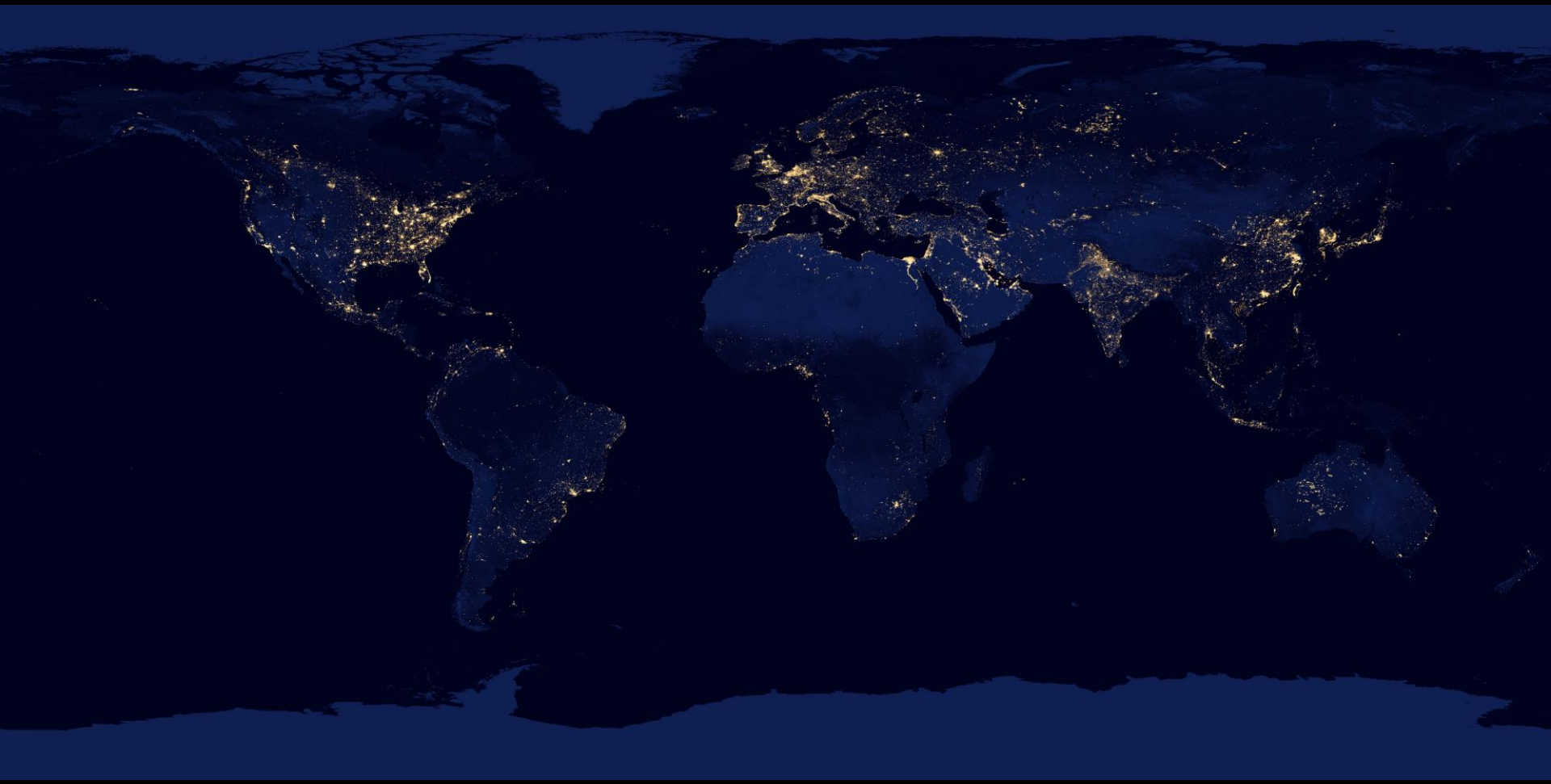
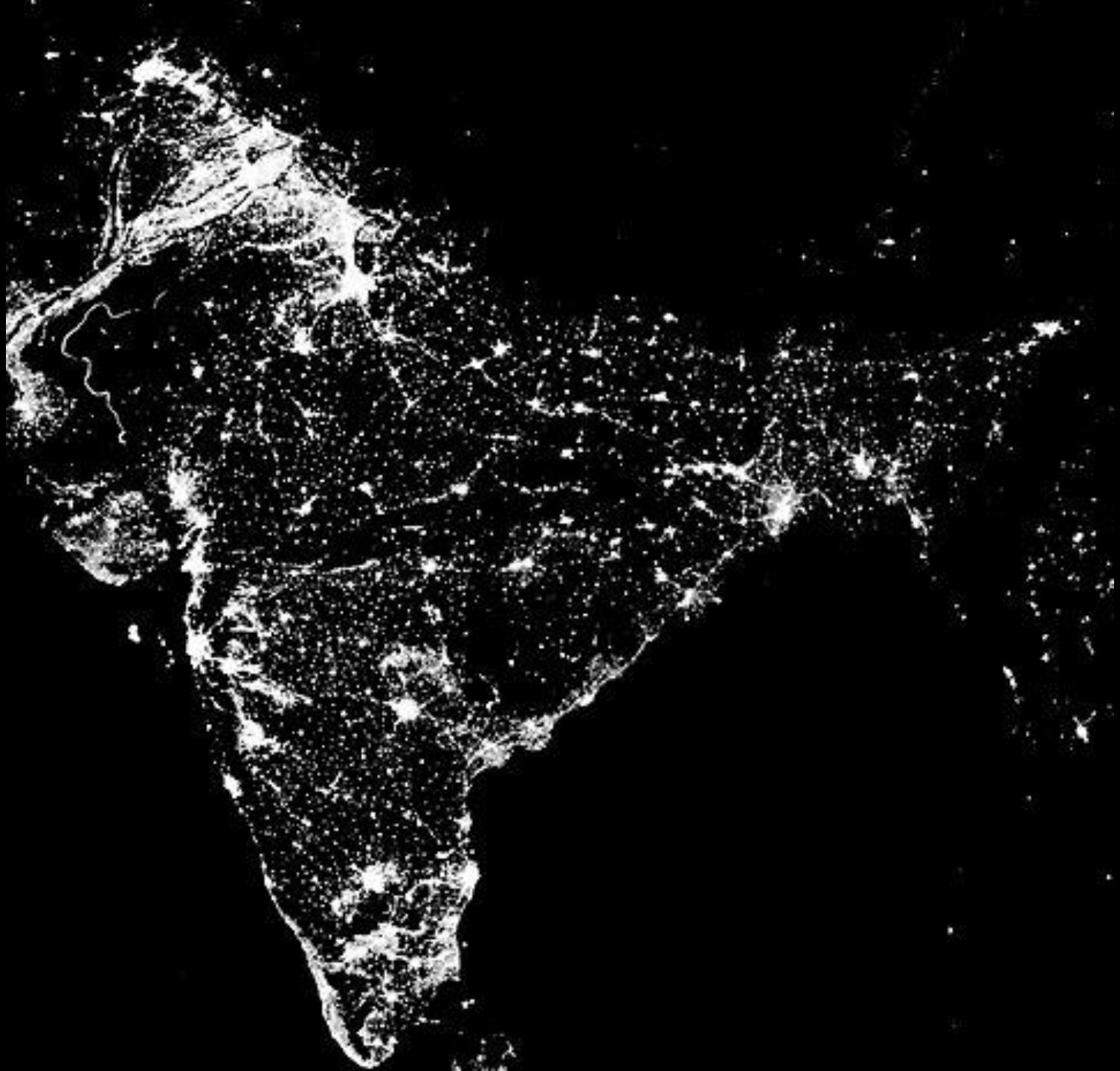
Tiger Crossing National Highway And Jumping Crash Barrier Triggers a Debate on Wildlife Conservation-Watch Video

Tiger jumps crash barrier after crossing National Highway. Watch here.

Published: July 10, 2019 7:56 PM IST

By India.com Buzz Desk | **Edited by** Kritika Vaid





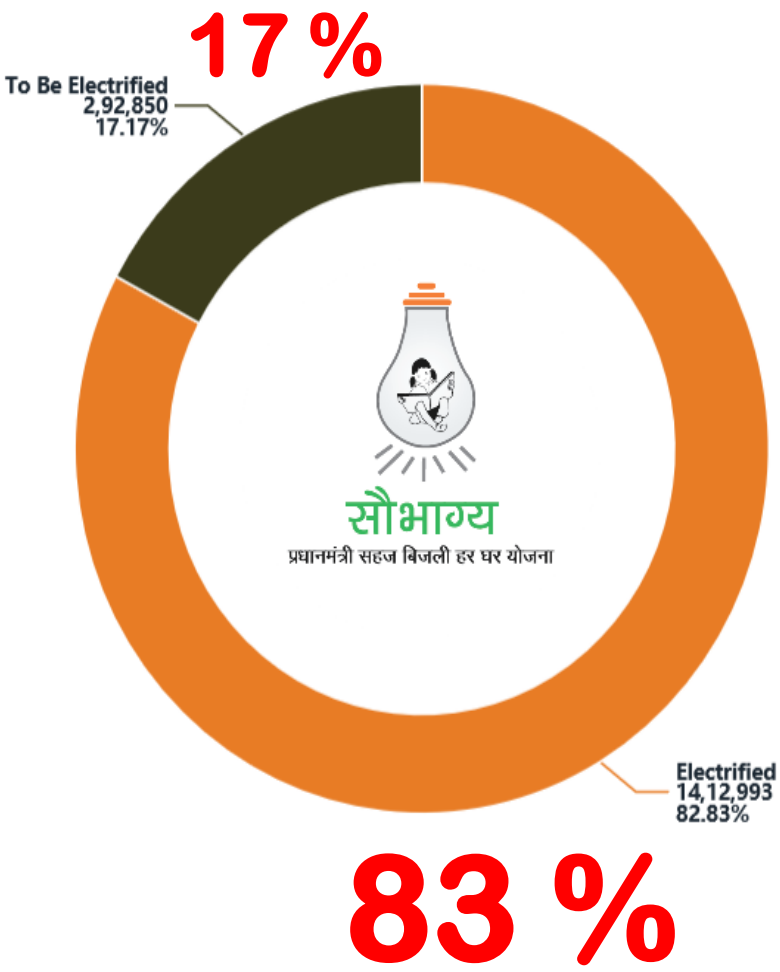
- Energy is needed for economic growth, for improving the quality of life and for increasing opportunities for development

- Until few years ago India was amongst the most electricity - deprived country in the world, where more than 400 million people in 78 million homes were without access to electricity (UNEP, 2008; World Bank, 2009).

