

News release

World economy set to lose up to 18% GDP from climate change if no action taken, reveals Swiss Re Institute's stress-test analysis

- New Climate Economics Index stress-tests how climate change will impact 48 countries, representing 90% of world economy, and ranks their overall climate resilience
- Expected global GDP impact by 2050 under different scenarios compared to a world without climate change:
 - 18% if no mitigating actions are taken (3.2°C increase);
 - 14% if some mitigating actions are taken (2.6°C increase);
 - 11% if further mitigating actions are taken (2°C increase);
 - 4% if Paris Agreement targets are met (below 2°C increase)
- Economies in Asia would be hardest hit, with China at risk of losing nearly 24% of its GDP in a severe scenario, while the world's biggest economy, the US, stands to lose close to 10%, and Europe almost 11%

Zurich, 22 April 2021 – Climate change poses the biggest long-term threat to the global economy. If no mitigating action is taken, global temperatures could rise by more than 3°C and the world economy could shrink by 18% in the next 30 years. But the impact can be lessened if decisive action is taken to meet the targets set in the Paris Agreement, Swiss Re Institute's new Climate Economics Index shows. This will require more than what is pledged today; public and private sectors will play a crucial role in accelerating the transition to net zero.

Swiss Re Institute has conducted a stress test to examine how 48 economies would be impacted by the ongoing effects of climate change under four different temperature increase scenarios. As global warming makes the impact of weather-related natural disasters more severe, it can lead to substantial income and productivity losses over time. For example, rising sea levels result in loss of land that could have otherwise been used productively and heat stress can lead to crop failures. Emerging economies in equatorial regions would be most affected by rising temperatures.

Major economies could lose roughly 10% of GDP in 30 years

In a severe scenario of a 3.2°C temperature increase, China stands to lose almost one quarter of its GDP (24%) by mid-century. The US, Canada and the UK would all see around a 10% loss. Europe would suffer slightly more (11%), while economies such as Finland or Switzerland are less exposed (6%) than, for example, France or Greece (13%).


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Thierry Léger, Group Chief Underwriting Officer and Chairman of Swiss Re Institute, said: "Climate risk affects every society, every company and every individual. By 2050, the world population will grow to almost 10 billion people, especially in regions most impacted by climate change. So, we must act now to mitigate the risks and to reach net-zero targets. Equally, as our recent biodiversity index shows, nature and ecosystem services provide huge economic benefits but are under intense threat. That's why climate change and biodiversity loss are twin challenges that we need to tackle as a global community to maintain a healthy economy and a sustainable future."

Climate Economics Index ranks countries' resilience to climate change

Along with evaluating each country's expected economic impact from climate risks, Swiss Re Institute also ranked each country on its vulnerability to extreme dry and wet weather conditions. In addition, it looked at the country's capacity to cope with the effects of climate change. Put together, these findings generate a ranking of countries' resilience to the impacts of climate change.

The ranking displays a similar view to the GDP impact analysis: Countries most negatively impacted are often the ones with fewest resources to adapt to and mitigate the effects of rising global temperatures. The most vulnerable countries in this context are Malaysia, Thailand, India, the Philippines and Indonesia. Advanced economies in the northern hemisphere are the least vulnerable, including the US, Canada, Switzerland and Germany.

Public and private sectors play a crucial role in accelerating climate action

Given the consequences highlighted in Swiss Re Institute's analysis, the need for action is indisputable. Coordinated measures by the world's largest carbon emitters are crucial to meet climate targets. The public and private sectors can facilitate and accelerate the transition, particularly regarding sustainable infrastructure investments that are vital to remain below a 2°C temperature increase. Given the long-term horizon of their liabilities and long-term capital to commit, institutional investors such as pension funds or insurance companies are also ideally positioned to play a strong role.

Jérôme Haegeli, Swiss Re's Group Chief Economist, said: "Climate change is a systemic risk and can only be addressed globally. So far, too little is being done. Transparency and disclosure of embedded net-zero efforts by governments and the private sector alike are crucial. Only if public and private sectors pull together will the transition to a low-carbon economy be possible. Global cooperation to facilitate financial flows to vulnerable economies is essential. We have an opportunity to correct the course now and construct a world that will be greener, more sustainable and more resilient.

Our analysis shows the benefit of investing in a net-zero economy. For example, adding just 10% to the USD 6.3 trillion of annual global infrastructure investments would limit the average temperature increase to

below 2°C. This is just a fraction of the loss in global GDP that we face if we don't take appropriate action."

