

A Global Picture of Environmental Risks of Planned Transport Infrastructure

Andy Arnell, Rowan Palmer, Fiona Danks

Why am I talking?

Road and rail infrastructure is **good**

Road and rail infrastructure is **bad**

It can be both

Weighing **ecological consequences**
against **socio-economic benefits** -
essential for decision making



Why else?

Policy relevance

-Sustainable Development Goals (SDGs)
etc...

Part of UNEP project on sustainable
infrastructure with a **national** focus

But global focus for this project as
provides **context**

Funded by:



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET



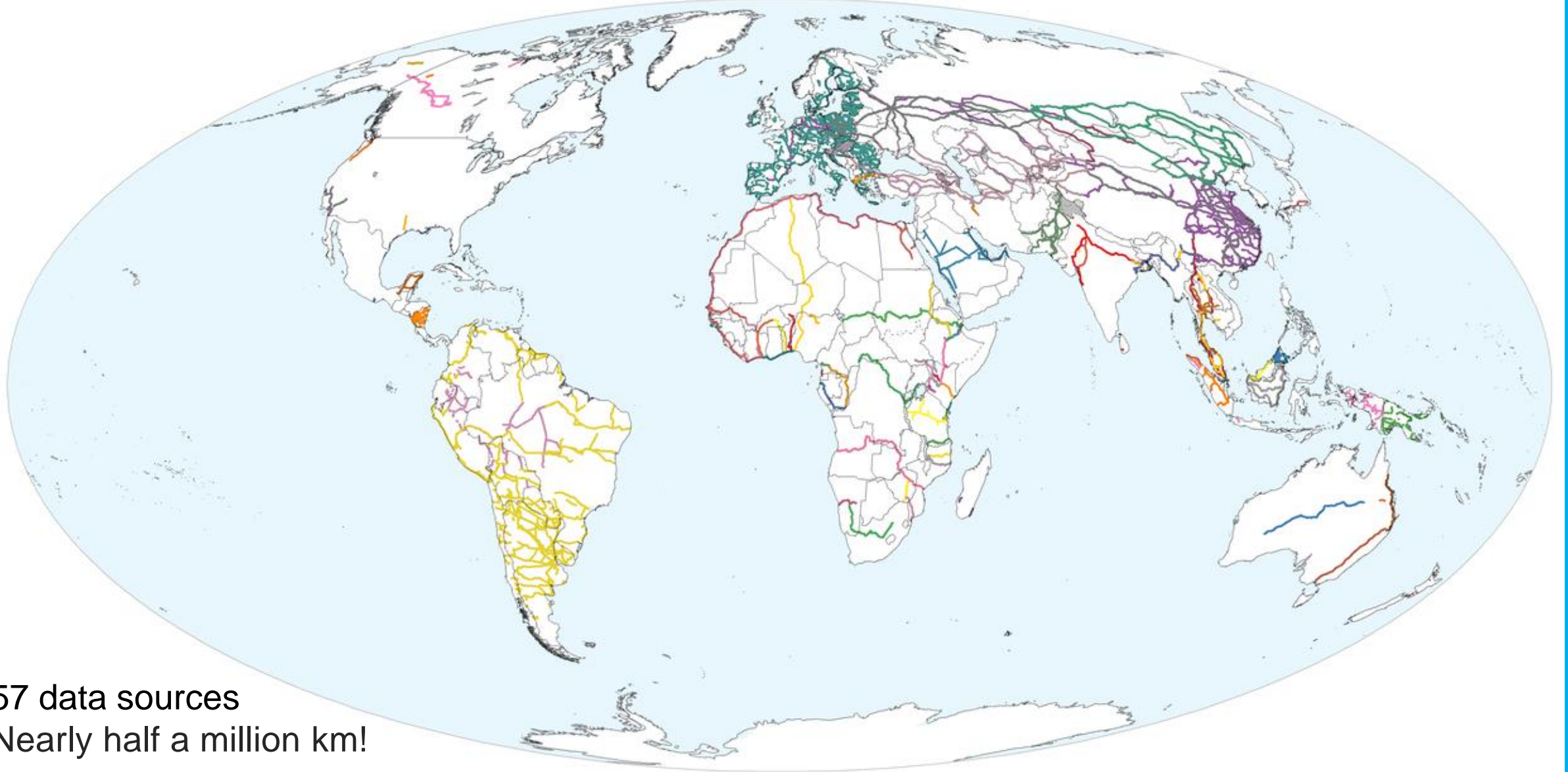
Approach

So, we:

1. developed a new global **database**
 2. created a suite of relevant **metrics**
 3. estimated environmental **risks**
 4. **compared risks** to **benefits** (to the economy)
-

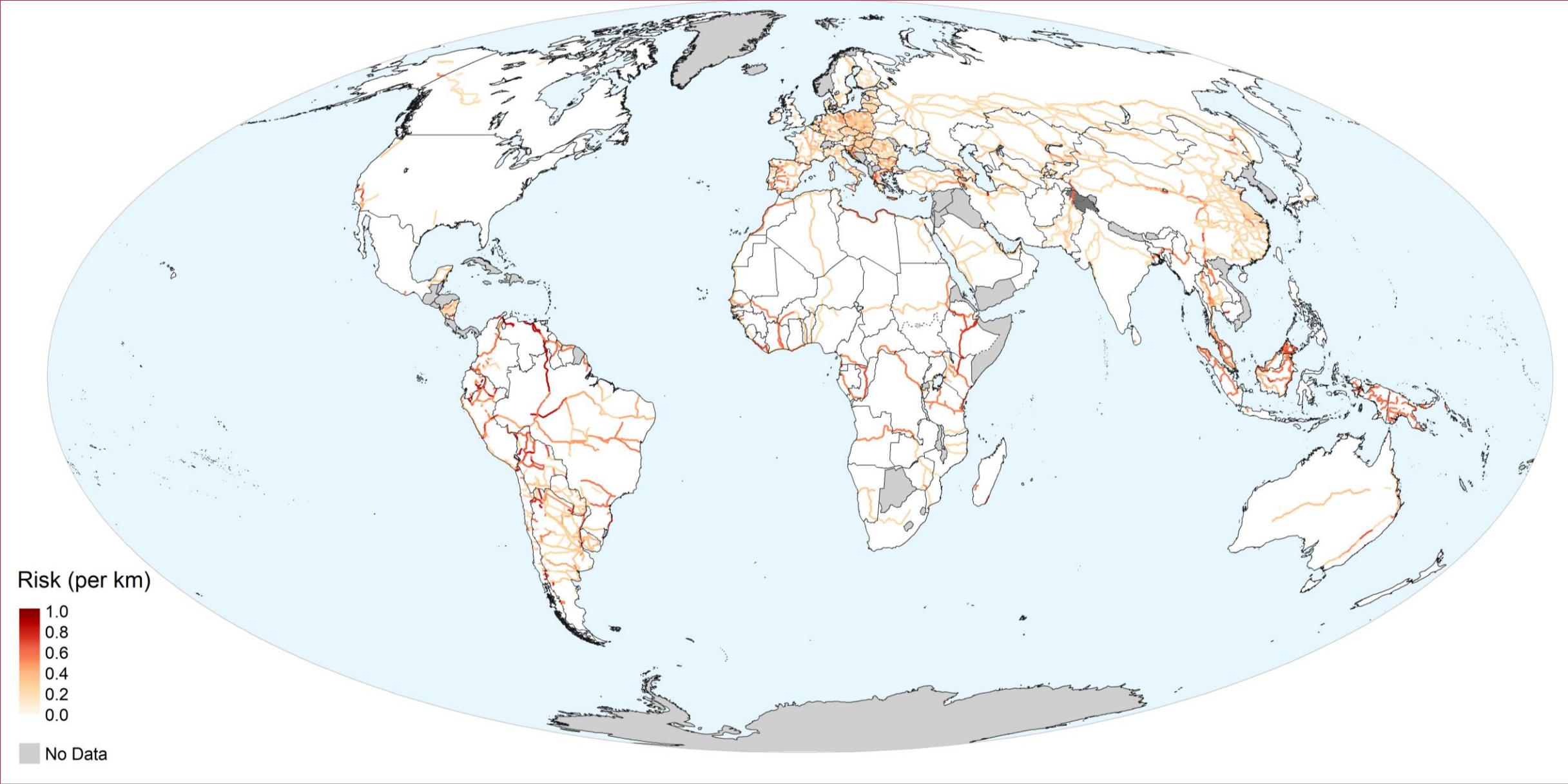


Planned road and rail infrastructure

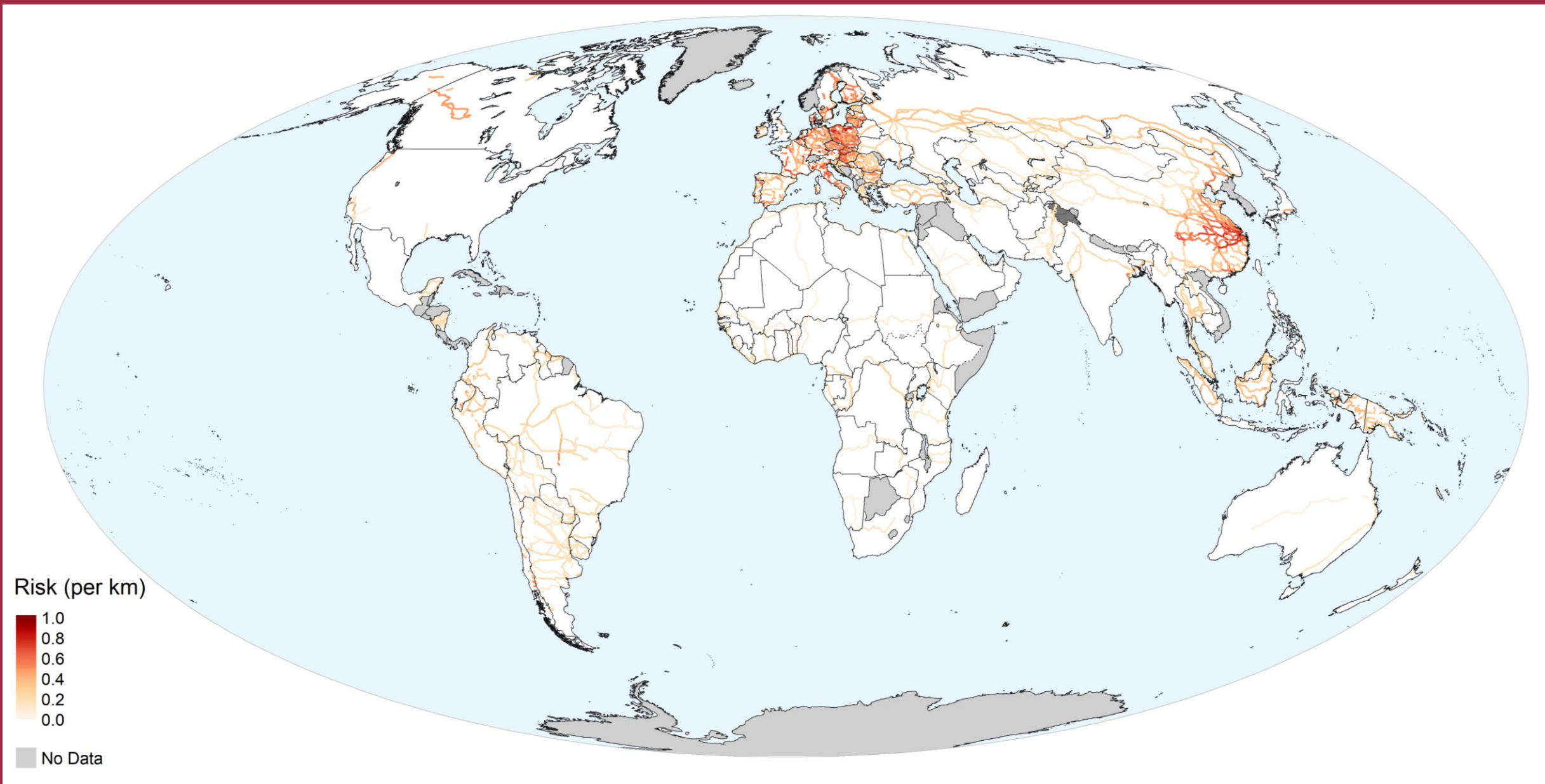


57 data sources
Nearly half a million km!

