

ASCOR



Grantham
Research Institute
on Climate Change
and the Environment

Assessing Sovereign Climate-related Opportunities and Risks (ASCOR) Explainer Series

Area CF4. Renewable energy opportunities

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ASCOR framework

Emissions Pathways (EP)	Climate Policies (CP)	Climate Finance (CF)
EP1. Emissions trends EP2. 2030 targets EP3. Net zero targets	CP1. Climate legislation CP2. Carbon pricing CP3. Fossil fuels CP4. Sectoral transitions CP5. Adaptation CP6. Just transition	CF1. International climate finance CF2. Climate costing CF3. Climate spending CF4. Renewable opportunities

Note: [ASCOR framework: methodology note - Version 1.1](#) was used to assess 70 countries in 2024.

Content

1. Introduction to renewable energy opportunities
2. How does ASCOR assess renewable energy opportunities?
3. Results of 2024 assessments

1. Introduction to renewable energy opportunities

Why does ASCOR assess renewable energy opportunities?



Electricity demand is expected to increase through to 2050 ([IPCC](#)).



To meet demand and align with climate goals, **low-carbon energy must be rapidly deployed**.



The **cost of renewable electricity has decreased** rapidly over the last two decades.



Renewable energy is both a **lever for mitigation and an investment opportunity**.



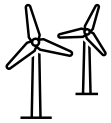
The renewable energy pipeline **is a proxy for potential transition investment opportunities**.

What are the main types of renewable energy sources?



Solar

Energy harnessed from the sun's radiation using photovoltaic cells or solar thermal collectors to convert sunlight into electricity or heat.



Wind

Energy generated from the kinetic energy of wind, captured by wind turbines that convert wind movement into mechanical power and then electricity.



Geothermal

Energy derived from the natural heat stored beneath the Earth's surface, used for electricity generation or direct heating applications.



Hydro

Energy produced from the movement of water in rivers or dams, where flowing or falling water is used to drive turbines and generate electricity.

2. How does ASCOR assess renewable energy opportunities?

Metrics



CF4i. What is the country's prospective solar energy capacity?



CF4ii. What is the country's prospective wind energy capacity?



CF4iii. What is the country's prospective geothermal energy capacity?



CF4iv. What is the country's prospective hydroelectric energy capacity?

How does ASCOR assess renewable energy opportunities?



We rely on [Global Energy Monitor \(GEM\)](#) data on 'prospective' renewable energy capacity, which includes projects that have been **announced or are under construction**.



This '**renewable energy pipeline**' is normalised by GDP sourced from the [World Bank](#) to provide a more comparable measure of national low-carbon investment opportunities.



Rather than focusing on the geophysical (and fully hypothetical) potential of renewable energy, we assess the **actual progress in scaling up renewable energy capacity**.

