Introducing

AVISTEP

The Avian Sensitivity Tool for Energy Planning

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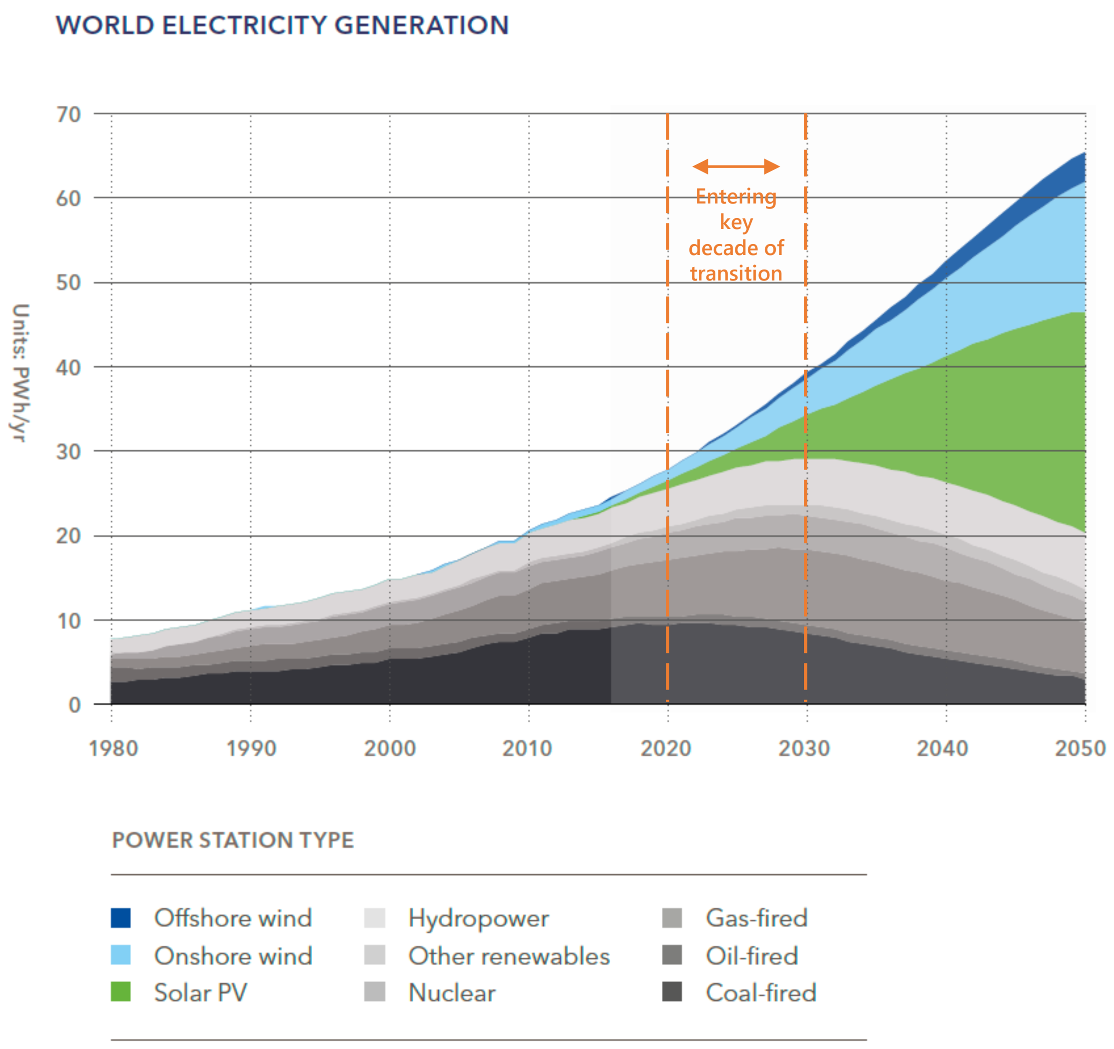
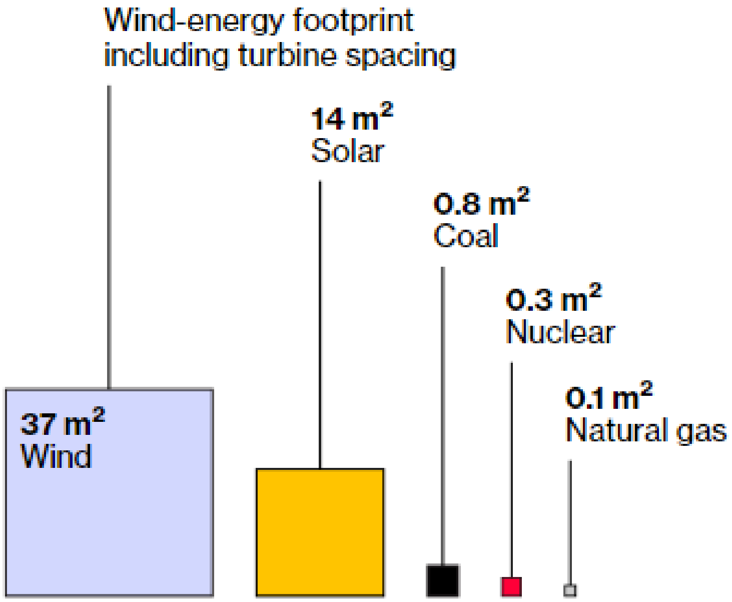
BirdLife INTERNATIONAL | ADB ASIAN DEVELOPMENT BANK | EAKPF Republic of Korea