Risk to biodiversity – per km of project



Risk to ecosystem services – per km of project

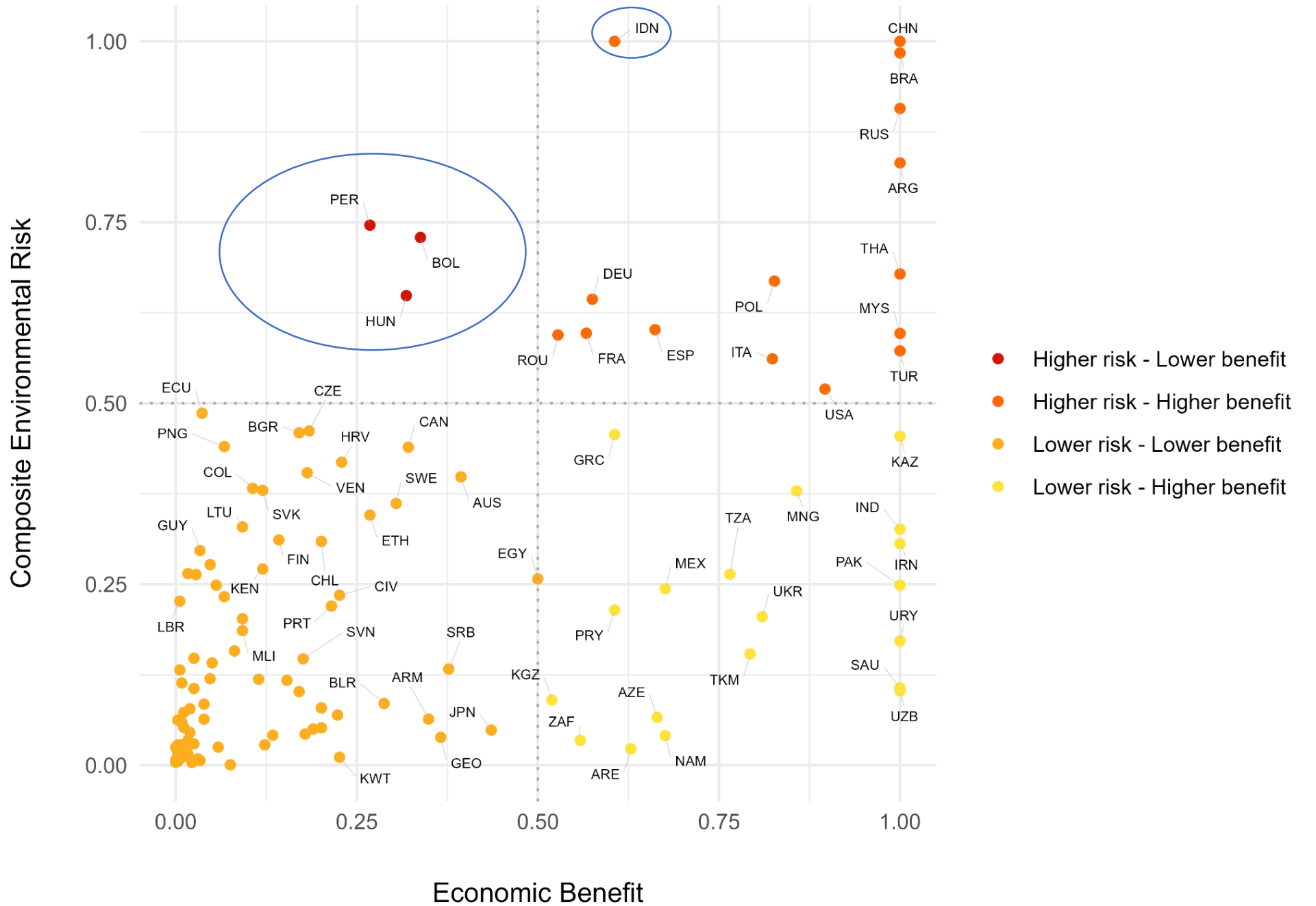


Environmental risks

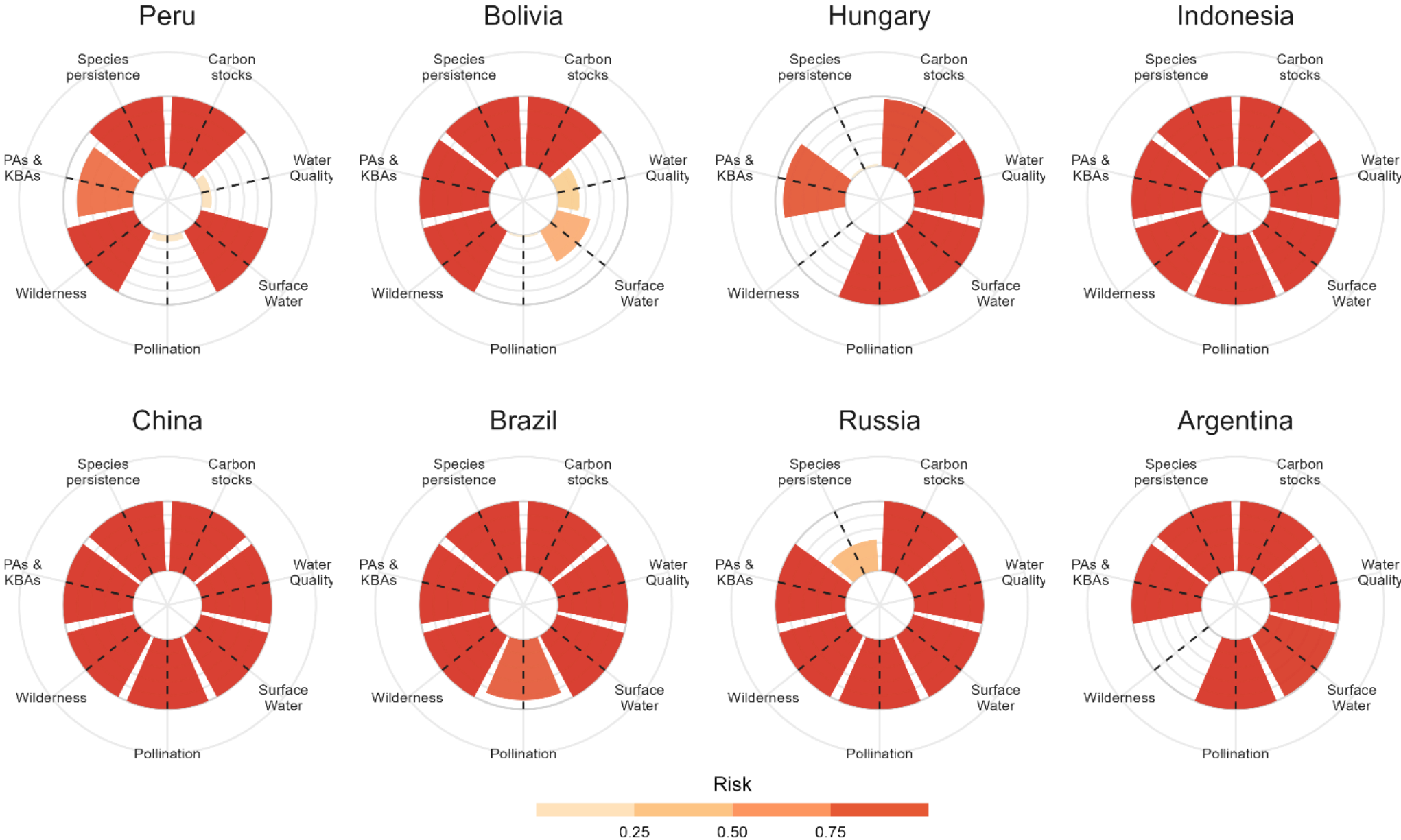
Some global stats

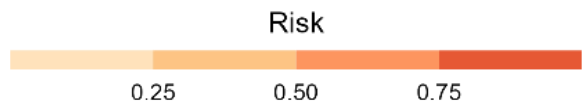