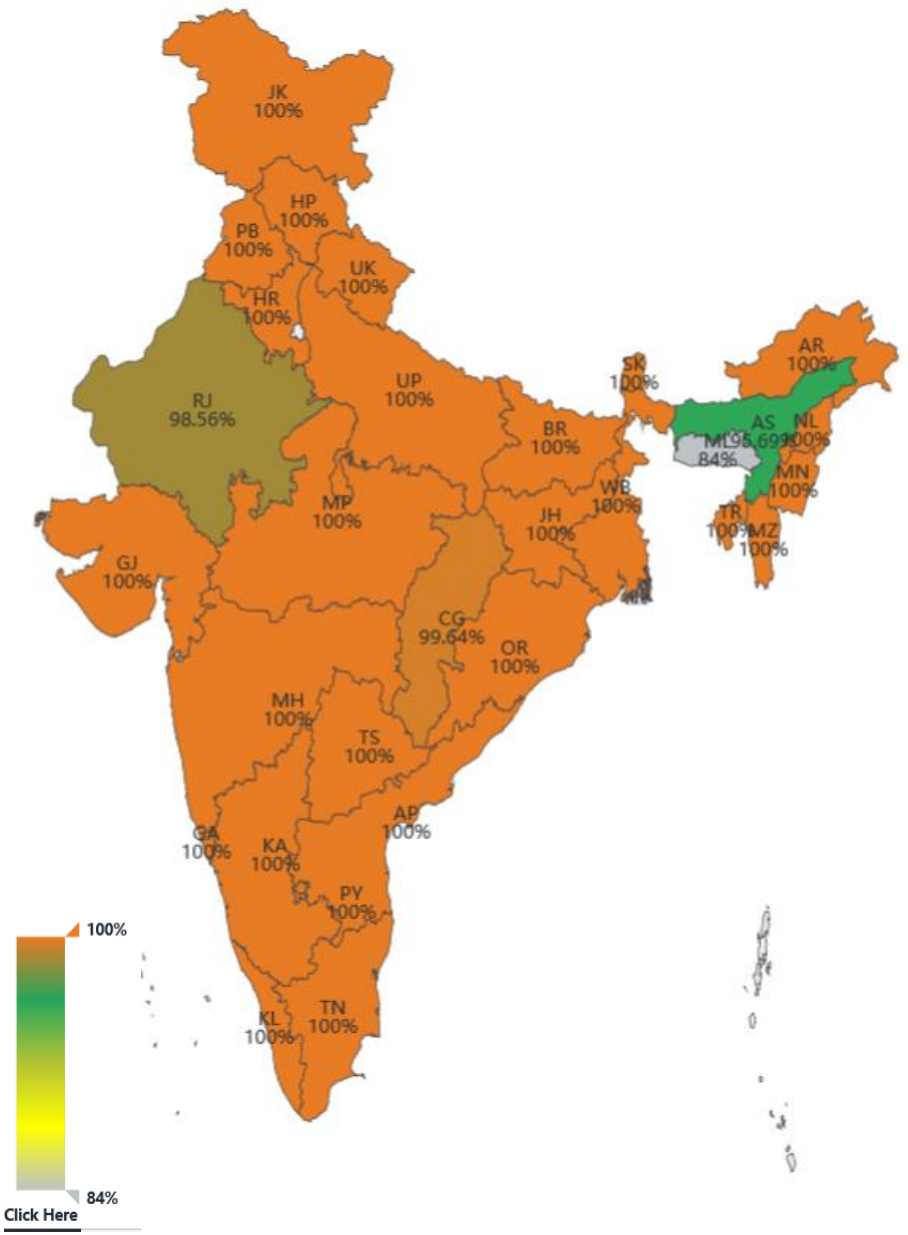
- More than 50% of rural, poor households in India were still un-electrified

Household Progress From 11-OCT-2017 Out of 17,05,843

Household Electrified : 14,12,993



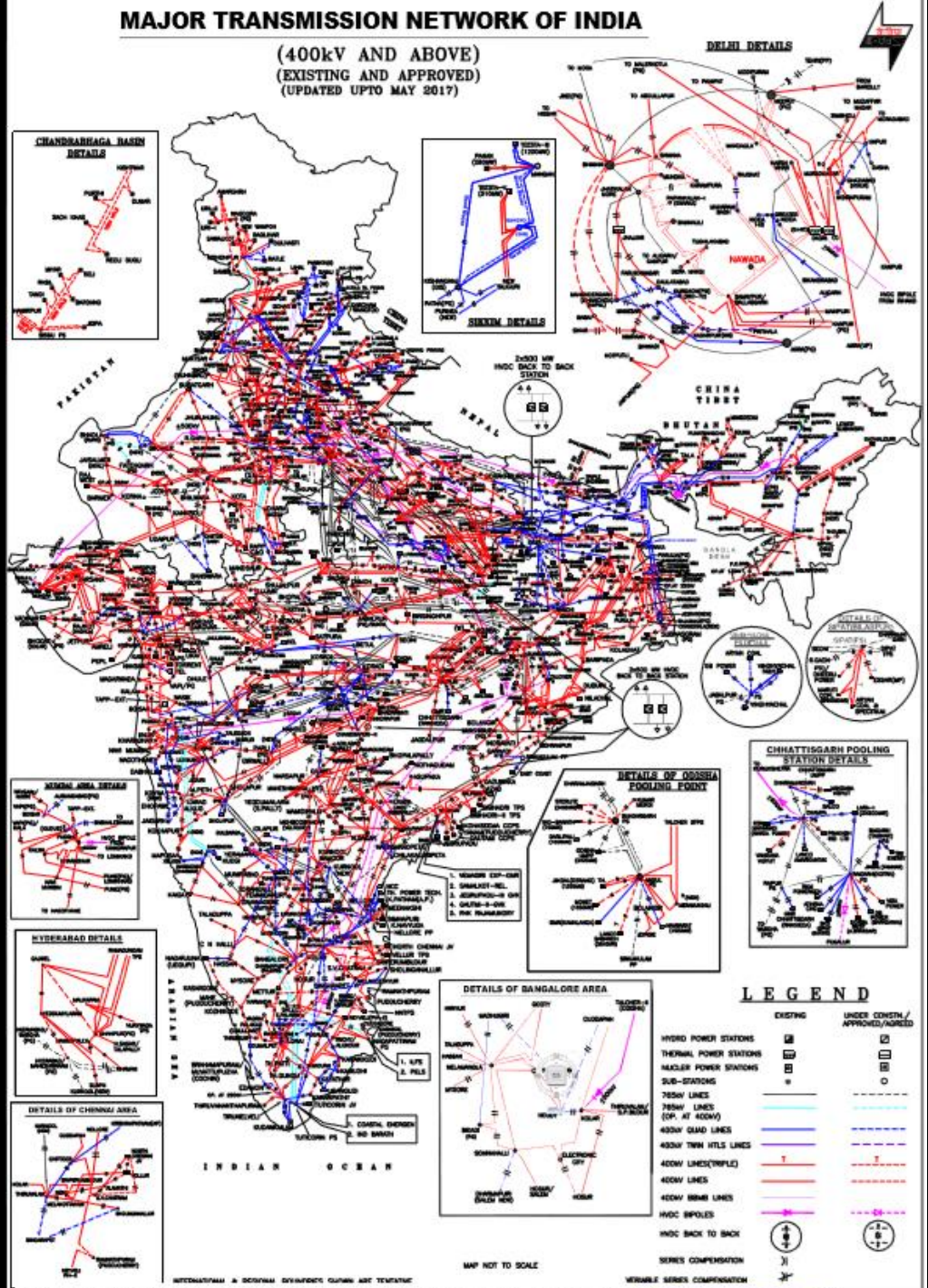
Electrification Status (%)



The poles that deliver power often criss-cross undeveloped landscapes occupied by numerous avian species

MAJOR TRANSMISSION NETWORK OF INDIA

(400kV AND ABOVE)
(EXISTING AND APPROVED)
(UPDATED UPTO MAY 2017)



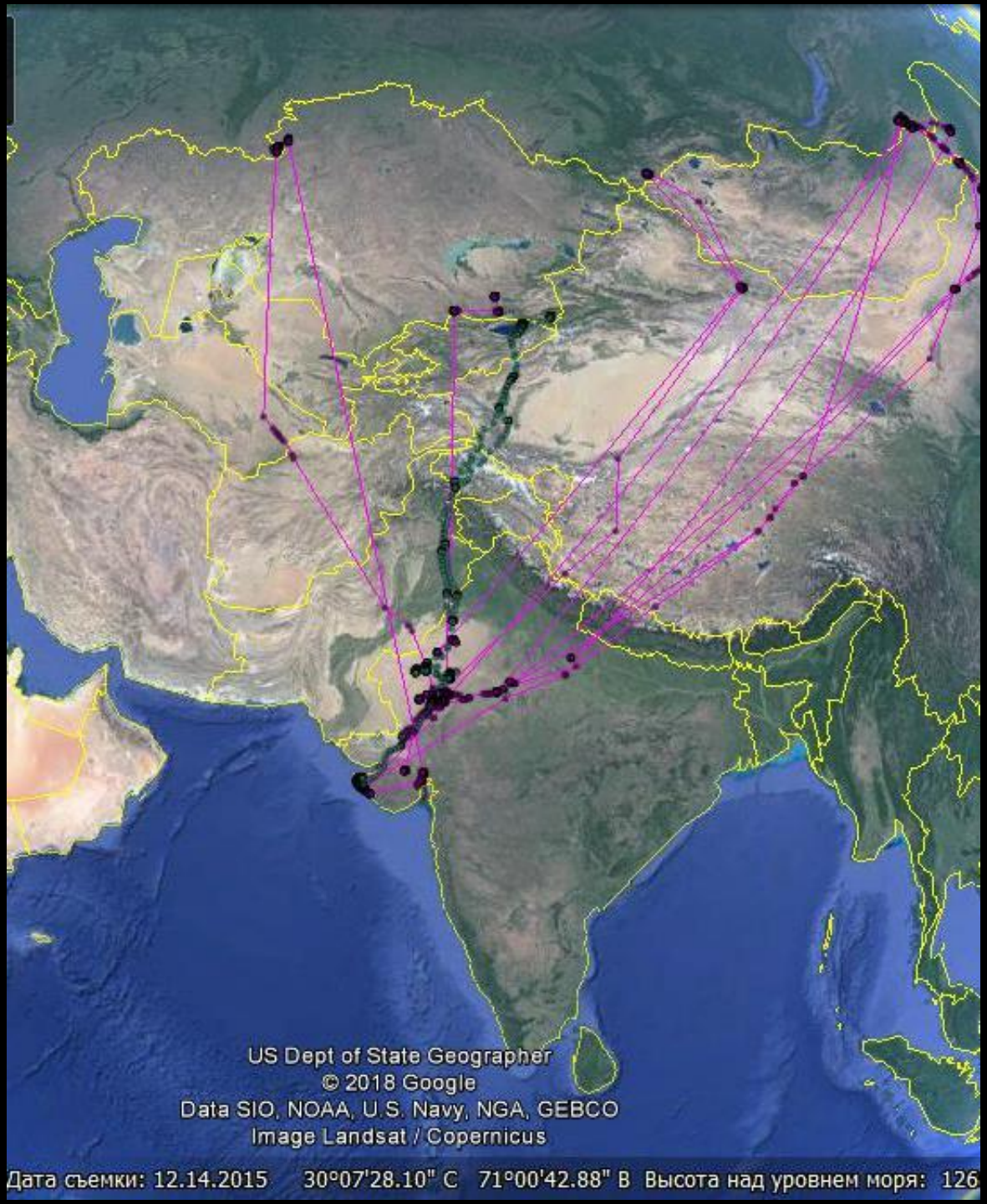

RD Meriya

Seven Jumbos Electrocuted to Death In Dhenkanal

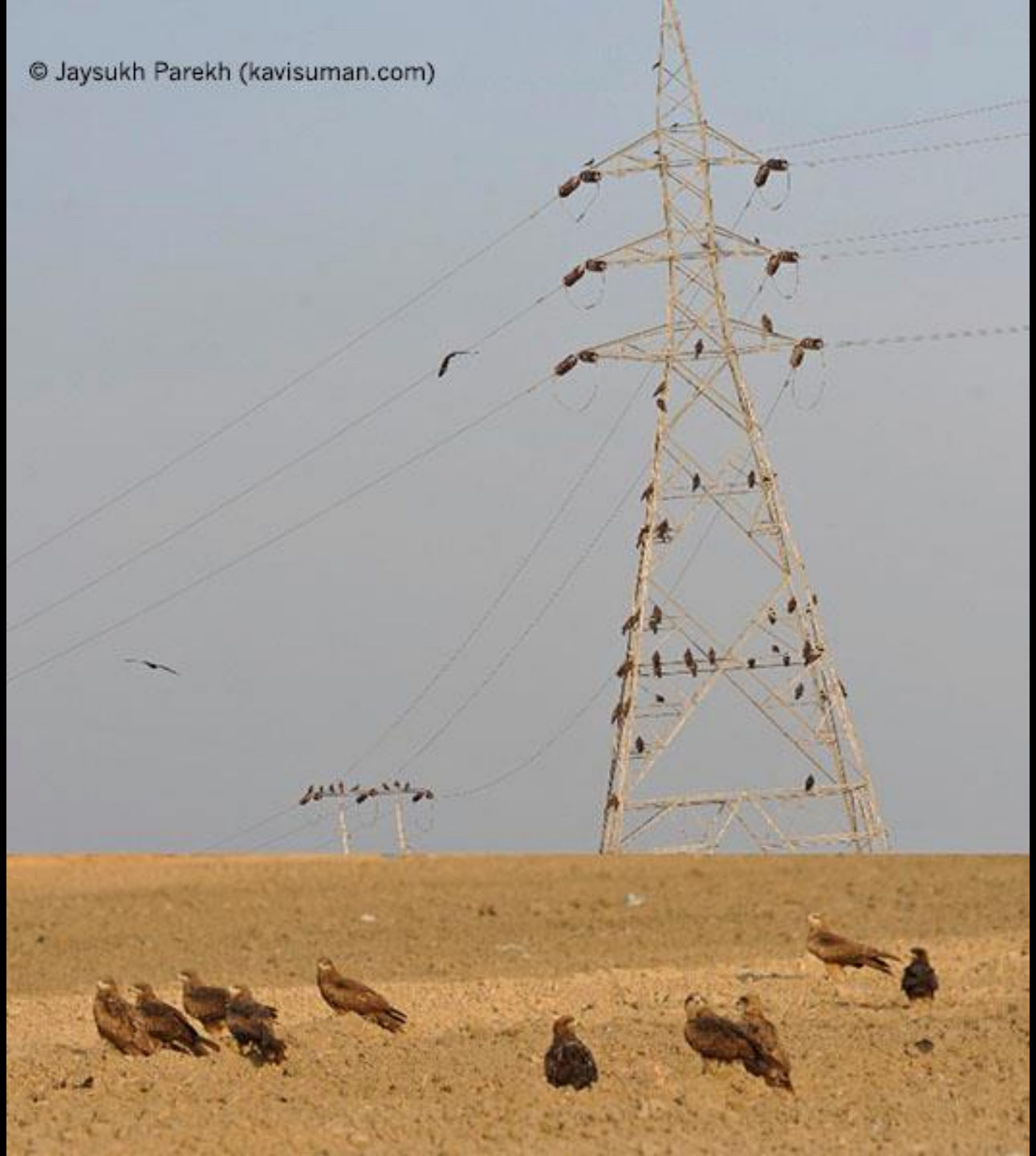
Nagarhole (November 2012)