Entering key decade of global transition



Renewables are space-intensive

- Requiring many millions of square kilometres of land and sea globally
- A more than doubling of power lines.



Land area needed to power a flat-screen TV, by energy source

Note: Assumes 100-watt television operating year-round
Source: van Zalk, John, Behrens, Paul, 2018, The Spatial Extent of Renewable and Non-Renewable Power Generation

Poorly sited renewable energy infrastructure undermines green credentials

- If renewable energy developments are sited purely to maximise wind and solar resources, then this could jeopardise over 11 million ha of natural lands globally, including over 3 million ha of Key Biodiversity Areas (KBAs), and the ranges of over 1,500 globally threatened species.

- This loss of natural habitat could release over 400 million tons of stored carbon, undermining climate change targets.

SOURCE: Kiesecker, J., Baruch-Mordo, S., Kennedy, C. M., Oakleaf, J. R., Baccini, A. and Griscom, B. W. (2019) Hitting the Target but Missing the Mark: Unintended Environmental Consequences of the Paris Climate Agreement. *Front. Environ. Sci*. 7:151.doi: 10.3389/fenvs.2019.00151



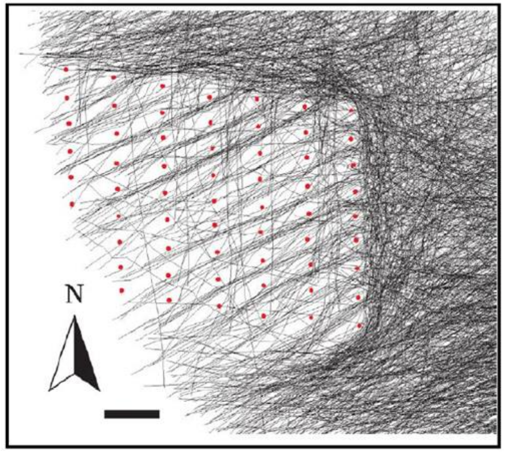





Avoidance, displacement and barrier effects

- Another factor affecting collision risk is avoidance behaviour—some species show high wariness around turbines and avoid turbine arrays.

- However, this itself can have a negative impact if it results in displacement from a favoured habitat or creates a barrier to daily movements or migration.



Too often, in emerging markets with weak nature legislation, renewable development is targeted at areas where it is believed to be easiest. Namely, landscapes perceived as being “**empty**”.

Caatinga, north-eastern Brazil

Thar Desert, India

Intertidal mudflat, south-east Asia

Lear's Macaw *Anodorhynchus leari*

Great Indian Bustard *Ardeotis nigriceps*

Spoon-billed Sandpiper *Calidris pygmaea*


The "Canudos 1" wind energy facility under construction in Bahia, Brazil threatens the only home of the Endangered Lear's Macaw.


The Great Indian Bustard is on course to go extinct due to badly planned renewable energy

- The single greatest threat is collision with power lines associated with wind and solar development.
- Their rapid flight, weight (they are the heaviest flying bird in the world), and the fact that they have a restricted visual field make this species uniquely susceptible to power line collision.
- The Wildlife Institute of India (WII) estimate that there are on average 18 fatal collision events each year. With a population of less than a hundred, extinction is inevitable and imminent.

There is ample scope to avoid sensitive locations

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- Wind farms and solar facilities can be readily integrated into landscapes of low ecological value, such as agricultural and industrial sites.