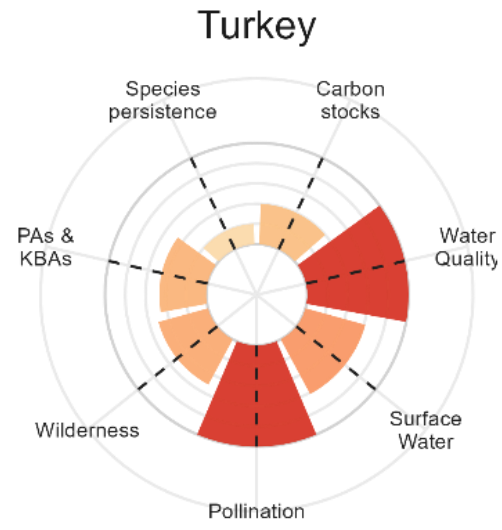
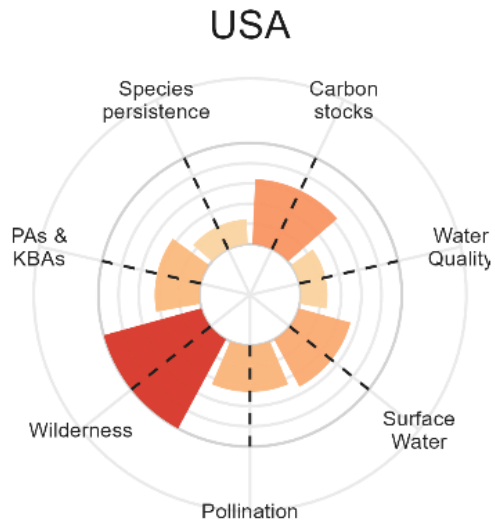
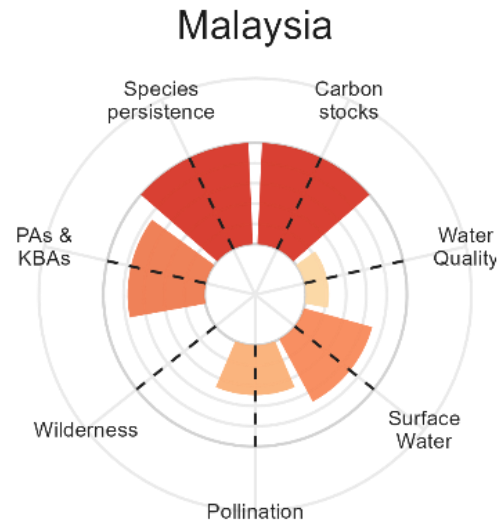
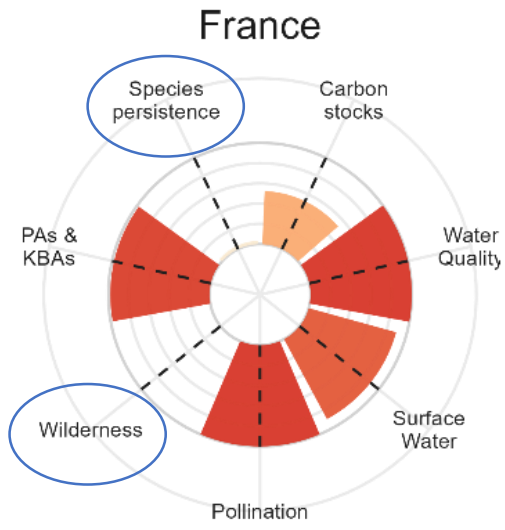
- **Species**
 - ~60% of study species within risk areas
 - 42 sp. decline in persistence by >10%
 - **Conservation areas**
 - 12% of infrastructure (~60,000km)
 - **Wilderness areas**
 - 1.6% of infrastructure (~8,000Km)
 - **Carbon stocks**
 - ~883 million tonnes at risk
-





Comparing risk profiles





Some inequities...

