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News release

A fifth of countries worldwide at risk from ecosystem collapse as biodiversity declines, reveals pioneering Swiss Re index

- 39 countries have ecosystems in a fragile state on more than a third of their land – Malta, Israel, Cyprus, Bahrain and Kazakhstan have the lowest Biodiversity and Ecosystems Services (BES) ranking
- 55% of global GDP depends on high-functioning BES
- Major economies in Southeast Asia, Europe and the US exposed to BES decline
- Swiss Re Institute BES Index enables businesses and governments to factor in biodiversity and ecosystem issues into economic decision-making

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Zurich, 23 September 2020 – Countries across the world are reliant on a range of services that are based around their natural ecosystems. Biodiversity and Ecosystem Services (BES) include such necessities as food provision, water security and regulation of air quality that are vital to maintaining the health and stability of communities and economies.

Over half (55%) of global GDP, equal to USD 41.7 trillion[1], is dependent on high-functioning biodiversity and ecosystem services. However, a staggering fifth of countries globally (20%) are at risk of their ecosystems collapsing due to a decline in biodiversity and related beneficial services, reveals a new study by Swiss Re Institute.

The study, which is based on Swiss Re Institute's new Biodiversity and Ecosystem Services Index, shows that both developing and advanced economies are at risk. The report finds developing countries that have a heavy dependence on agricultural sectors, such as Kenya or Nigeria, are susceptible to BES shocks from a range of biodiversity and ecosystem issues.

Among G20 economies, South Africa and Australia top the rankings of fragile BES. The well-known impact of water scarcity is a driver for these countries, alongside factors such as coastal protection and pollination. Brazil and Indonesia enjoy the highest percentage of intact ecosystems within the G20. However, the countries' strong economic dependency on natural resources highlights the importance of sustainable development and conservation to the long-term sustainability of their economies.

An upcoming United Nations Summit on biodiversity on 30 September 2020 is set to call for "urgent action on biodiversity for sustainable development" as global efforts to improve in this vital area have fallen well below UN targets to halt biodiversity loss.

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[1] Value-added output 2018, USD trillion, in constant local currency units (LCU). To ensure long-term comparability, figures are converted to USD 2015 prices according to Oxford Economics.

To build understanding around this global issue, Swiss Re Institute developed the BES Index, enabling business leaders and governments worldwide to cross-compare and benchmark the state of local ecosystems that underpin their economies. Insurers can also use this data to develop relevant insurance solutions that protect communities at risk from poor-functioning BES.

Christian Mumenthaler, Swiss Re's Group Chief Executive Officer, said: "There is a clear need to assess the state of ecosystems so that the global community can minimise further negative impact on economies across the world. This important piece of work provides a data-driven foundation for understanding the economic risks of deteriorating biodiversity and ecosystems. In turn, we can inform governmental decision-making to help improve ecosystem restoration and preservation. We can also support corporations and investors as they fortify themselves against environmental shocks. Armed with this information, we can also ensure the provision of stronger sustainable insurance services."

What can be done?

The insights from the index serve to highlight the importance of nature conservation and restoration for a functioning economy. Among the top ten countries with fragile ecosystems and high GDP dependency on natural services, it is the resource-rich developing countries with large agricultural sectors that stand out, such as Kenya, Vietnam, Pakistan, Indonesia and Nigeria. The study highlights the dangers of these economies potentially reaching critical tipping points when essential natural resources are disrupted. To prevent this, ongoing economic diversification combined with conservation and preservation efforts will be key.

Major economies in Southeast Asia, Europe and America that already have diversified economies are nevertheless also exposed to risk from BES decline. This is because important individual economic sectors can be impacted by single BES factors. Water scarcity, for example, can have a disruptive effect on a country's manufacturing sectors, properties and supply chains.

The report discusses how addressing BES challenges through preservation actions can have significant impacts. For example, ecosystem restoration along the coast of Louisiana could reduce expected flood costs by USD 5.3 billion annually.[2] Steps to ensure functioning coral reefs globally could lower estimated flood damages for 100-year storm events that would otherwise increase by 91% across the globe.[3]

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[2] Barbier E.B. 2015. Hurricane Katrina's lessons for the World. nature, 20 August 2015. Vol. 524, p. 285–287. Edward B. Barbier refers to the Coastal Protection and Restoration Authority of Louisiana: Louisiana's Comprehensive Master Plan for a Sustainable Coast. Office of Coastal Protection and Restoration 2012. The 2017 and 2023 plans are available online.

[3] Beck M.W., Losada, I.J., Menéndez P., Reguero B.G., Diaz-Simal P., Fernandez F. 2018: The global flood protection savings provided by coral reefs. Nature communications 2018, 9:2186.