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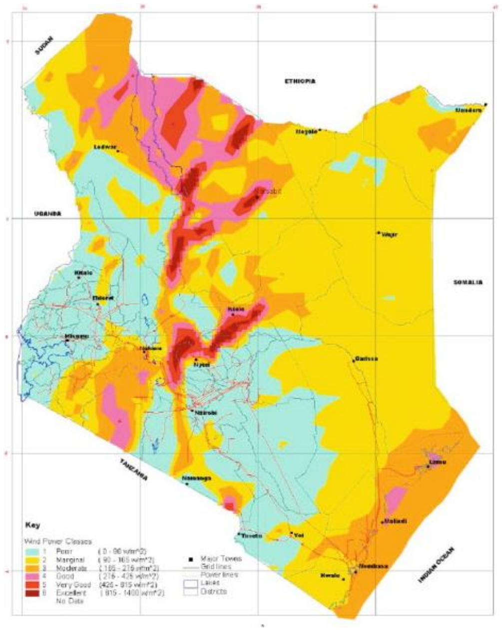
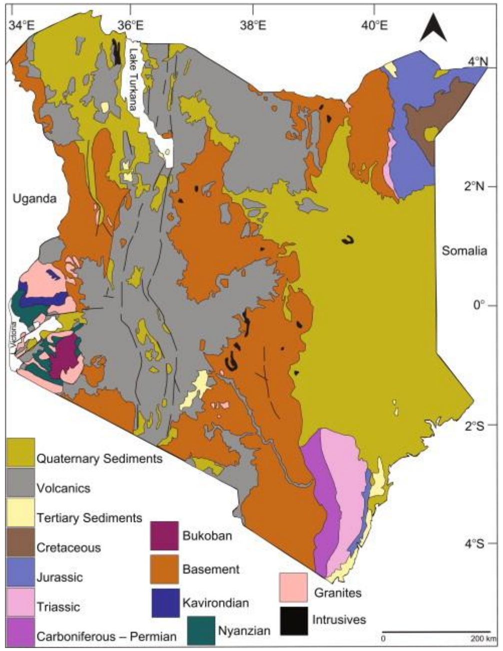
- Wind farms and solar facilities can be readily integrated into landscapes of low ecological value, such as agricultural and industrial sites.
- Even in India, which has ambitious targets for renewables and numerous competing land use demands, analysis shows that there is 12 times the land needed to achieve the country's solar and wind goals simply by using degraded lands with low social and ecological value.

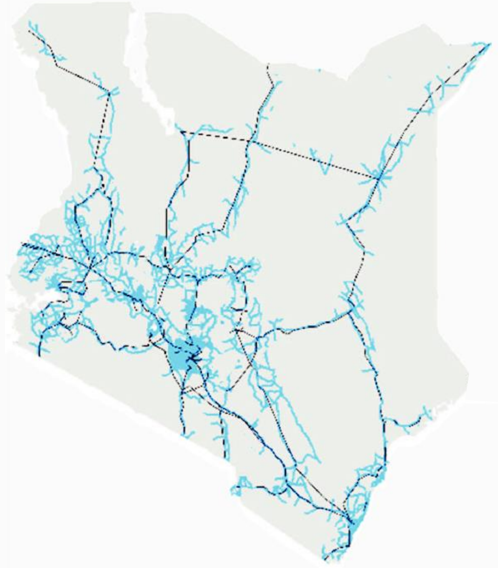
Need to ensure that spatial data on birds and biodiversity is considered alongside other routinely used sources of spatial information.