Powerlines – *the new death trap*

Migratory Flyways in India


US Dept of State Geographer
© 2018 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Дата съемки: 12.14.2015 30°07'28.10" С 71°00'42.88" В Высота над уровнем моря: 126


© Mark L. Watson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© Abu Bakar Siddik

Birds and Power lines

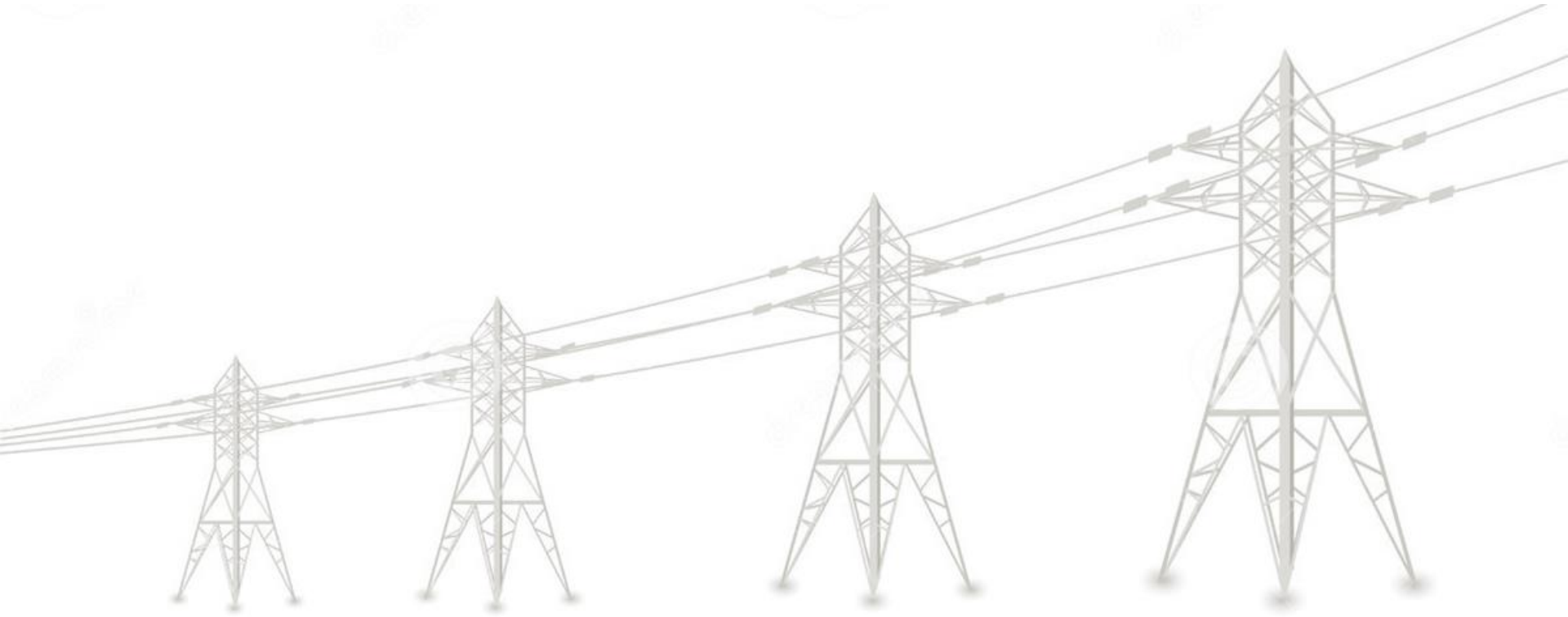
- Power lines are said to pose a major threat to many bird species across the world, in particular endangered species such as birds of prey, which show the greatest incidence of **electrocution**

- **Collision** with power lines is a lesser-known problem than electrocution and is harder to detect because it can occur at any point along the transmission line.

- Electrocutions are thought to affect avian populations in Asia, but regional research has not been widely disseminated

- Voltages ≥ 66 kV typically pose little avian electrocution risk, because the phase-to-phase and phase-to-ground separations required from an engineering perspective are usually sufficient to prevent simultaneous avian contact (APLIC 2006).

- These however pose the problem of collisions to birds



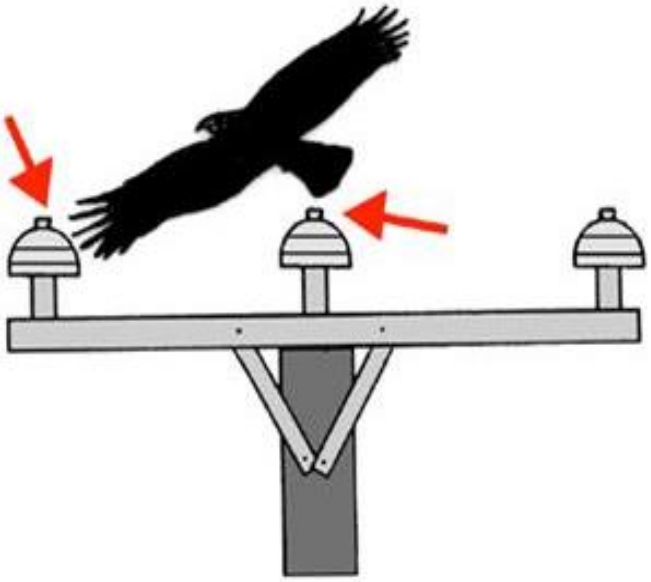
Electrocutions

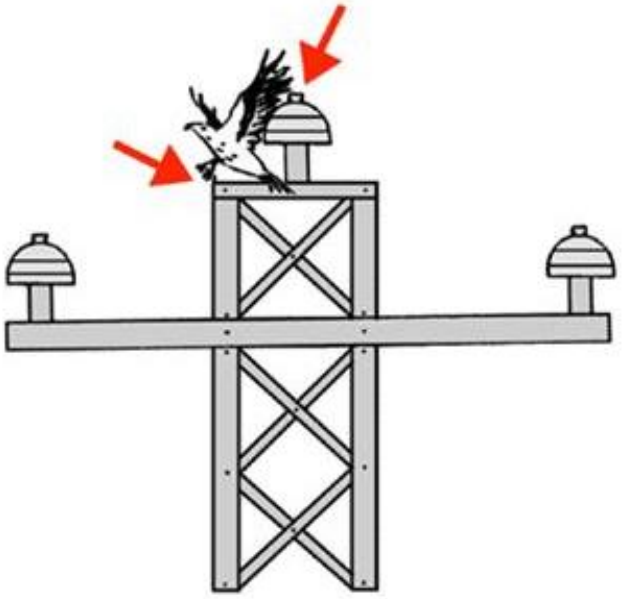
- Bird electrocutions may occur because of a combination of biological, environmental, and electrical design factors.

- Biological and environmental factors include:

    - Habitat
    - Bird species (body size, behaviour, distribution and abundance)
    - Prey/food availability

Electrocutions





Preventing electrocutions

To prevent bird electrocutions from occurring, one of two methods may be used:

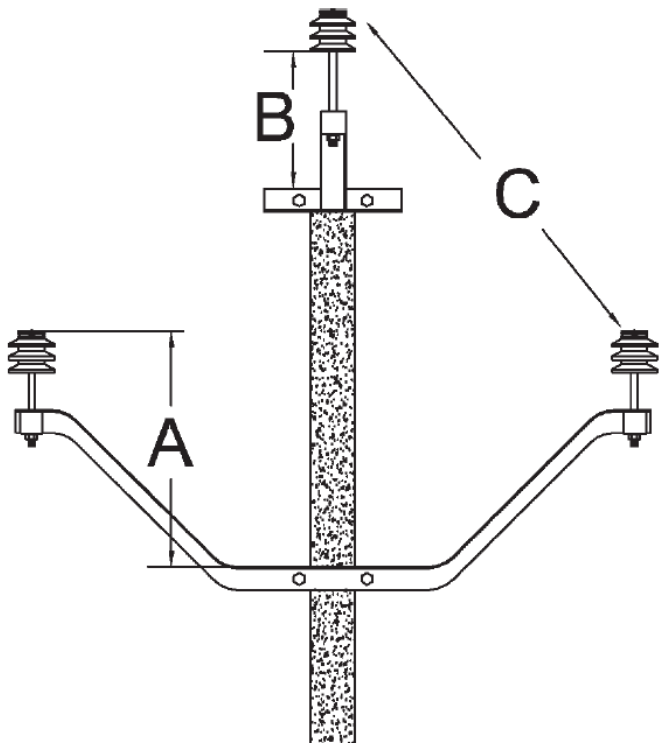
- Framing structures so that there is adequate separation between phases or phases and grounds to accommodate large perching birds.

Harness et al. 2013

Preventing electrocutions

- To prevent avian electrocutions, APLIC (2006) recommends 152 cm of horizontal and 102 cm of vertical separation between different phases and between phases and grounded equipment, including concrete poles and grounded metal cross-arms.