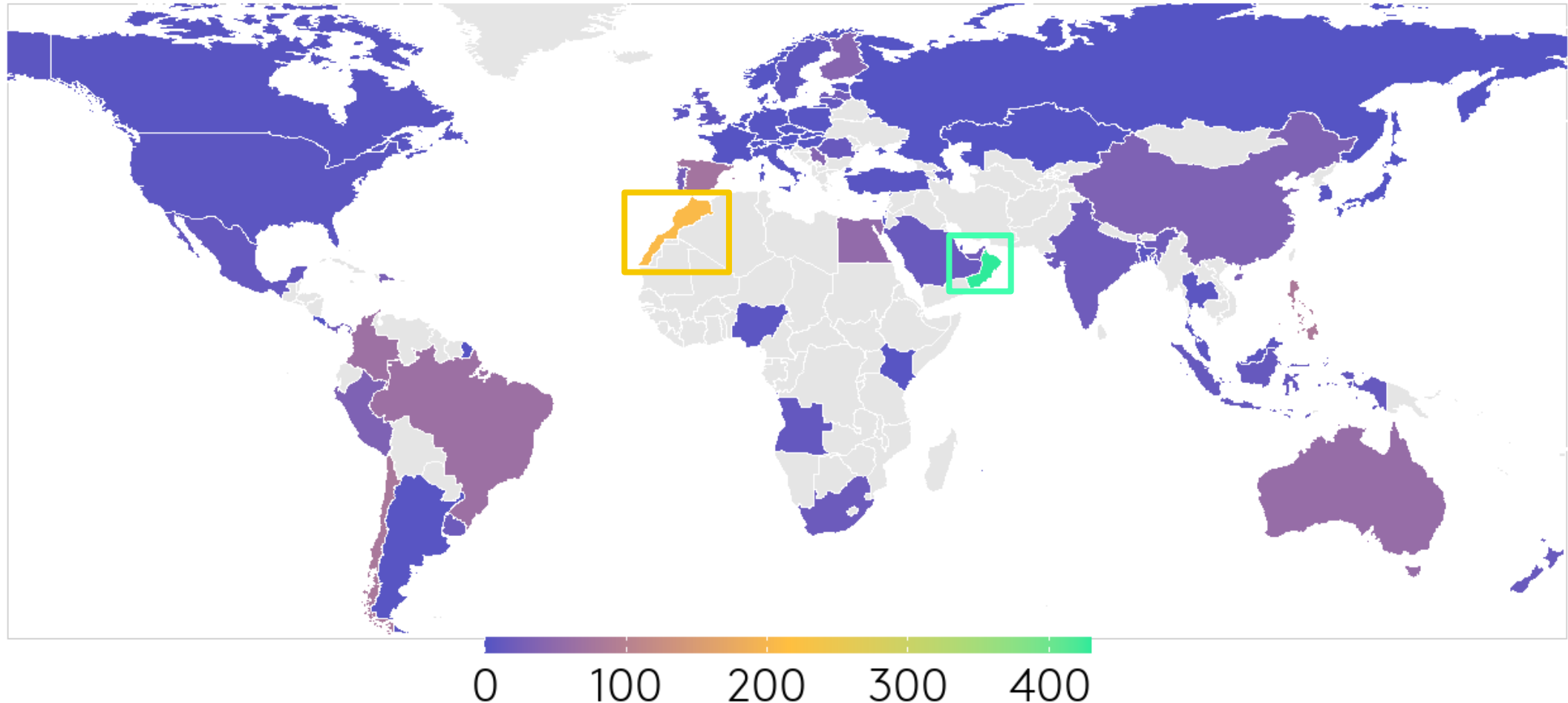


Country-specific factors are important when interpreting these metrics. Some countries lack the land area required and others already have nearly 100% renewable energy generation.

3. Results of 2024 assessments

Solar energy pipeline normalised by GDP

(MW per US\$ billion of GDP)