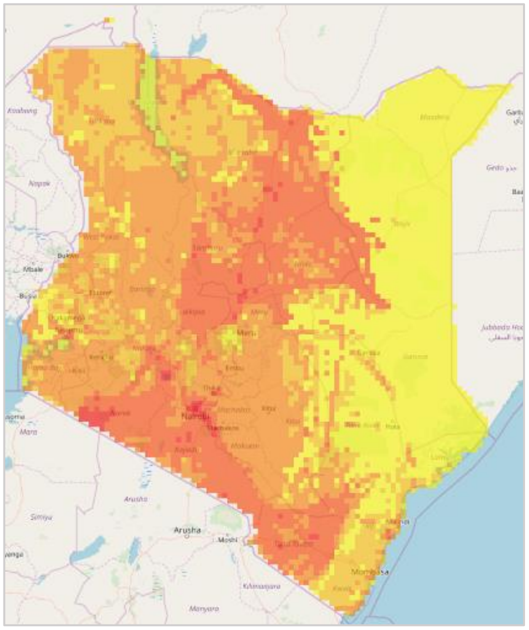
Wind Resource



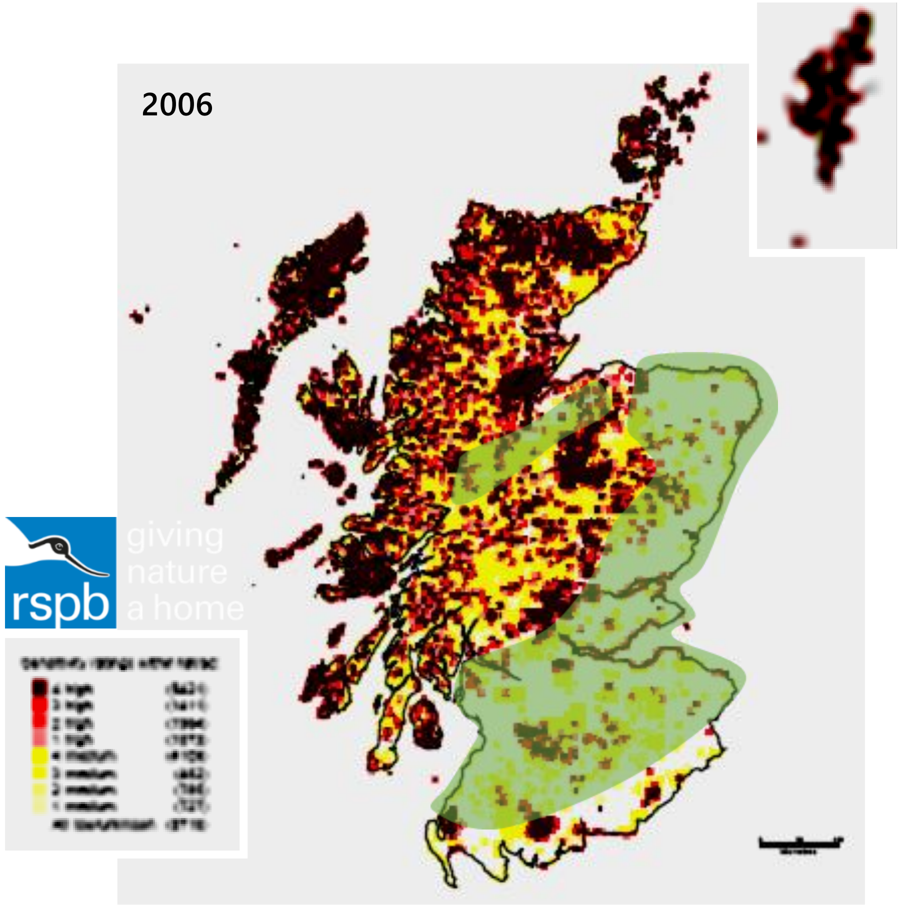
Geology



Grid network



Avian Sensitivity



Sensitivity mapping

- Wildlife Sensitivity Maps are recognised as an effective tool for identifying areas where the development of wind energy might impact sensitive biological communities.
- One of the first such maps was produced for Scotland by the RSPB (BirdLife in the UK).

The advantage of sensitivity mapping

- Provides biodiversity insight early in the planning cycle when development can be steered towards low-risk sites.
- Speeds up the renewable energy expansion by ensuring that fewer developments become embroiled in controversy or need elaborate mitigation measures in order to make them viable.
- Enables development to be planned strategically and efficiently, maximising available space, so that a rapid scaling up of renewables can be achieved in a truly nature-safe way.

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Supported by ADB and the e-Asia and Knowledge Partnership Fund

Bombay Natural History Society (BNHS)

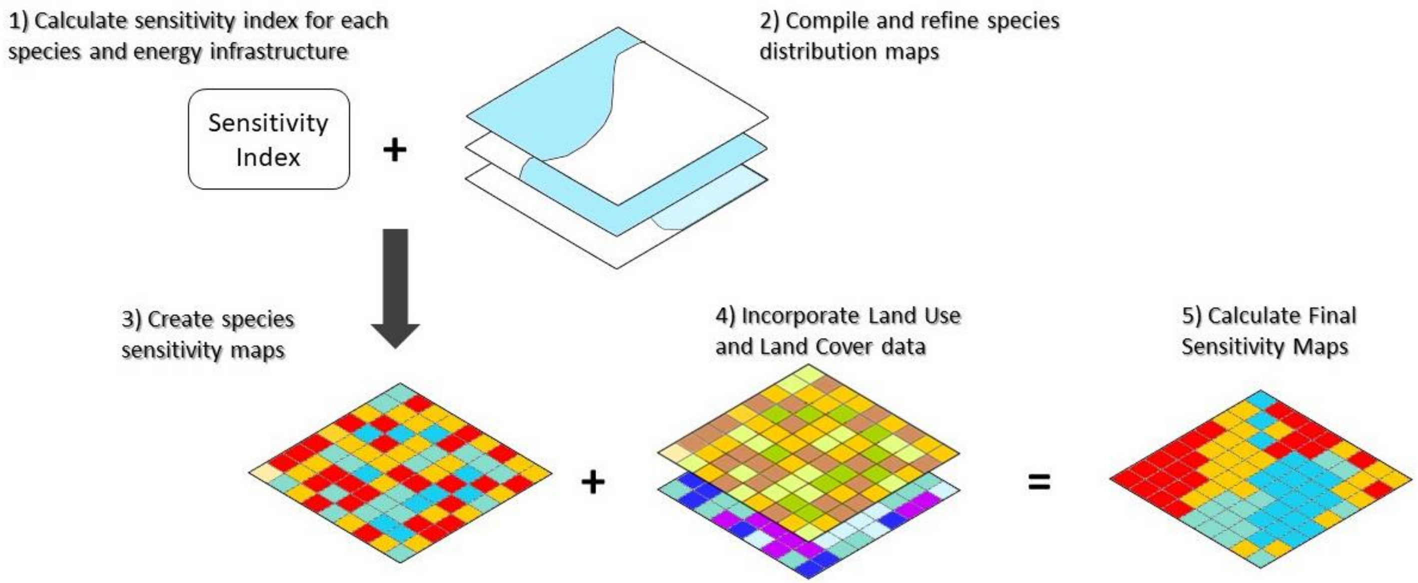
Bird Conservation Nepal (BCN)