- This is the least expensive strategy

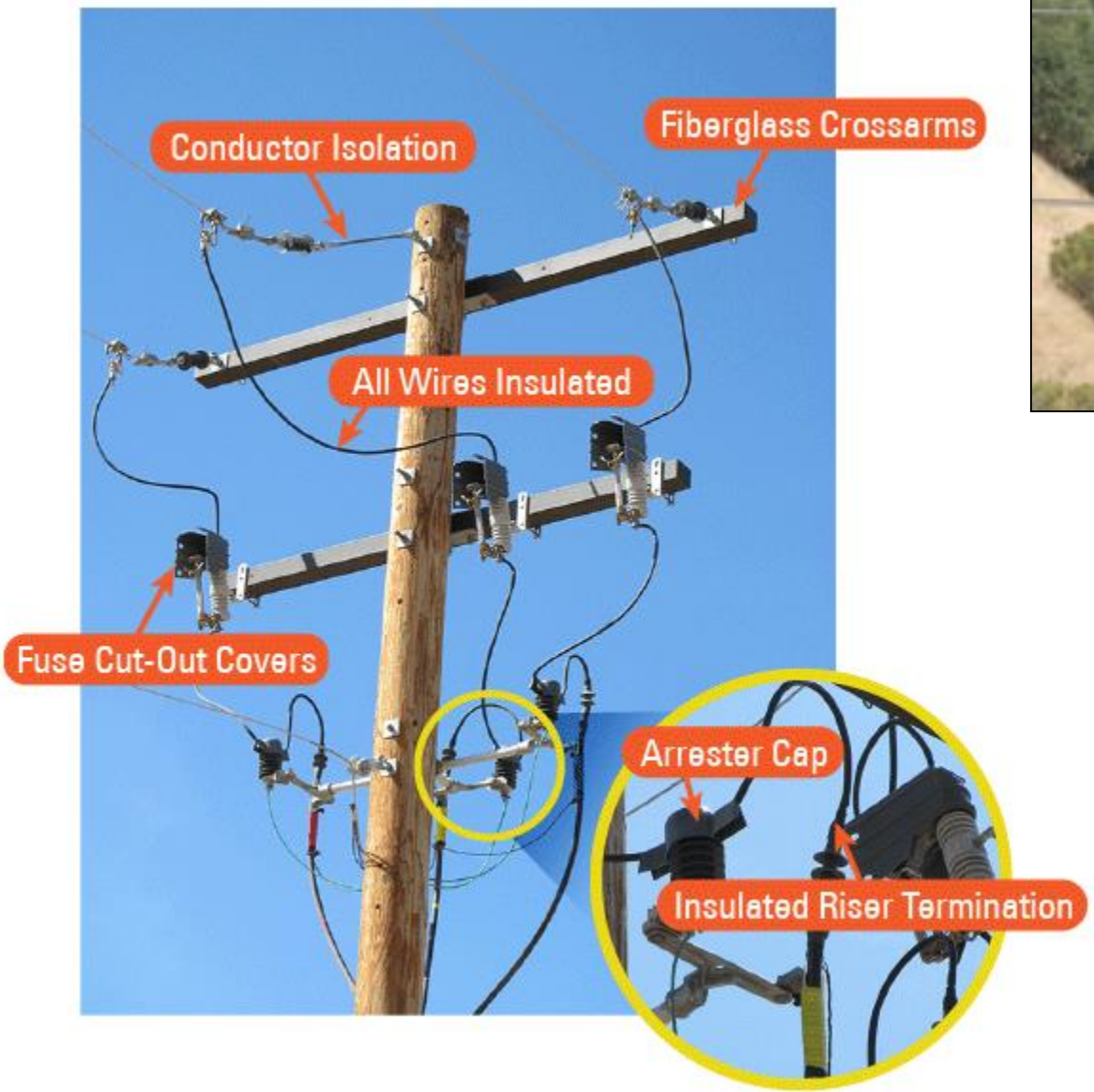


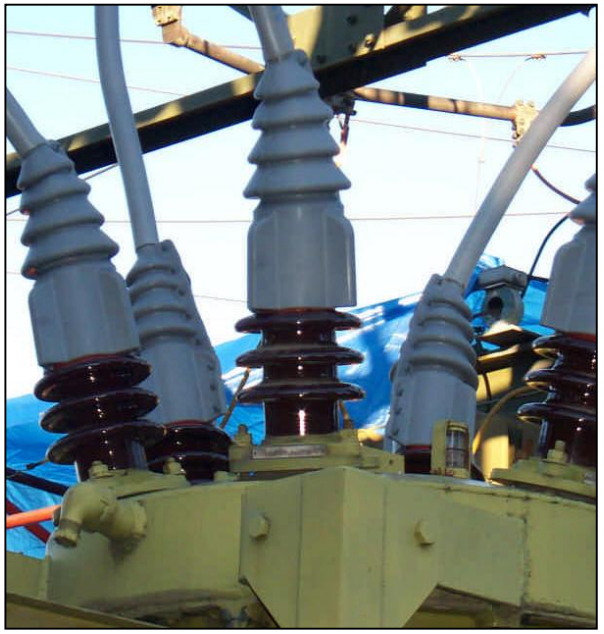
Preventing electrocutions

- Applying covers on phases or grounds where adequate separation is not feasible. Examples of covers include insulator/conductor covers, bushing covers, arrester covers, cutout covers, and jumper wire covers.

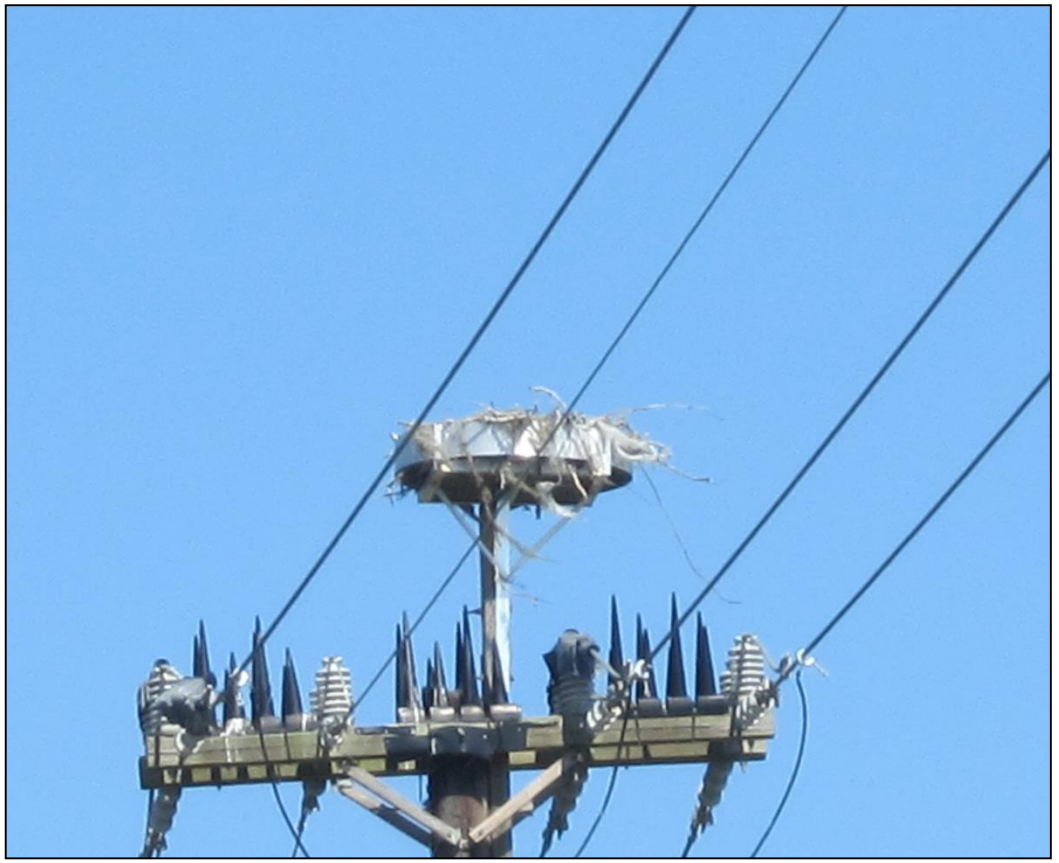
- Installing perch deterrents and providing raised platforms

Covers/Insulators





Perch deterrents



Collisions

- In the case of power line collisions, birds collide with one of the wires, generally the earth wire, which is less visible.

- Bird collisions may occur because of a combination of biological, environmental and electrical design factors.


Earth wire
Phase wire

Collisions

Factors are:

- Habitat, weather, time of day, lighting, human activity
- Bird species (body size, flight behavior, distribution and abundance, flocking behavior, age, sex)
- Power line configuration and location

Porus Khareghat

Lesser Flamingo

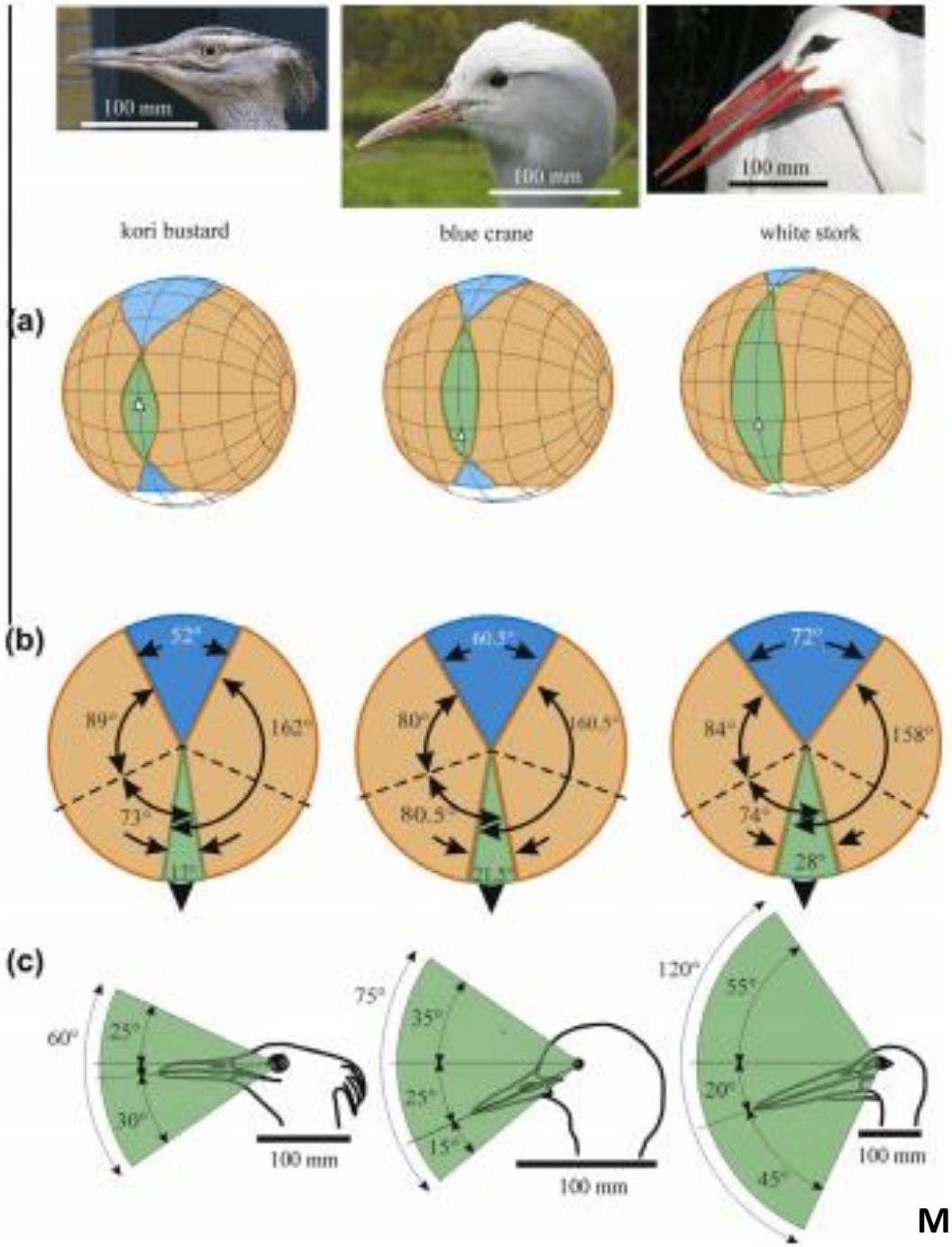
Jayesh Vaghela

Demoiselle Crane

Sarus Crane

Great Indian Bustard

Visual fields in Large Birds

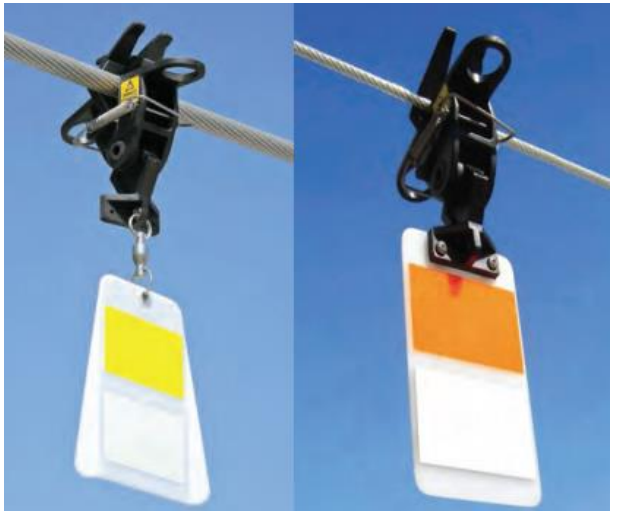


Martin and Shaw (2010)