Global Infrastructure Impact Viewer

(<https://www.giiviewer.org/>)

The screenshot displays the Global Infrastructure Impact Viewer interface. At the top, it features the UN Environment Programme logo and the text "Global Infrastructure Impact Viewer" and "UN WCMC". Navigation links for "Map" and "About" are in the top right. On the left, there are tabs for "Project Level", "Country Level", and "Risk-Benefit Comparison". Below these are sections for "Variable" (with a minus sign), "Impact of Project", and "Impact per KM". The "Total Environmental Risk" section is active, showing a selected option "Total Environmental Risk" with an information icon. Below this is the "Biodiversity Risk" section with options for "Total risk to biodiversity", "Risks to species", and "Risks to conservation areas". The main area is a map of Europe with infrastructure lines color-coded by risk. A legend titled "Legend" shows "Risk (per km of infrastructure)" with a color scale from 0.0833 (light orange) to 0.7500 (dark red). A data popup window is open over a location in Western Europe, showing "Total Environmental Risk per km" as 0.4724 and a bar chart titled "Environmental risk components" with six bars of varying heights and colors (brown, blue, dark blue, yellow, green, dark green). A blue arrow points from the popup to the map. At the bottom, there is a "Zoom to" search bar and a footer with "Map Disclaimer" and "Powered by Esri".

Global Infrastructure Impact Viewer

(<https://www.giiviewer.org/>)

Global Infrastructure
Impact Viewer

Map About

Project Level **Country Level** Risk-Benefit Comparison

and/or rail infrastructure projects per country.

Type of Infrastructure +

Variable -

Impact for Country Impact per KM

Total Environmental Risk

Total Environmental Risk i

Biodiversity Risk

Find address or place

Legend

Risk


1.0000

0.0005


Map navigation controls: < + -

Global Infrastructure Impact Viewer

(<https://www.giiviewer.org/>)



Global Infrastructure Impact Viewer



Map About

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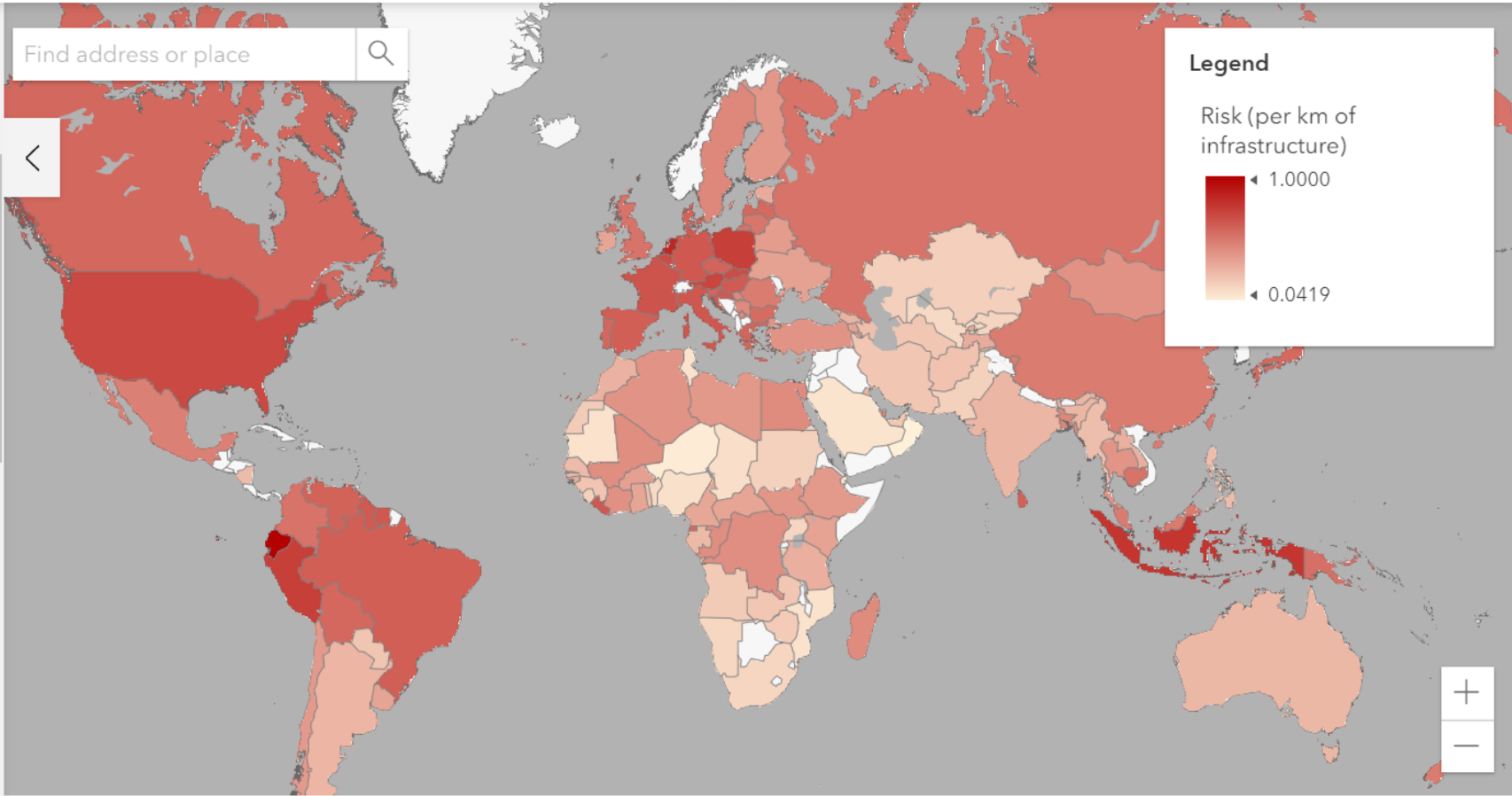
Impact for Country Impact per KM