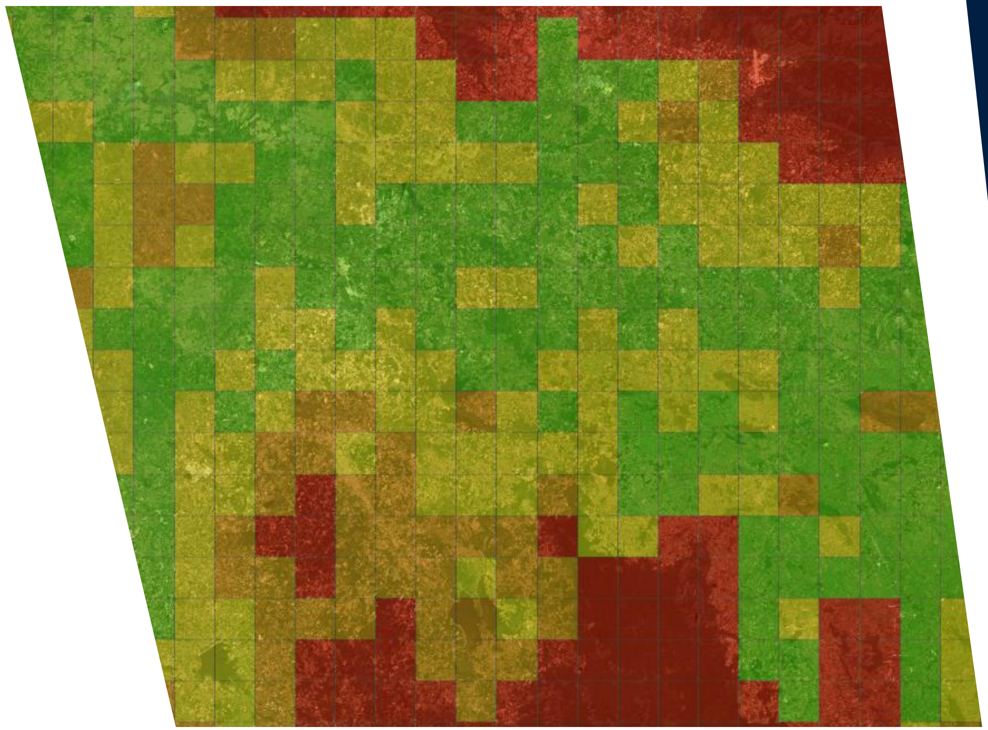
Bird Conservation Society of Thailand (BCST)

Viet Nature

Methodology

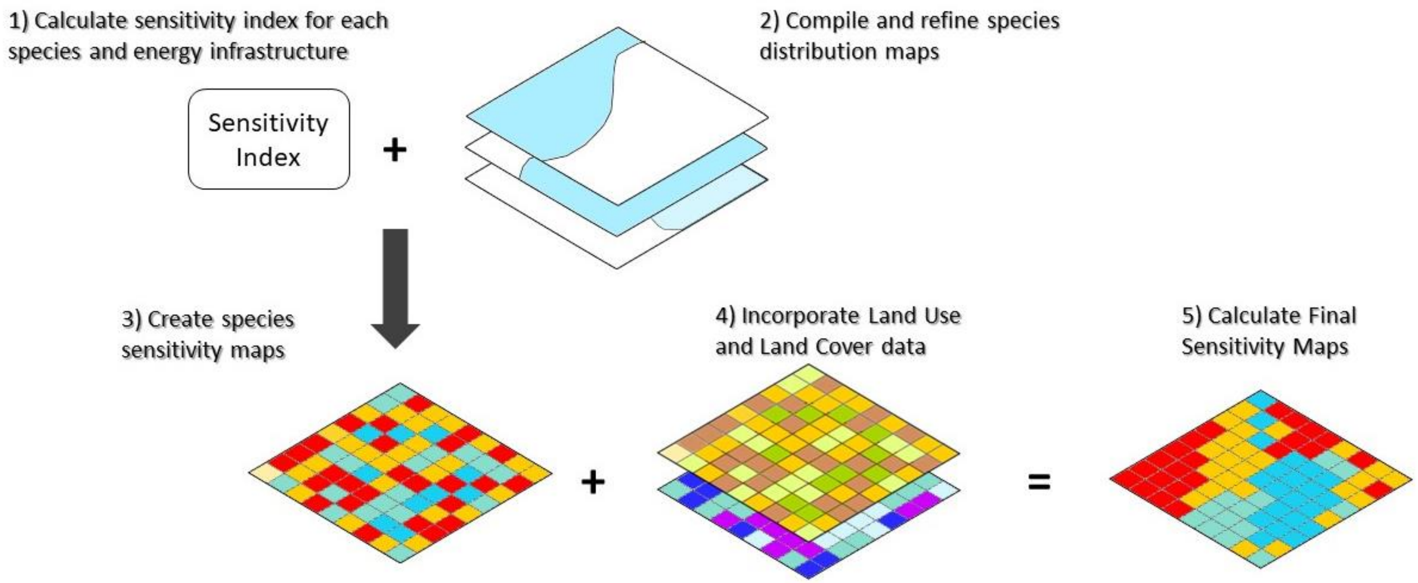
1. Create sensitivity index for at-risk species (e.g. for wind taking account of collision susceptibility, displacement susceptibility, natural mortality, conservation status and endemism).