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The Swiss Re Institute report that accompanies the launch of the index, "Biodiversity and Ecosystem Services: A business case for re/insurance", highlights several real-life cases of how BES impact economies.

For example, the destruction of the Aral Sea, which led to economic collapse and mass migration from the surrounding coastal area, provides an extreme illustration of how the collapse of an ecosystem can affect a local economy. Other examples include the economic impacts of invasive species, nutrient run-off and algal blooms or the effects of the loss of pollinators on the agricultural sector. Global medical research is also very much at threat from the decimation of rainforests, as almost 50% of all medicines are sourced from natural resources within this habitat.

How does the index work?

The Swiss Re BES Index provides a more holistic, comparative view of the state of BES globally. It works by aggregating data from ten different BES categories addressing water security, timber provision, food provision, habitat intactness, pollination, soil fertility, water quality, regulation of air quality and local climate, erosion control and coastal protection.

The aggregated data is provided at a resolution of 1 km^2 across the globe. This supports both a highly localised analysis of the ten BES categories, as well as the ability to provide a country-wide or regional view of biodiversity and ecosystem services.

The Swiss Re BES index also highlights the impact of BES on economic sectors, with manufacturing, real estate, professional and administrative activities, and wholesale and retail trade as priority sectors from an economic perspective.

"Using Swiss Re Institute's BES Index as a basis for decision-making in underwriting and asset management will make businesses and investments more resilient," said Jeffrey Bohn, Swiss Re's Chief Research Officer. "This index also underlines the important need for relevant nature-based insurance solutions and will create a new business segment for insurance, thereby strengthening resilience of affected regions and communities."

Swiss Re will make the index available as part of CatNet®, Swiss Re's online natural hazard information and mapping system. Using insights from Swiss Re Institute's BES Index enables clients to add a sustainability perspective to risk selection and inform their decision-making on the long-term risk-adequacy of their premiums. The availability of transparent risk assessment for BES services will in turn open up the market for nature-based insurance solutions, which allows governments to use risk transfer mechanisms to directly protect ecological resources.

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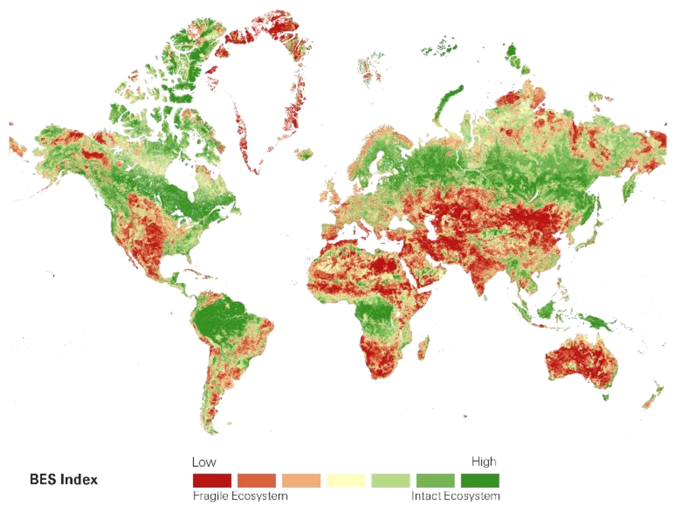

Figure 1: Swiss Re's Biodiversity and Ecosystem Services (BES) Index is provided at a resolution of 1km^2 across the globe. This supports both a highly localised analysis of the 10 BES categories, as well as the ability to provide a country-wide or regional view of biodiversity and ecosystem services globally.

BES Index ranking: G20 countries

Country	Share of fragile ecosystems in BES Index	Share of intact ecosystems in BES Index	GDP dependency on BES (indexed)
South Africa	40%	0%	0.40
Australia	34%	2%	0.30
India	28%	2%	0.71
Turkey	24%	1%	0.56
Mexico	24%	4%	0.44
Italy	21%	2%	0.35
China	18%	3%	0.64
Saudi Arabia	13%	5%	0.65
United States	12%	8%	0.24
European Union - excluding UK	11%	7%	0.38
Argentina	9%	3%	0.49
South Korea	6%	0%	0.50
Japan	4%	18%	0.37
Russia	4%	19%	0.52
France	4%	2%	0.26
United Kingdom	4%	1%	0.21
Brazil	4%	42%	0.41
Indonesia	3%	37%	0.80
Canada	3%	30%	0.34
Germany	2%	4%	0.38

Table 1: G20 rankings for Swiss Re Institute BES. We consider locations with high values of the SRI BES Index (upper 15th percentile globally) to be "intact" ecosystems with significant value for biodiversity and high capacity to provide ecosystem services. Locations with low BES values (lower 15th percentile globally) are considered to be "fragile" ecosystems that have suffered the effects of degradation.