Mitigating climate change requires a whole menu of measures. More carbon-pricing policies combined with incentives for nature-based and carbon-offsetting solutions are needed, as well as international convergence on taxonomy for green and sustainable investments. As part of financial reporting, institutions should regularly disclose how they plan to achieve the Paris Agreement and net-zero emission targets. Re/insurers also play a role in providing risk transfer capacity, risk knowledge and long-term investment, using their understanding of risk to help households, companies and societies mitigate and adapt to climate change.

Notes to editors

Methodology of the report

The Swiss Re Institute scenario analysis uses insights gained from an existing model by Moody's Analytics, quantifying the gradual impacts of climate change over time, and from research by the World Bank, identifying so-called "impact channels", such as the effect of rising temperatures on productivity. Swiss Re Institute's analysis incorporates the uncertainties related to the potential economic impacts of climate change under different scenarios of global temperature increase and at different levels of severity. These uncertainties include additional and typically omitted impact channels, such as potential disruptions to supply chains and trade due to climate change, as well as respective economic sensitivities. A detailed description of the methodology can be found in the report.

Download the electronic version of Swiss Re Institute's report

"The economics of climate change risks: no action not an option" (English version):
<https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-economics-of-climate-change.html>

Link to interactive tool

Full details and in-depth analyses from Swiss Re's Climate Economics Index are available in an [interactive tool](#) on [swissre.com](https://www.swissre.com)

Background on Swiss Re Institute's Biodiversity and Ecosystems Services (BES) study:

[A fifth of countries worldwide at risk from ecosystem collapse as biodiversity declines, reveals pioneering Swiss Re index | Swiss Re](#)

Swiss Re

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.

Climate Economics Index: mid-of-century

The Climate Economics Index looks at which economies would be hardest hit, most exposed and best positioned to adapt to climate risk. It ranks countries based on: Expected economic impact from "chronic" climate risks linked to gradual temperature rises; the degree to which it is vulnerable to extreme weather events and severe hot/wet conditions; and a country's current adaptive capacity.

Rank	Country	Physical risk (70%)			Current adaptive capacity (30%)	Total Index
		Chronic risk (GDP impact, RCP8.5, x10 factor) (30%)	(Extreme weather risk)			
			Dry climate risk score (20%)	Wet climate risk score (20%)		
1	Finland	3	8	32	8	11.3
2	Switzerland	4	12	37	2	11.6
3	Austria	7	15	41	6	15.1
4	Portugal	9	21	30	10	15.9
5	Canada	12	18	20	16	16.0
6	Norway	6	29	34	10	17.4
7	US	13	34	12	16	17.9
8	Sweden	10	28	36	7	17.9
9	Denmark	1	40	48	3	18.8
10	Germany	17	25	45	1	19.4
11	Japan	22	35	16	9	19.5
12	Spain	14	17	31	19	19.5
13	Greece	28	3	25	21	20.3
14	Australia	33	16	17	13	20.4
15	UK	11	36	47	4	21.1
16	Turkey	15	4	26	36	21.3
17	Netherlands	5	26	46	18	21.3
18	New Zealand	29	2	27	24	21.7
19	Italy	31	7	33	15	21.8
20	Korea	24	30	14	20	22.0
21	Hungary	19	9	39	23	22.2
22	Romania	21	5	35	27	22.4
23	United Arab Em	41	6	1	29	22.4
24	Belgium	8	27	42	21	22.5
25	Hong Kong	35	39	2	13	22.6
26	Ukraine	2	10	38	42	22.8
27	France	26	19	40	12	23.2
28	Argentina	20	22	10	37	23.5
29	Mexico	25	20	15	31	23.8
30	Egypt	23	11	3	47	23.8
31	Russia	27	13	28	32	25.9
32	Poland	16	24	44	25	25.9
33	Czech	18	23	43	26	26.4
34	Saudi Arabia	43	14	4	38	27.9
35	South Africa	37	1	18	45	28.4
36	Chile	39	31	9	30	28.7
37	Taiwan	40	41	6	28	29.8
38	Brazil	34	42	8	33	30.1
39	Singapore	47	44	29	5	30.2
40	Peru	30	46	7	41	31.9
41	China	38	33	21	35	32.7
42	Colombia	36	38	22	40	34.8
43	Venezuela	32	32	24	48	35.2
44	Thailand	45	43	11	39	36.0
45	India	42	37	13	46	36.4
46	Philippines	46	48	5	43	37.3
47	Malaysia	48	47	23	33	38.3
48	Indonesia	44	45	19	44	39.2