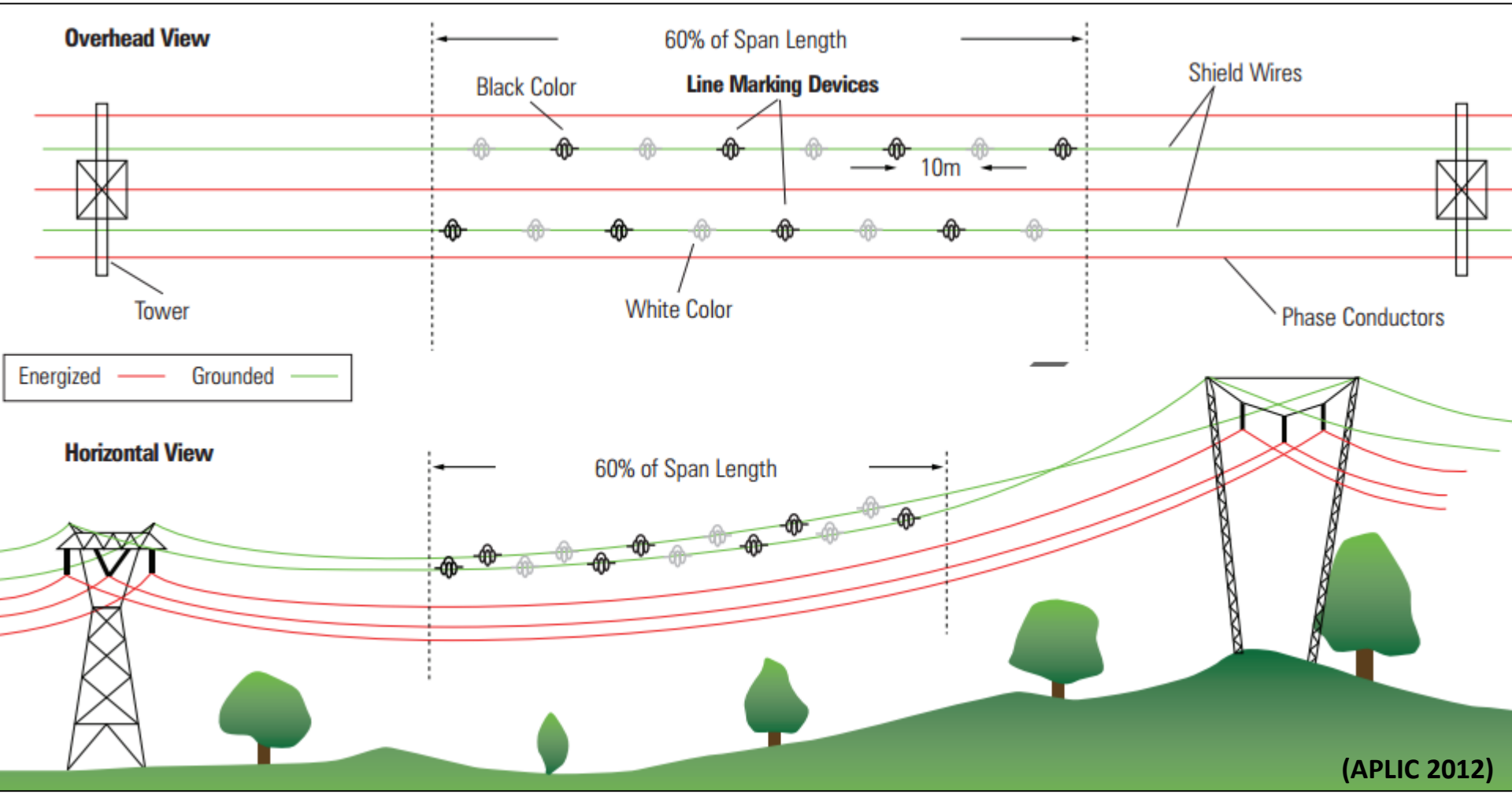
Preventing Bird Collisions

- Power line spans in collision risk areas may be marked to make the wires more visible to flying birds.
- A variety of line marking devices, including hanging markers, coils, and aviation marker balls, are commercially available.
- Managing surrounding lands (Garbage dumps, Carcass disposal sites)
- When collisions cannot be reduced by another method such as line marking or managing surrounding lands, the configuration of an existing line can sometimes be changed to minimize collisions

Bird Diverters

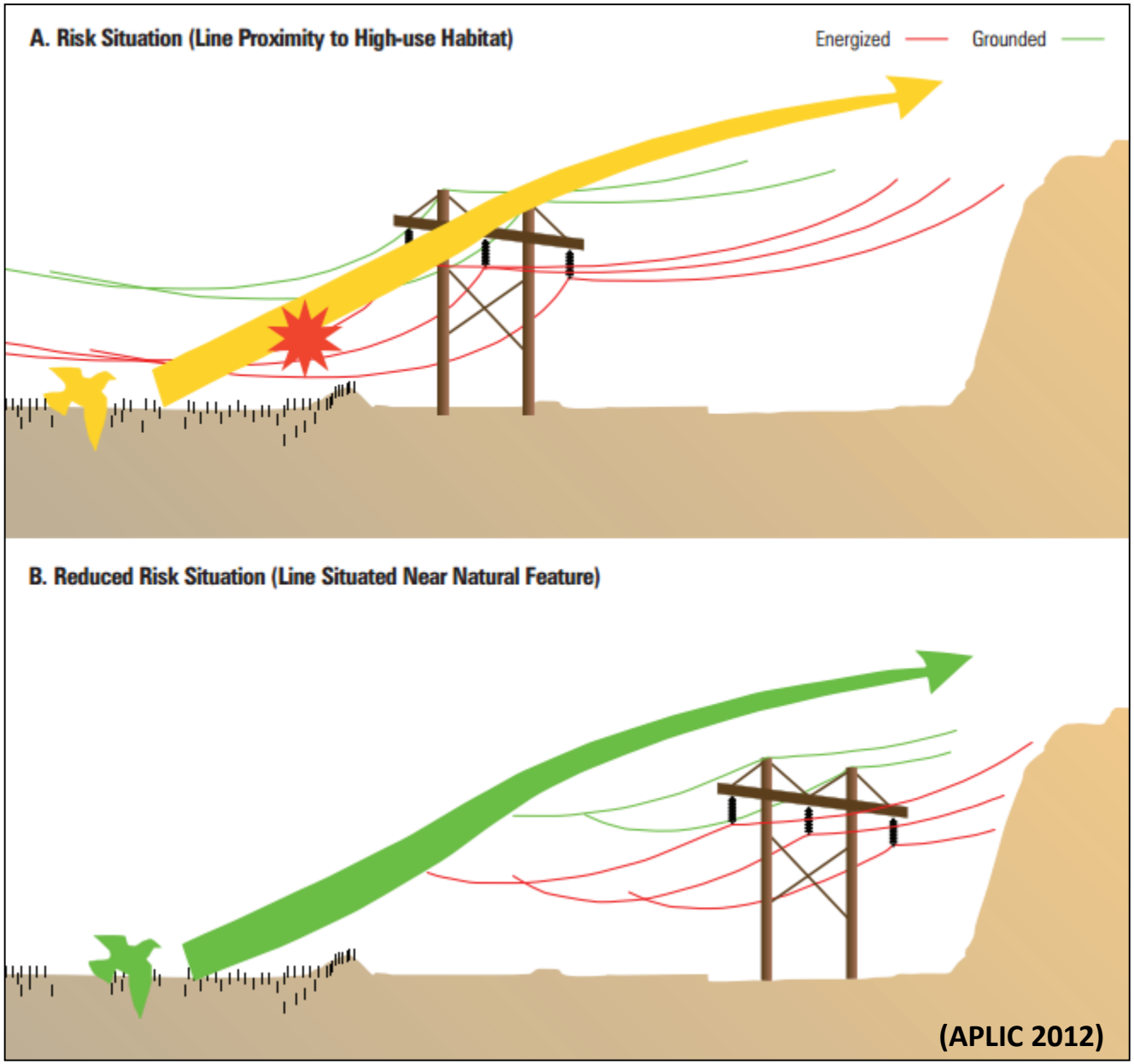


Placement of line marker devices

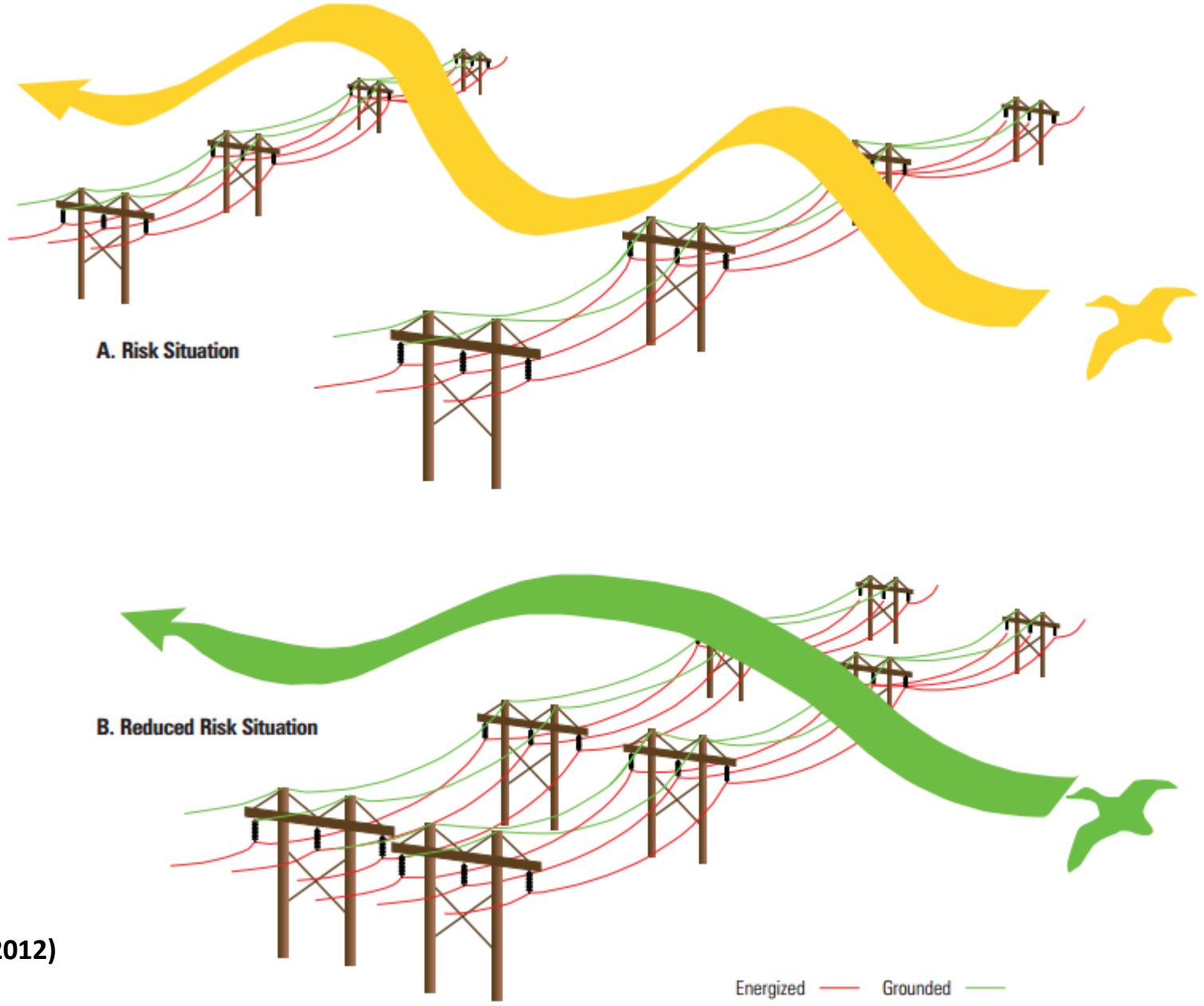


(APLIC 2012)