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Notes to editors

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The Swiss Re Group is one of the world's leading providers of reinsurance, insurance and other forms of insurance-based risk transfer, working to make the world more resilient. It anticipates and manages risk – from natural catastrophes to climate change, from ageing populations to cybercrime. The aim of the Swiss Re Group is to enable society to thrive and progress, creating new opportunities and solutions for its clients. Headquartered in Zurich, Switzerland, where it was founded in 1863, the Swiss Re Group operates through a network of around 80 offices globally. It is organised into three Business Units, each with a distinct strategy and set of objectives contributing to the Group's overall mission.

How to order this Swiss Re Institute report:
Download the electronic version or order printed copies of Swiss Re Institute's report, "Biodiversity and Ecosystem Services: A business case for re/insurance" (English version): https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-biodiversity-and-ecosystems-services

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Certain statements and illustrations contained herein are forward-looking. These statements (including as to plans, objectives, targets, and trends) and illustrations provide current expectations of future events based on certain assumptions and include any statement that does not directly relate to a historical fact or current fact.

Forward-looking statements typically are identified by words or phrases such as "anticipate", "assume", "believe", "continue", "estimate", "expect", "foresee", "intend", "may increase", "may fluctuate" and similar expressions, or by future or conditional verbs such as "will", "should", "would" and "could". These forward-looking statements involve known and unknown risks, uncertainties and other factors, which may cause the Group's actual results of operations, financial condition, solvency ratios, capital or liquidity positions or prospects to be materially different from any future results of operations, financial condition, solvency ratios, capital or liquidity positions or prospects expressed or implied by such statements or cause Swiss Re to not achieve its published targets. Such factors include, among others:

- the frequency, severity and development of insured claim events, particularly natural catastrophes, man-made disasters, pandemics, acts of terrorism or acts of war;
- mortality, morbidity and longevity experience;
- the cyclicality of the reinsurance sector;
- central bank intervention in the financial markets, trade wars or other protectionist measures relating to international trade arrangements, adverse geopolitical events, domestic political upheavals or other developments that adversely impact global economic conditions;
- increased volatility of, and/or disruption in, global capital and credit markets;
- the Group's ability to maintain sufficient liquidity and access to capital markets, including sufficient liquidity to cover potential recapture of reinsurance agreements, early calls of debt or debt-like arrangements and collateral calls due to actual or perceived deterioration of the Group's financial strength or otherwise;
- the Group's inability to realize amounts on sales of securities on the Group's balance sheet equivalent to their values recorded for accounting purposes;
- the Group's inability to generate sufficient investment income from its investment portfolio, including as a result of fluctuations in the equity and fixed income markets, the composition of the investment portfolio or otherwise;
- changes in legislation and regulation, or the interpretations thereof by regulators and courts, affecting the Group or its ceding companies, including as a result of comprehensive reform or shifts away from multilateral approaches to regulation of global operations;
- the lowering or loss of one of the financial strength or other ratings of one or more companies in the Group, and developments adversely affecting its ability to achieve improved ratings;
- uncertainties in estimating reserves, including differences between actual claims experience and underwriting and reserving assumptions;

- policy renewal and lapse rates;
- uncertainties in estimating future claims for purposes of financial reporting, particularly with respect to large natural catastrophes and certain large man-made losses, as significant uncertainties may be involved in estimating losses from such events and preliminary estimates may be subject to change as new information becomes available;
- legal actions or regulatory investigations or actions, including in respect of industry requirements or business conduct rules of general applicability;
- the outcome of tax audits, the ability to realize tax loss carryforwards and the ability to realize deferred tax assets (including by reason of the mix of earnings in a jurisdiction or deemed change of control), which could negatively impact future earnings, and the overall impact of changes in tax regimes on the Group's business model;
- changes in accounting estimates or assumptions that affect reported amounts of assets, liabilities, revenues or expenses, including contingent assets and liabilities;
- changes in accounting standards, practices or policies;
- strengthening or weakening of foreign currencies;
- reforms of, or other potential changes to, benchmark reference rates;
- failure of the Group's hedging arrangements to be effective;
- significant investments, acquisitions or dispositions, and any delays, unforeseen liabilities or other costs, lower-than-expected benefits, impairments, ratings action or other issues experienced in connection with any such transactions;
- extraordinary events affecting the Group's clients and other counterparties, such as bankruptcies, liquidations and other credit-related events;
- changing levels of competition;
- the effects of business disruption due to terrorist attacks, cyberattacks, natural catastrophes, public health emergencies, hostilities or other events;
- limitations on the ability of the Group's subsidiaries to pay dividends or make other distributions; and
- operational factors, including the efficacy of risk management and other internal procedures in anticipating and managing the foregoing risks.

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