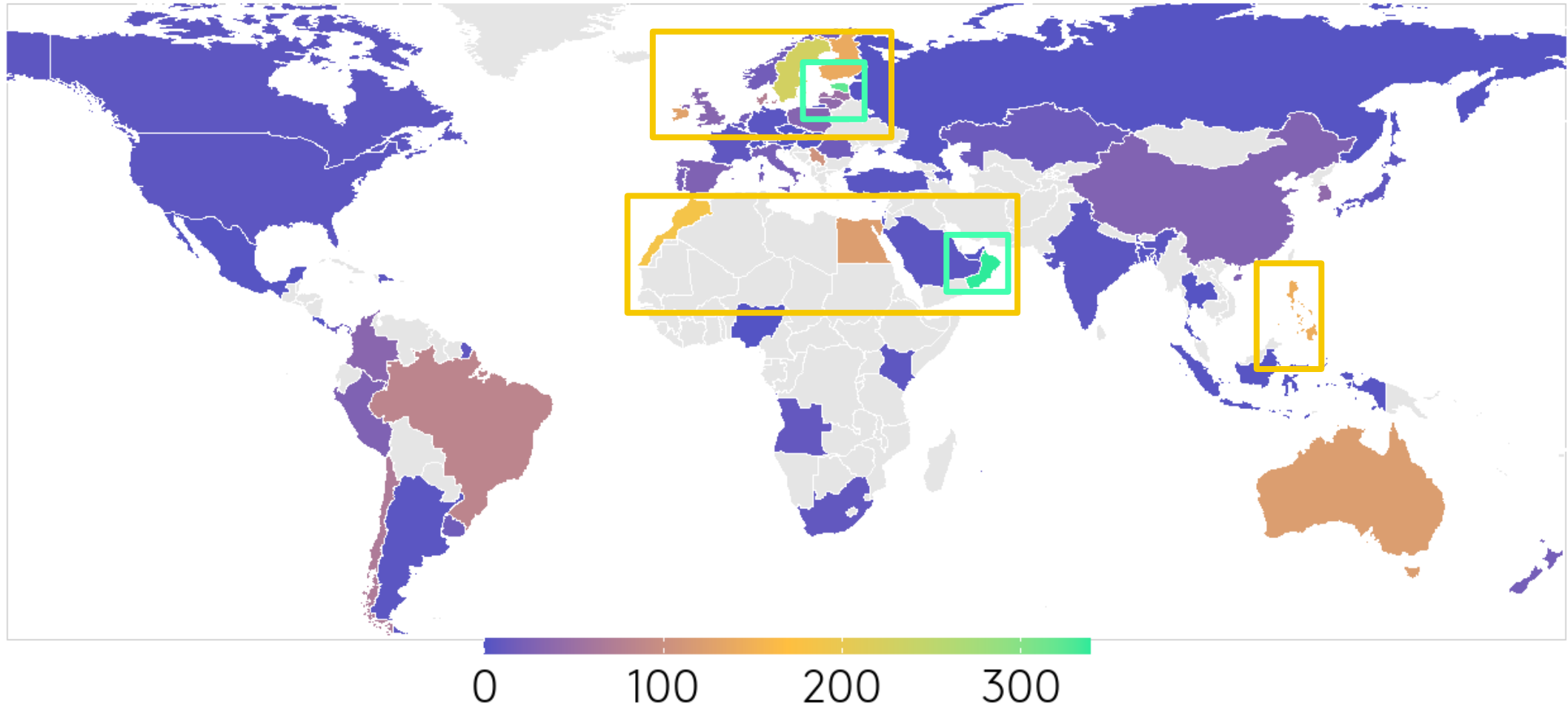


Note: The data for Uruguay's solar and wind prospective energy capacity was adjusted before normalisation to reflect announced projects not yet included in the Global Energy Monitor database.

Source: Authors' analysis adapted from Global Energy Monitor data.

Wind energy pipeline normalised by GDP

(MW per US\$ billion of GDP)

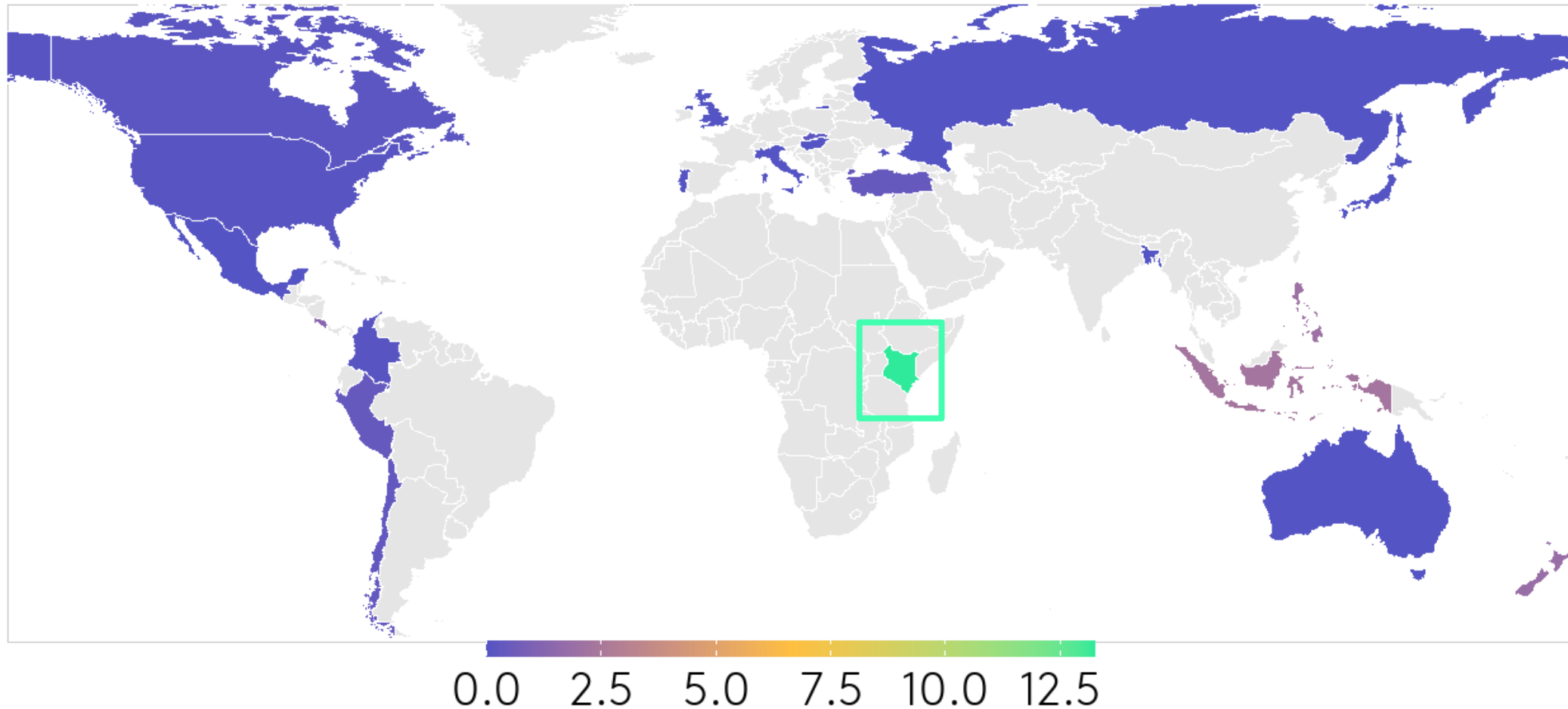


Note: The data for Uruguay's solar and wind prospective energy capacity was adjusted before normalisation to reflect announced projects not yet included in the Global Energy Monitor database.