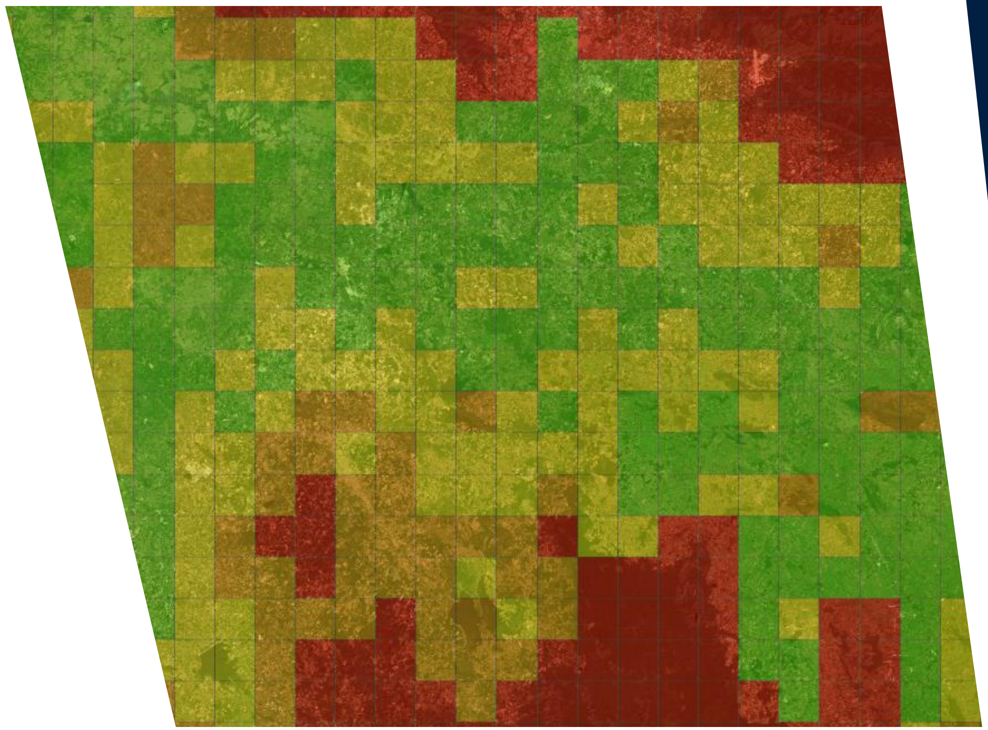




Methodology

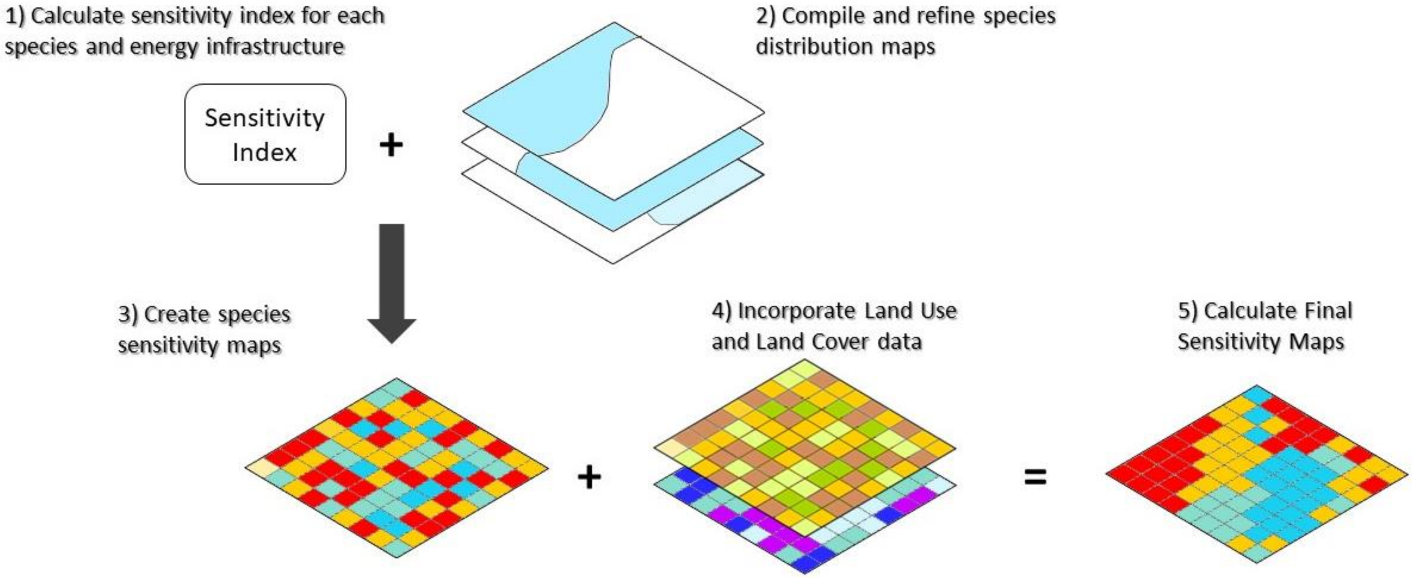
2 Compile species distribution maps – model areas of suitable habitat and elevation within the known species range and then refine these with observational records.