Power line orientation



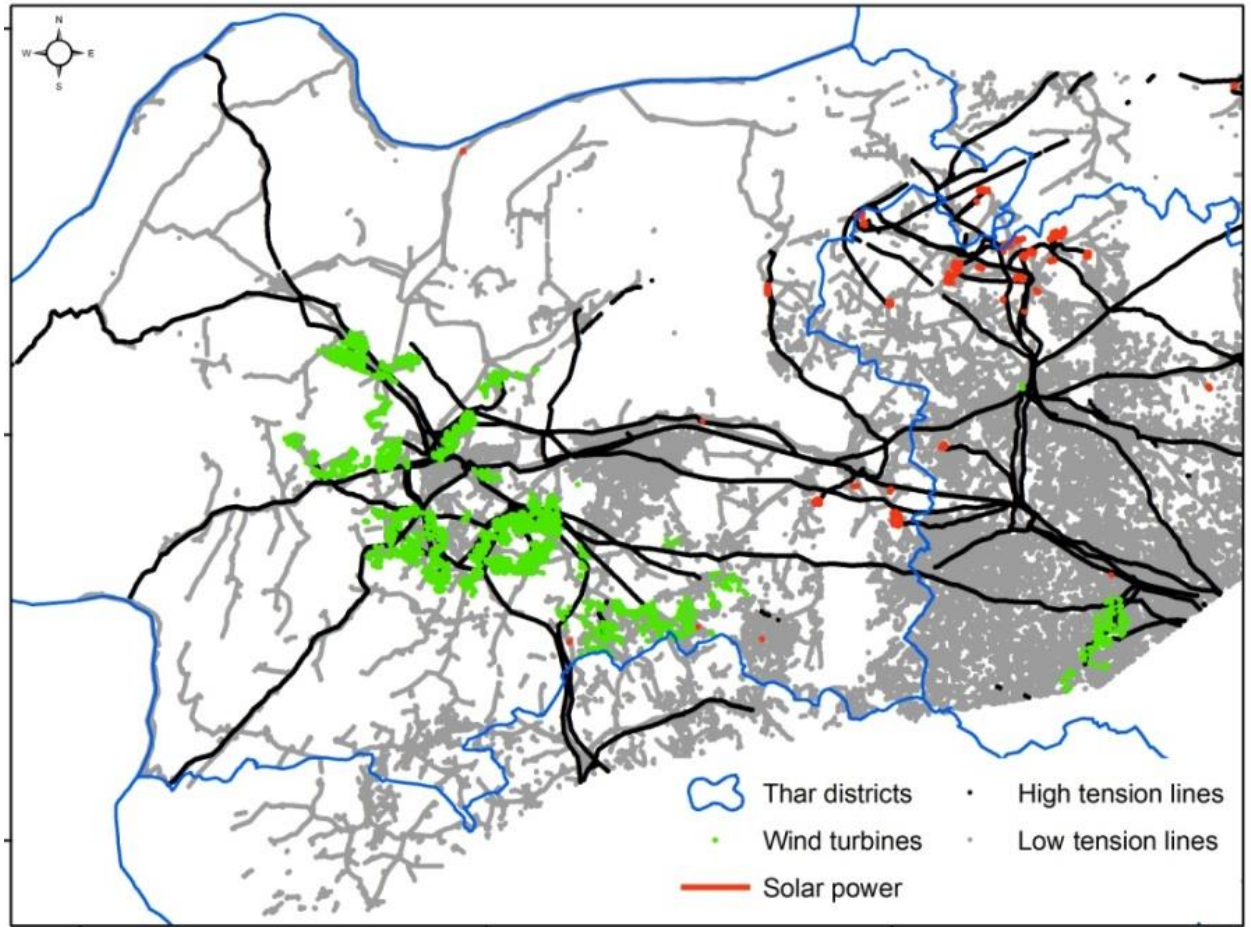
Power line orientation



(APLIC 2012)

CASE STUDIES

Bustard Recovery Program
Wildlife Institute of India

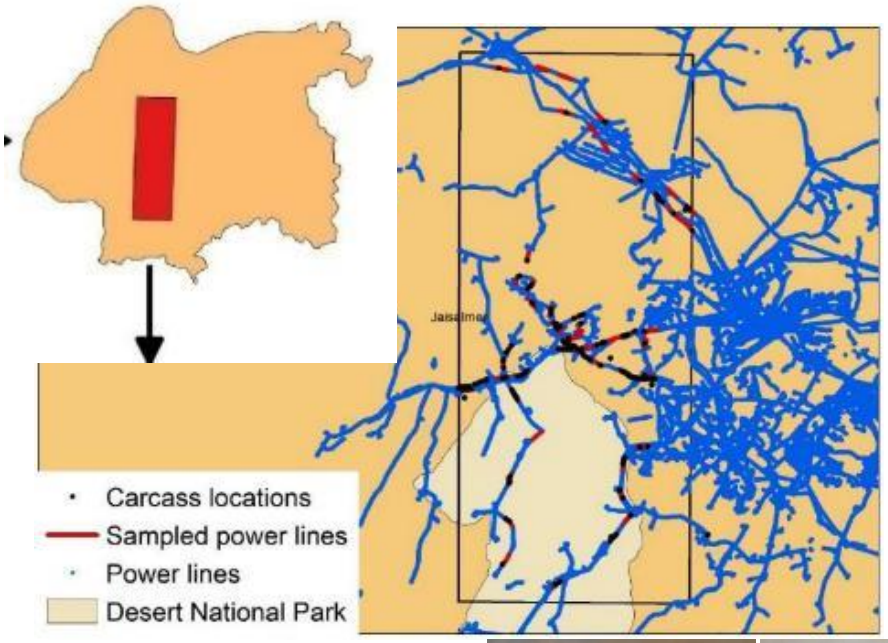


4 GIB mortality detected in Thar (2017–18)

& estimated deaths of **~18 GIB / year (15% population)**

How to assess the impact of power-lines on bird populations ?

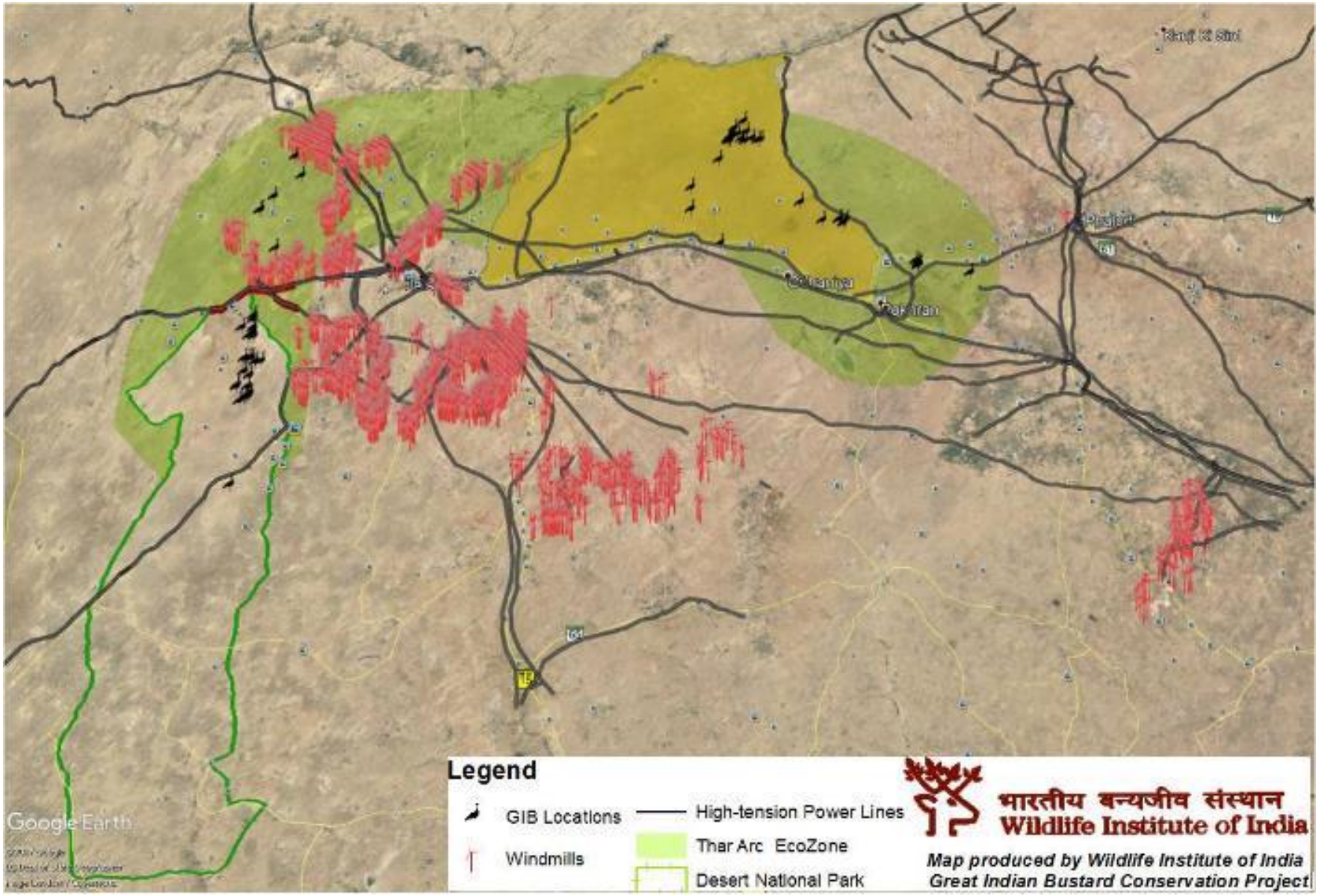
Carcass surveys



Species that collided frequently with power-lines based on carcass surveys

Research to strategize mitigation of power-line impacts on bird populations

Mapping



Research to strategize mitigation of power-line impacts on bird populations

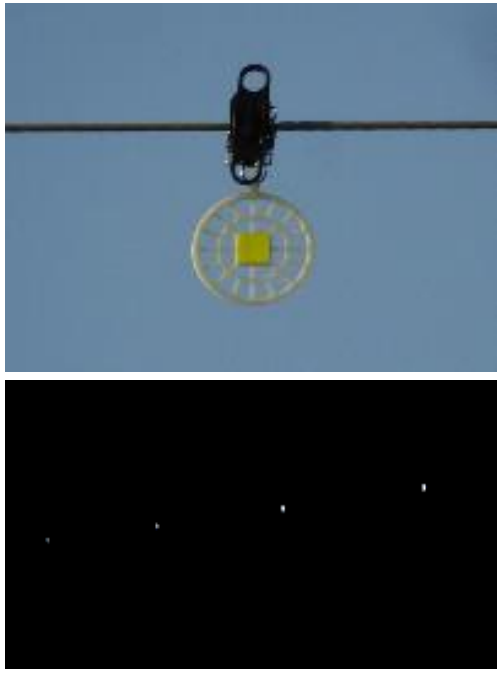
Use of telemetry to understand bird movement patterns & fine-tune areas for mitigating threats

Mitigation of power-line impacts on bird populations

- Sensitization workshops to disseminate the evidence to power-agencies
- Meetings with power-agencies to recommend mitigation measures
- Parallel awareness and judiciary processes to implement mitigation measures

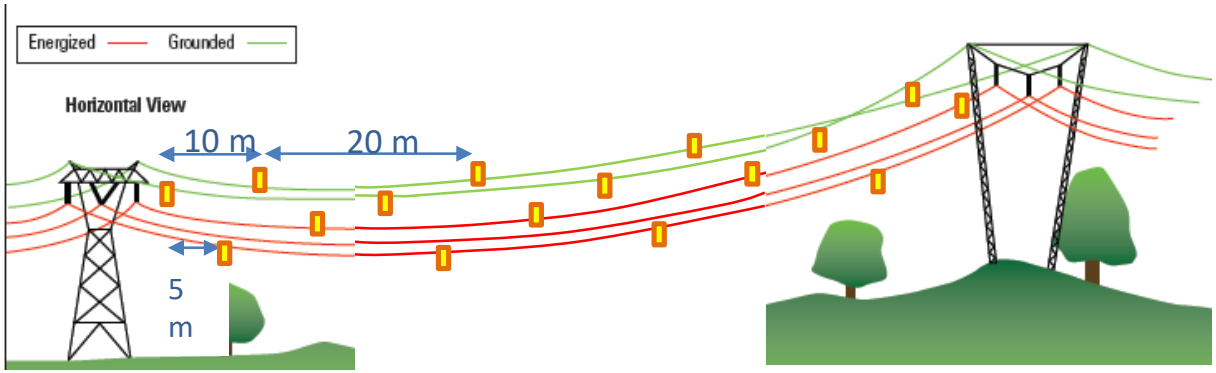
Case-study: Meetings for powerline mitigation in GIB habitats 2016 onwards & pilot installation of diverters in Thar

Conservation advocacy



WII recommendation

- Underground high risk powerlines
- Bird diverters on medium risk powerlines
- Disallow new powerlines in priority habitats