Source: Authors' analysis adapted from Global Energy Monitor data.

Geothermal energy pipeline normalised by GDP

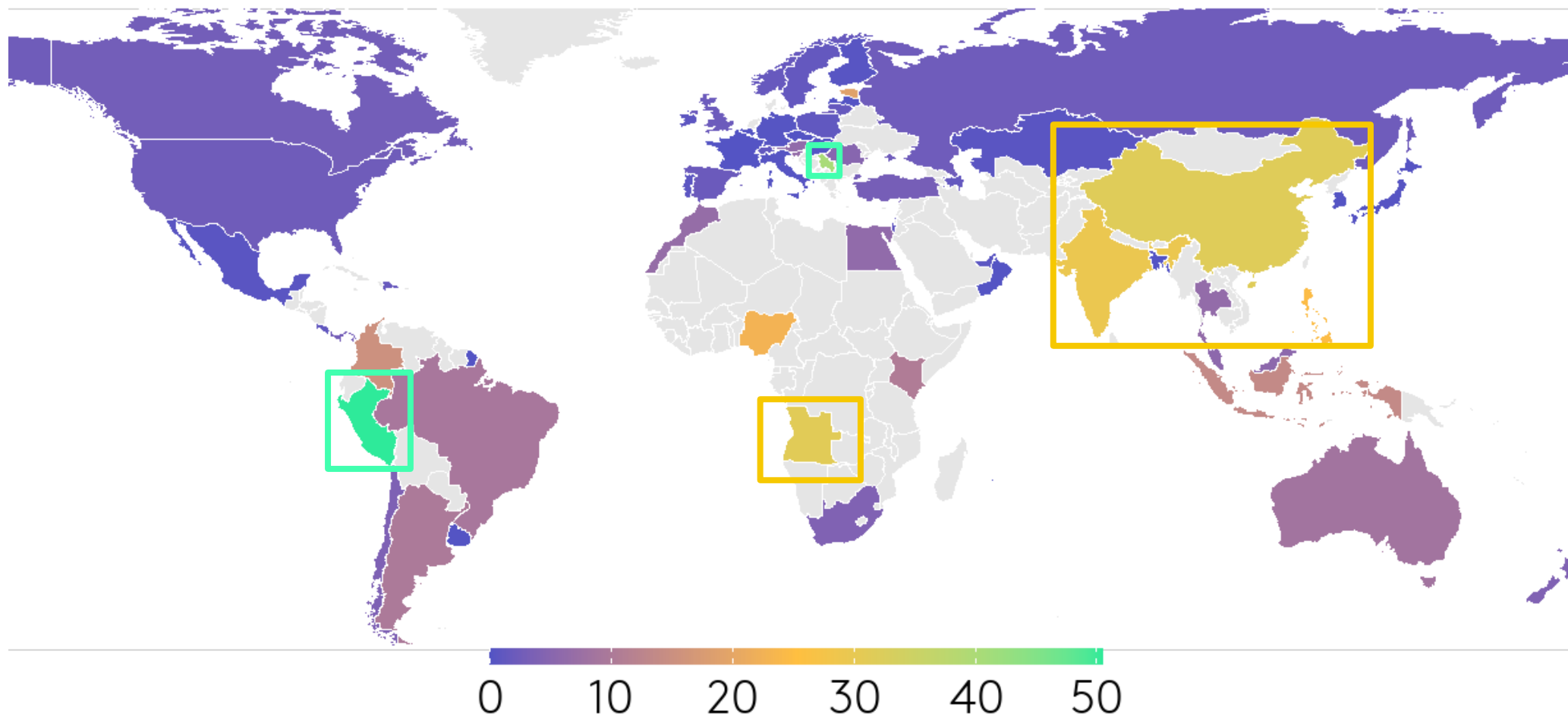
(MW per US\$ billion of GDP)



Source: Authors' analysis adapted from Global Energy Monitor data.

Hydro energy pipeline normalised by GDP

(MW per US\$ billion of GDP)



Source: Authors' analysis adapted from Global Energy Monitor data.

Stay up to date on the ASCOR project:

www.ascorproject.org

Access the ASCOR tool and database:

www.transitionpathwayinitiative.org/ascor

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