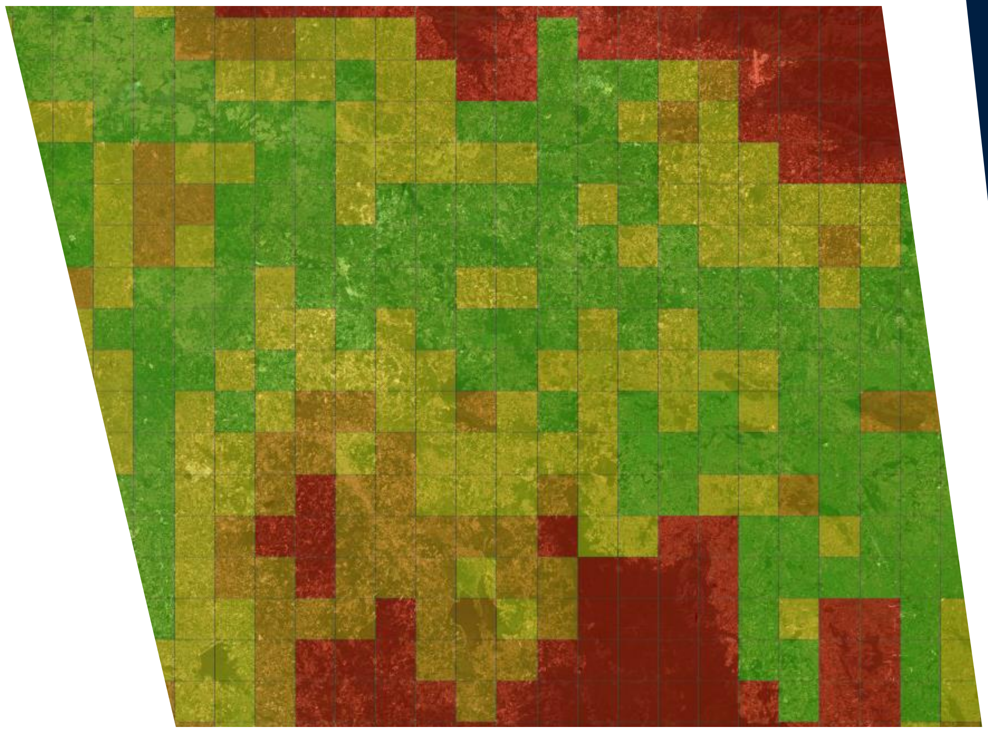




Methodology

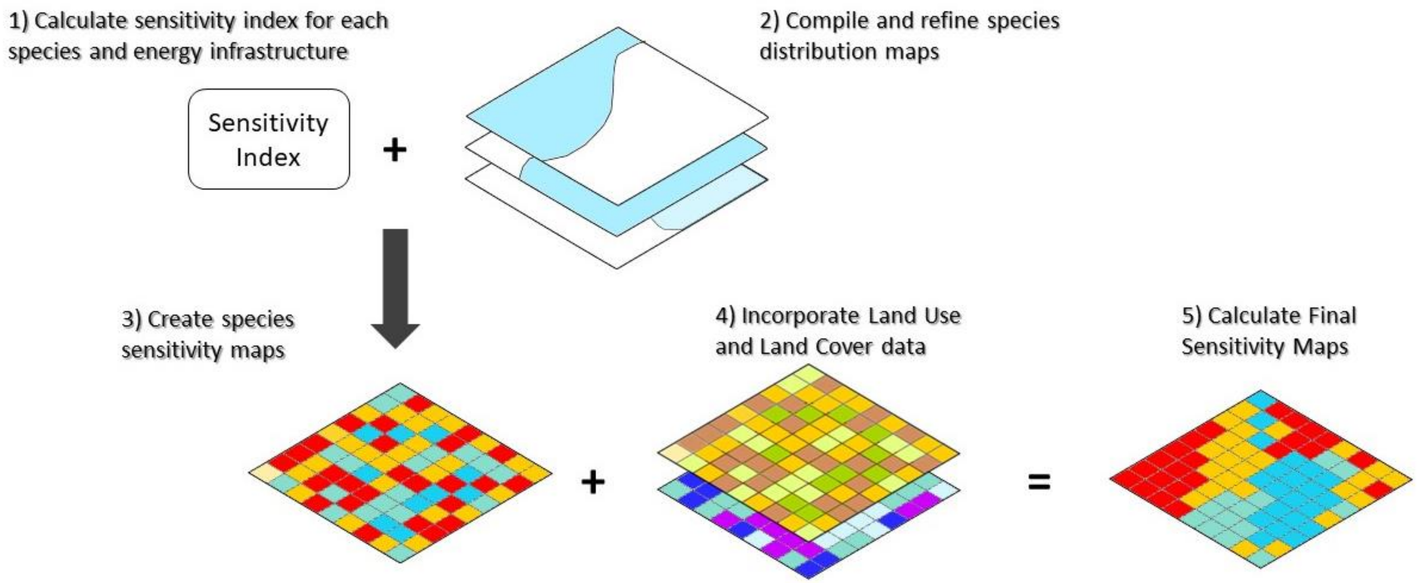
3 Create species sensitivity maps.

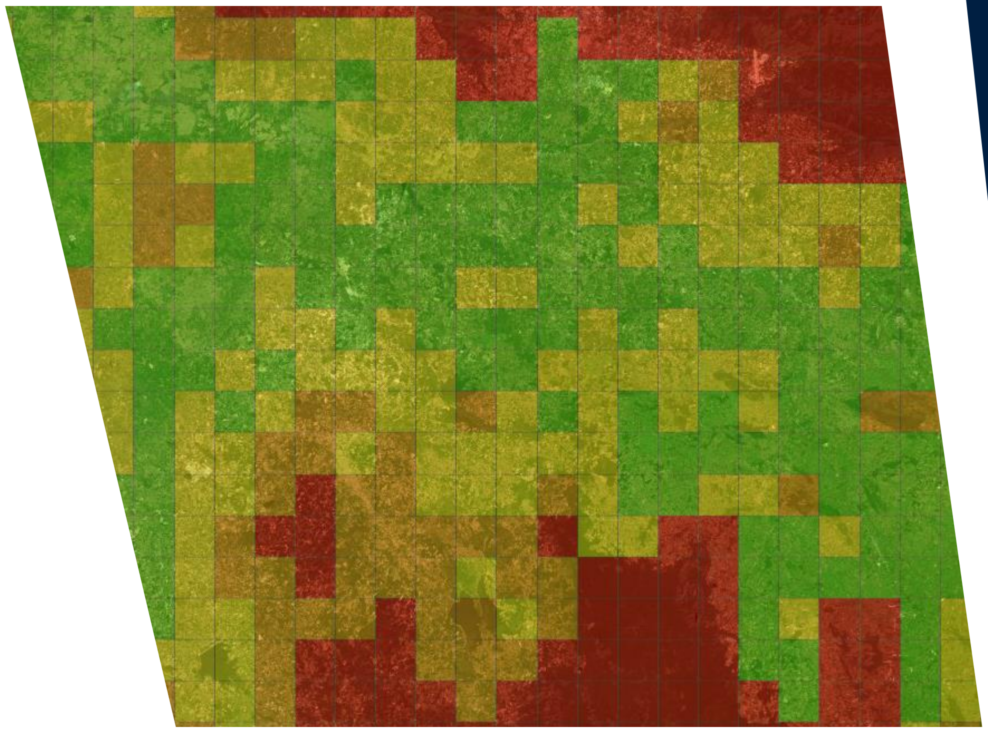




Methodology

4 Incorporate Land Use and Land Cover data – Protected Areas, Important Bird Areas (IBAs), seabird colonies, sensitive habitats (determined through high resolution land cover data).






India
Nepal
Thailand
Vietnam


AVISTEP
Select a Supported Country
India
Nepal
Thailand
Vietnam
BirdLife
Earthstar Geographics
Powered by Esri
lenovo
X230

- Onshore Wind
- Offshore Wind
- Solar Photovoltaic
- Transmission Powerlines
- Distribution Powerlines

National

- Low
- Moderate
- High
- Very High

Regional

- Low
- Moderate
- High
- Very High

Site (5km x 5km)

- Low
- Moderate
- High
- Very High

Thank you for listening!

Live AVISTEP demo

Today 8pm (Manila Time GMT +8)

www.AVISTEP.birdlife.org