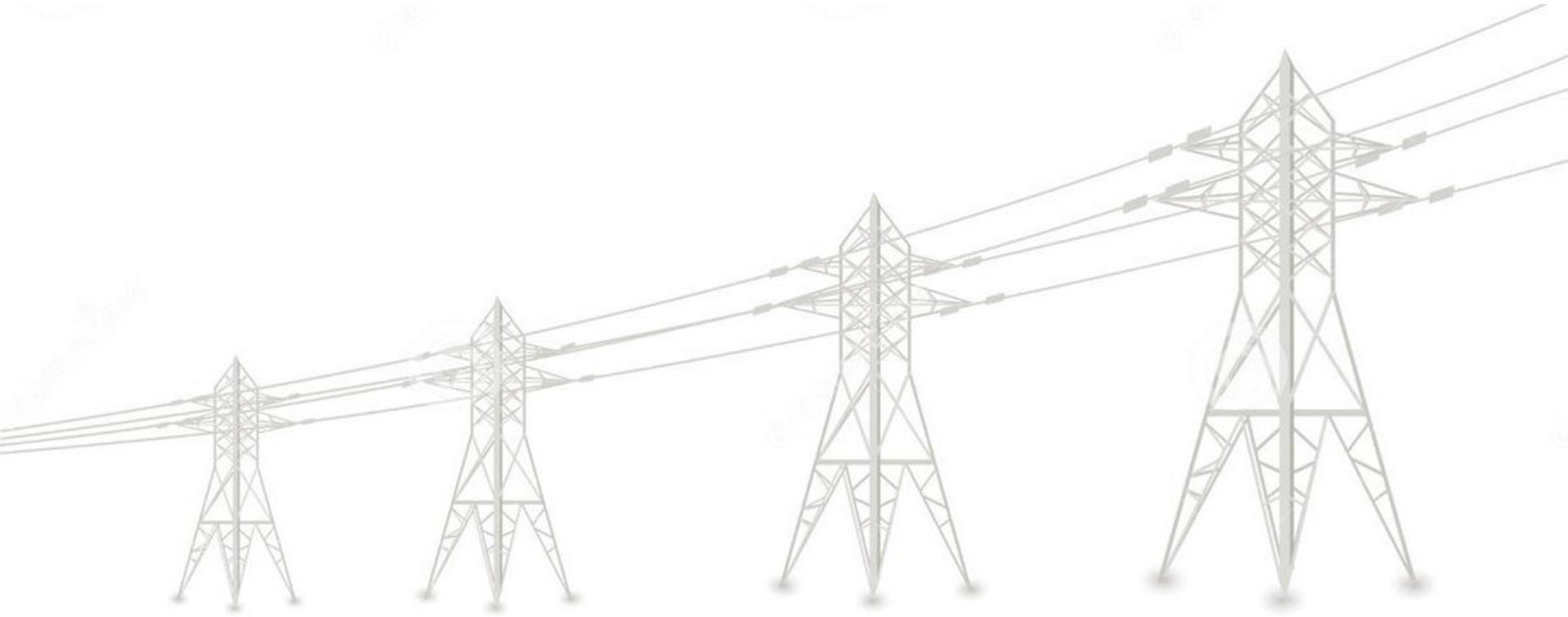


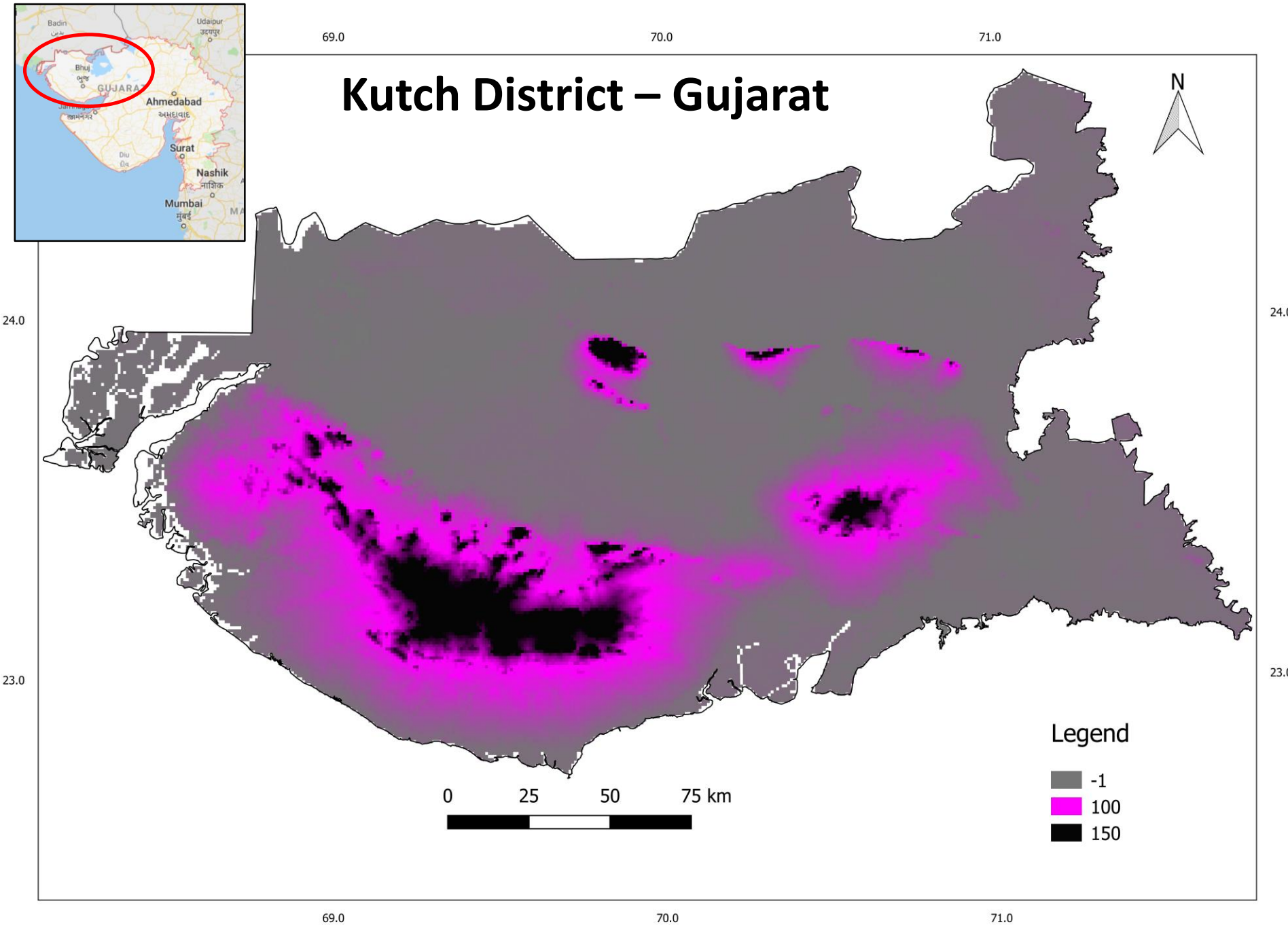
Cost calculations:

1 diverter / 5 m
Central 80% marking
~ 160 diverters / km
~ 5000 INR/unit
~ 8 lakh INR/km (export)
~ 2 lakh INR / km (local)

Preventing Bird Collisions

- Burying power lines may be a solution to bird collisions in some instances, but can cost from 3 to 20 times more than that of overhead power lines and have other environmental impacts




Kutch District – Gujarat
N
Badin
Udaipur
उदयपुर
Bhuj
GUJARAT
Ahmedabad
અમદાવાદ
Surat
Nashik
नाशिक
Mumbai
मुंबई
Diu
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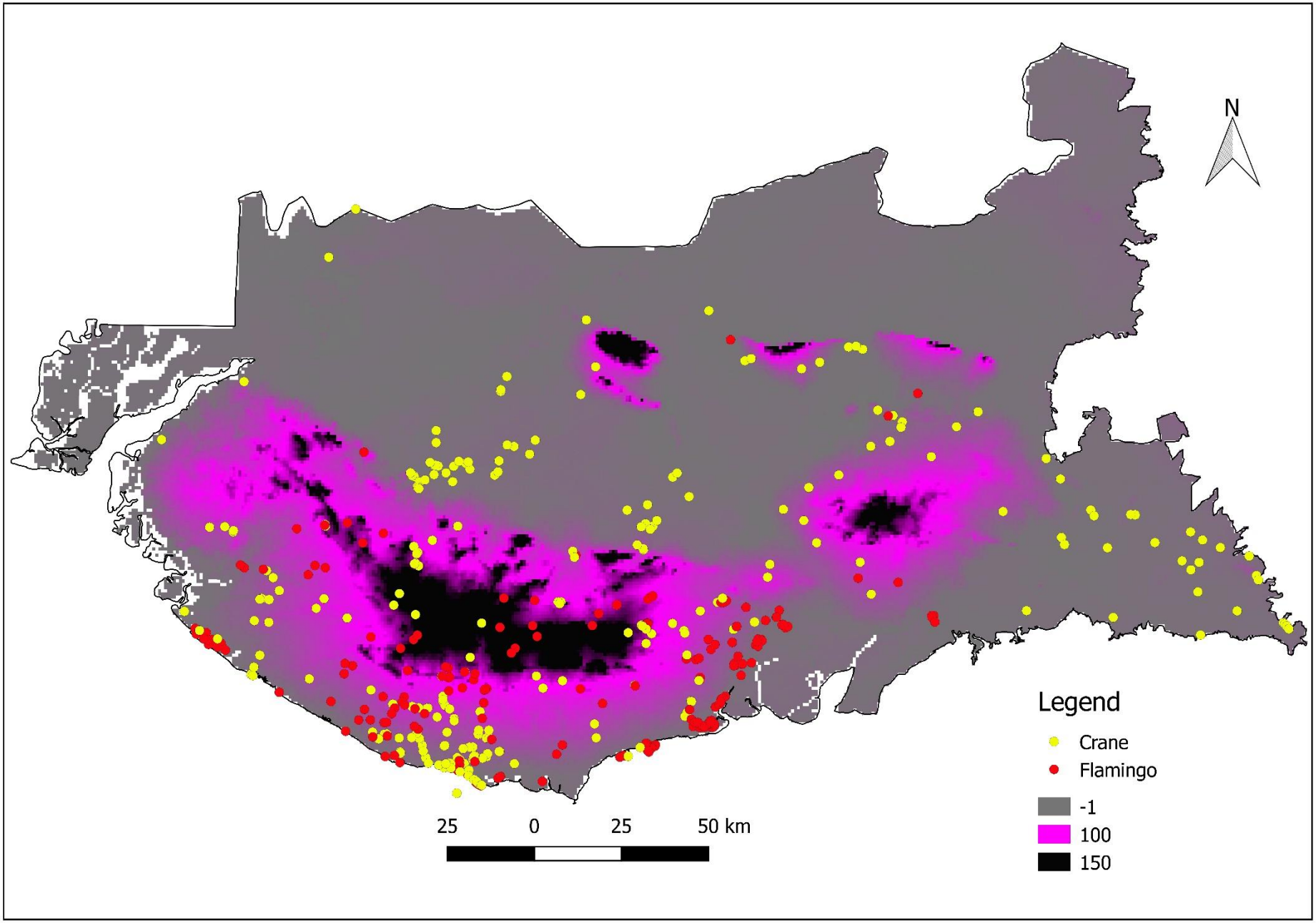
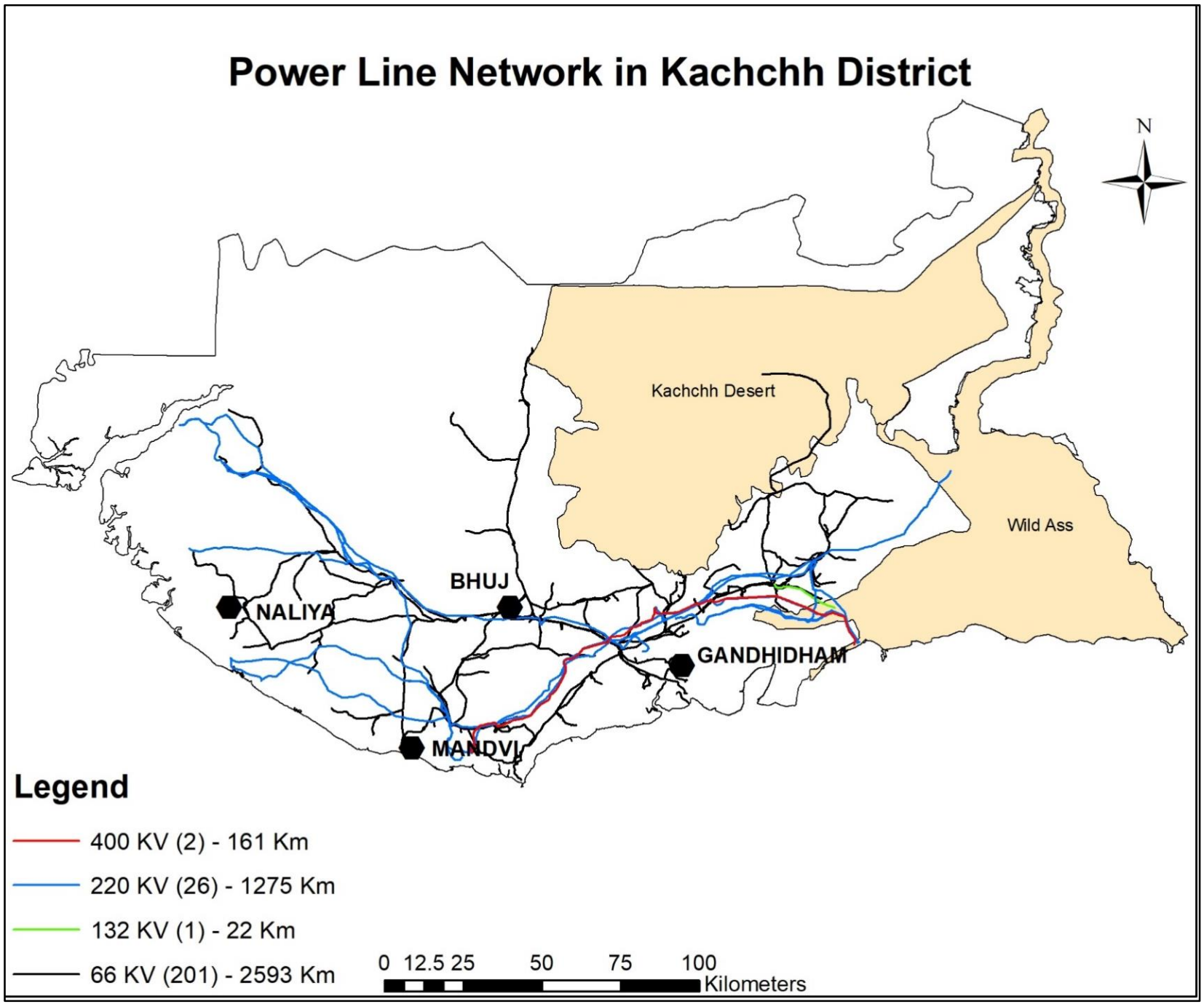
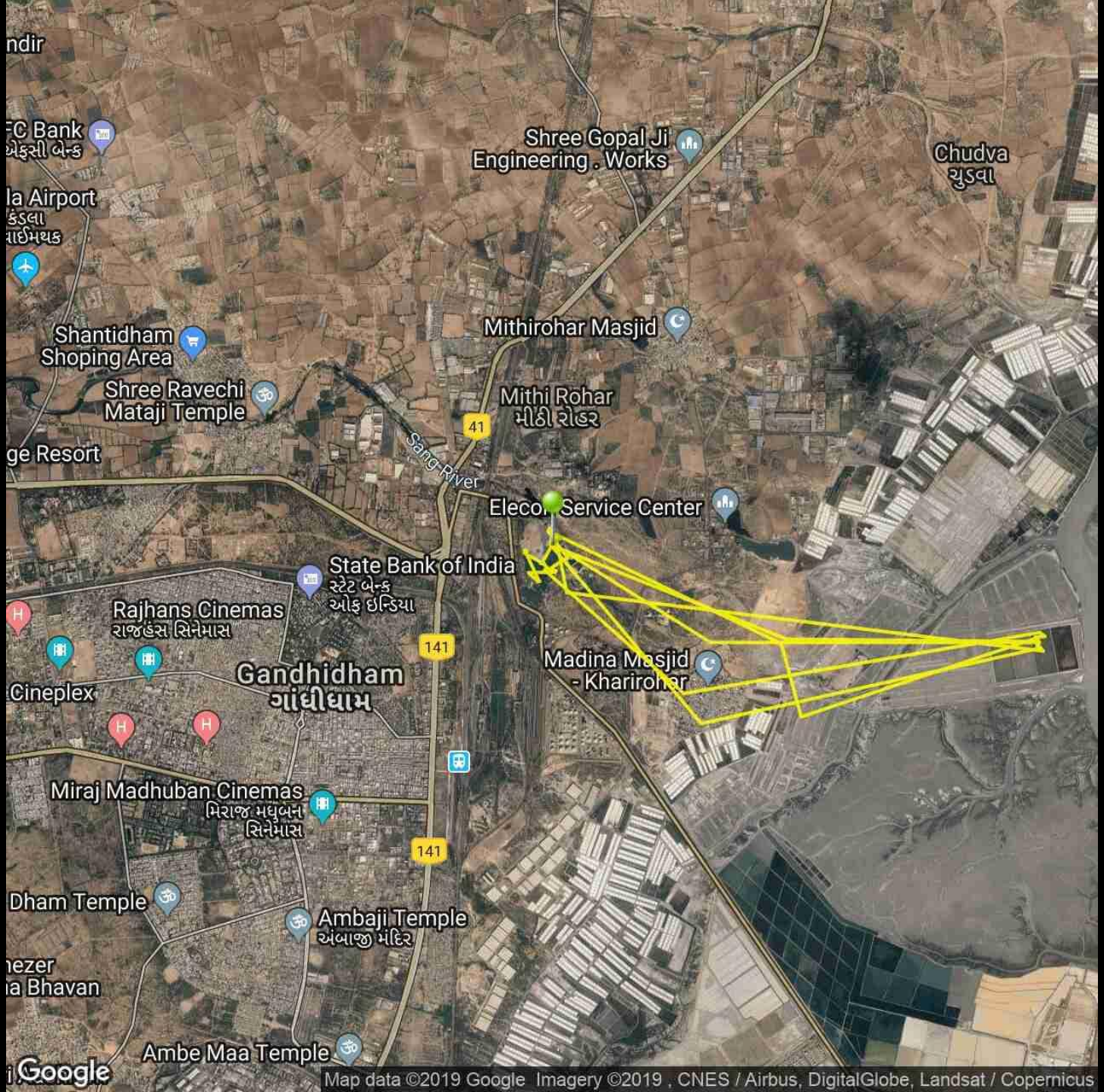
70.0
71.0
24.0
23.0
0
25
50
75 km
Legend
-1
100
150