Total Environmental Risk

Total Environmental Risk i

Biodiversity Risk

Find address or place



Legend

Risk (per km of infrastructure)

1.0000

0.0419

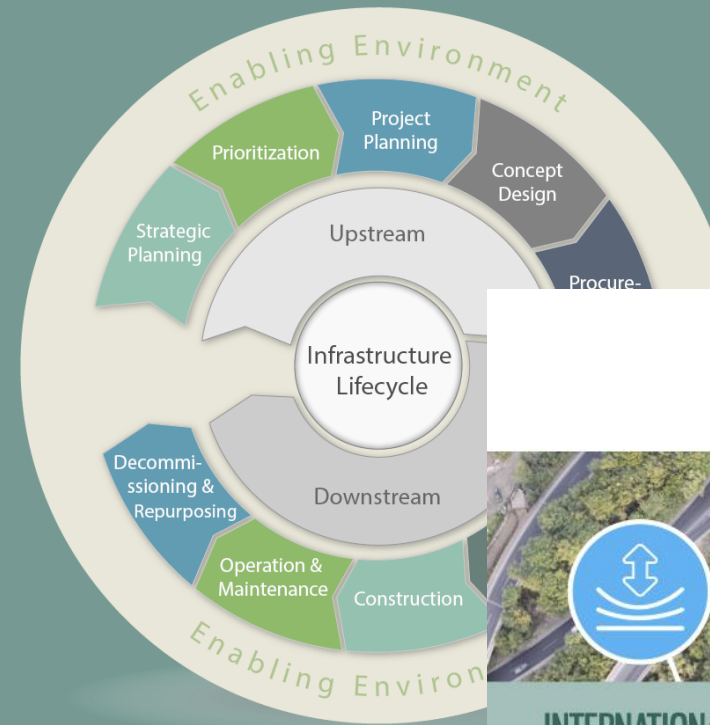
esri, FAO, NOAA, USGS

Map Disclaimer | Powered by Esri

Some solutions: Integrated Approaches to Sustainable Infrastructure

1. Built, natural, and enabling environments;
2. Synergies and tradeoffs;
3. Systems-level interventions and full-lifecycle approach

https://wedocs.unep.org/bitstream/handle/20.500.11822/39811/infrastructure_practices2.pdf?sequence=1&isAllowed=y



Summary

First **global picture!**

New database

- planned and in progress road and rail

Novel metric use

- e.g., species persistence score

Consider local context & inequities

Report and viewer launched!

Intergrated approaches needed.

andy.arnell@unep-wcmc.org



Report: <https://wedocs.unep.org/20.500.11822/41376>

Results viewer: <https://www.giiviewer.org/>

DCP project:

<https://resources-hub.developmentcorridors.org/>