

# Johan Rockström Wins ‘Environmental Nobel Prize’ for Identifying the Boundaries of Earth’s Life-Support

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By Rochelle Toplensky

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Johan Rockström is director of the Potsdam Institute for Climate Impact Research and the author of the Planetary Boundaries framework. Photo: Jadranko Marjanovic

Swedish scientist Johan Rockström has won the Tyler Prize—often called the environmental Nobel Prize—for his research on the limits of the life-support systems that have helped keep the earth climate relatively stable over the past 11,700 years.

The committee announced on Thursday that the author of the Planetary Boundaries framework won the prize. The \$250,000 prize was inaugurated in 1973 with the help of former President Ronald Reagan—then Governor of California—and is administered by the University of Southern California. It has been previously awarded to Jane Goodall and Michael Mann.

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“The Planetary Boundaries science is a critical measurement framework for the world to ensure we protect our life-support systems,” said Mary Robinson, former president of Ireland, chair of The Elders and a Planetary Guardian.

Rockström’s work defined nine planetary systems which help buffer our impact on the world, including ozone layer, freshwater resources, biodiversity and a stable climate. “Systems...which regulate the environmental conditions on Earth are dominated by feedbacks that buffer and dampen stress from global warming. Push them too far and they cross tipping points, making them shift from dampening to self-reinforcing, from cooling to warming,” said Rockstrom.

Analysis in 2009 found we had breached three of the seven boundaries that could be quantified. In 2015 we crossed four of the seven and by September last year we crossed six of nine boundaries and “Earth is now well outside of the safe operating space for humanity,” a report said.

Just as environmental science shows the need for collective action, the world is moving away from trust, toward more nationalist, short termism populism, said Rockström in an interview with WSJ Pro. “This is perhaps the most worrying discrepancy of them all and how to counteract that is a huge task for political leadership in the world today,” he said.

“It would be a complete disaster to have Donald Trump back in the White House, given his skepticism with regards to all science, but also his skepticism to global collaboration,” said Rockström.

The U.S. has played an important leadership role in climate action recently and there never would have been an agreement in Dubai to transition away from fossil fuels without the U.S. China agreement at Sunnylands, said Rockström.

As the world’s largest current CO2 emitter by a large margin, what “happens in China will in the end, determine the outcome for the world,” said Rockström. He worries that China—like Germany, Norway, the U.S. and other countries—are “double gaming” by investing in green technologies while also investing in fossil fuels.

While many focus on governments, Rockström said companies also have an important climate-action role to play. He highlighted how ahead of the U.N. climate conference in 2015 the World Business Council for Sustainable Development and others worked behind the scenes to give politicians the confidence needed to go achieve the landmark Paris climate accord.

“Earth is now well outside of the safe operating space for humanity.”

— Johan Rockström

Going forward, Rockström said companies need to start talking more about the opportunity of the transition, not just complain about compliance with the admittedly numerous new rules and requirements. But even more importantly, he said, businesses need to push national leaders to establish domestic policies and incentives that match the global decarbonization promises they have signed up to.

The Inflation Reduction Act, Europe's emission trading scheme and its carbon border adjustment mechanism are really important policies, Rockström said. The IRA has accelerated the decarbonization pathway in the U.S., as well as creating "positive stress" on competitiveness in Europe, meaning we're starting to put real economic resources behind the green transition, he added.

While efforts to stay within 1.5 degrees Celsius are a major global focus, climate change is only one of the nine planetary boundary systems. "We will not solve the climate crisis by only phasing out fossil fuels," Rockström said. He said we must come back into the safe space for biosphere boundaries related to biodiversity, to freshwater, nitrogen, phosphorus and land.

"The only way to solve the climate crisis is to phase out fossil fuels and transition the global food systems... simultaneously," he said. While acknowledging this is a massive challenge, Rockström thinks we have solutions. He suggests paying farmers for the ecosystem services such as conserving water or protecting biodiversity while also "internalizing the externalities" with policies like a universal moratorium to stop deforestation of tropical rainforests and global prices on things like methane from livestock and carbon-dioxide emissions.

There are around 70 carbon pricing initiatives around the globe, according to the World Bank. Some are around \$100 a metric ton, but most are much cheaper. Rockström said the latest research shows the true social cost of carbon is between \$250 and \$500 a metric ton, if you measure impacts on the economies of extreme events, but also impacts on humans.

Rockström will receive the prize at a ceremony in Germany in May. "His scientific achievements, coupled with his ability to influence policy and engage with the public, have made an invaluable contribution to our planet's welfare," said Tyler Prize Chair Julia Marton-Lefèvre.

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