AXC


N
Legend
Crane
Flamingo
-1
100
150
25
0
25
50 km


Power Line Network in Kachchh District
N
Kachchh Desert
Wild Ass
BHUJ
NALIYA
GANDHIDHAM
MANDVI
Legend
400 KV (2) - 161 Km
220 KV (26) - 1275 Km
132 KV (1) - 22 Km
66 KV (201) - 2593 Km
0 12.5 25 50 75 100
Kilometers

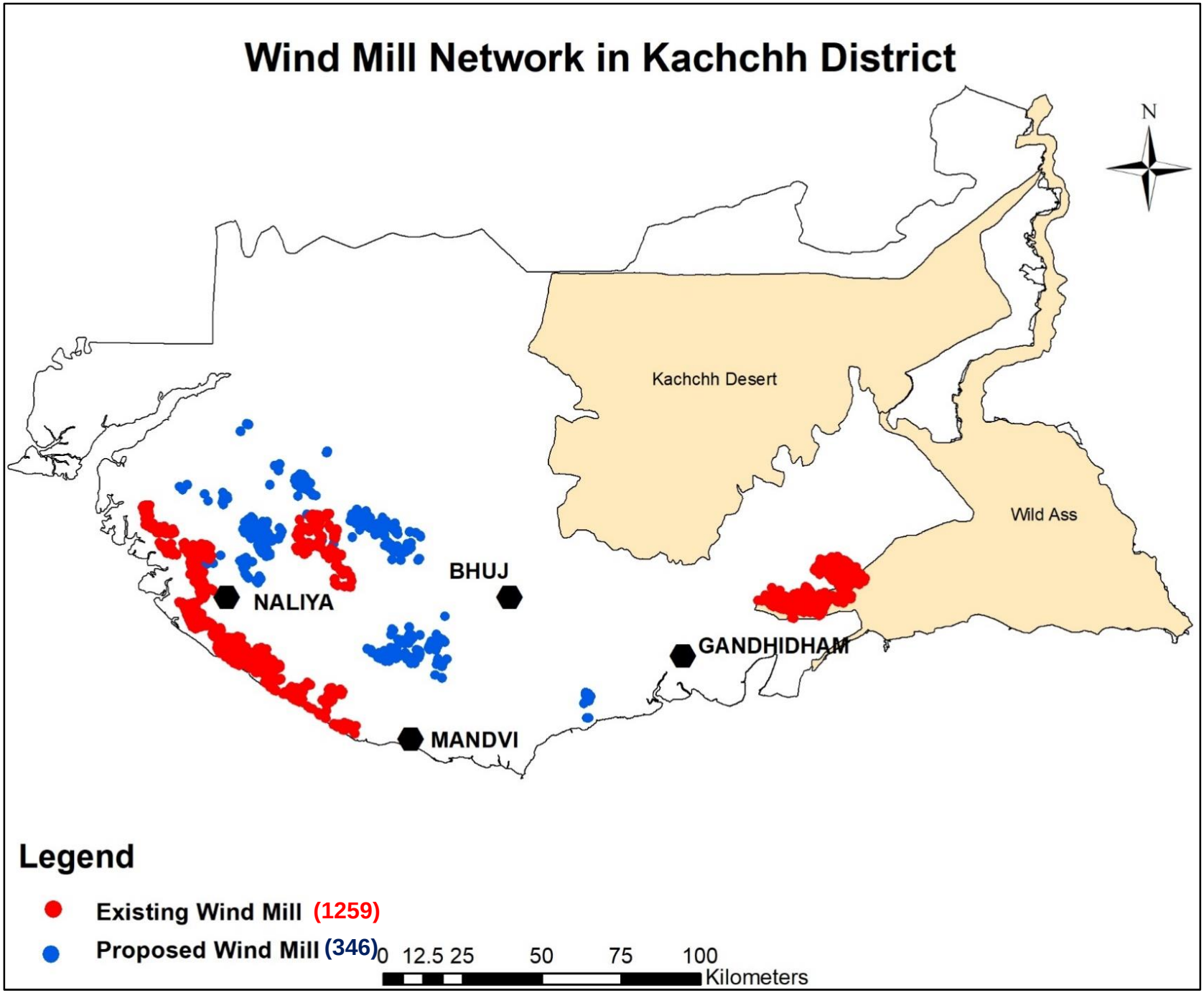

Shree Gopal Ji Engineering . Works
Chudva
ચુડવા
Mithirohar Masjid
Shantidham Shoping Area
Shree Ravechi Mataji Temple
Mithi Rohar
મીઠી રોહર
41
Sang River
Service Center
State Bank of India
સ્ટેટ બેન્ક ઓફ ઇન્ડિયા
Rajhans Cinemas
રાજહંસ સિનેમાસ
141
Madina Masjid
Gandhidham
ગાંધીધામ
Miraj Madhuban Cinemas
મિરાજ મધુબન સિનેમાસ
Ambaji Temple
અંબાજી મંદિર
Ambe Maa Temple
Google
Map data ©2019 Google Imagery ©2019 , CNES / Airbus, DigitalGlobe, Landsat / Copernicus


Desalpar
દેસલપર
Hodka
હોડકા
Sanva
સણવા
Rapar
રાપર
Kanthkot
કંથકોટ
Palasava
પલાસવા
Kunariya
કુનરિયા
Lakadia
લાકડીયા
Bhachau
ભચાઉ
Bhuj
ભુજ
Kukma
કુકમા
Naranpar
નારણપર
Pantiya
પાંતિયા
Gandhidham
ગાંધીધામ
Malia
માળિયા
Chandroda
ચંદ્રોડા
Navlakhi
નવલખી
Bidada
બીદડા
Shiracha
શિરચા
Mundra
Bagathala
બગથલા
Morbi
મોરબી
Mathak
મથક
Gulf of Kutch
Jodiya
જોડિયા
Wankaner
વાંકાનેર
Dhrol
ધ્રોળ
Jamnagar
જામનગર
Sikka
સિક્કા
Dadiya
દાળિયા
Padadhari
પડધારી
Motikhavdi
મોટીખાવડી
Kuvadva
કુવાડવા
Salaya
સાલયા
Rajkot
રાજકોટ
Khambhalia
ખાંભળીયા
Lalpur
Kalavad
કાલાવાડ
Khirasra
ખીરસરા
Google
Map data ©2019 Imagery ©2019 TerraMetrics

Conclusion

- Realistically, there is no practical way to permanently keep birds out of substations or off transmission structures.
- Knowledge of bird behaviour and interactions is essential in understanding the effectiveness of the deterrents
- All new power lines (distribution lines) to follow construction design standards
- Site-specific collision monitoring surveys are required

Renewable Energy


Wind Mill Network in Kachchh District
N
Kachchh Desert
Wild Ass
BHUJ
NALIYA
GANDHIDHAM
MANDVI
Legend
Existing Wind Mill (1259)
Proposed Wind Mill (346)
0 12.5 25 50 75 100
Kilometers


Thank You…