1. How would a US bitcoin strategic reserve work?

Introduction

Bitcoin hit a record high above $107,000 on Monday after President-elect Donald Trump reiterated plans to create a U.S. bitcoin strategic reserve, stoking the enthusiasm of crypto bulls. Here's how the plan could work.

What is a strategic reserve?

A strategic reserve is a stock of a critical resource which can be released at times of crisis or supply disruptions. The best-known example is the U.S. Strategic Petroleum Reserve, the world's largest supply of emergency crude oil, which was created by an act of Congress in 1975 after a 1973-74 Arab oil embargo throttled the U.S. economy.

Presidents have tapped the stockpile to calm oil markets during war or when hurricanes hit oil infrastructure along the U.S. Gulf of Mexico.

Canada has the world's only strategic reserve of maple syrup, while China has strategic reserves of metals, grains and even pork products.

How would a US strategic bitcoin reserve work?

It is currently unclear whether Trump could use his executive powers to create the reserve, or whether an act of Congress would be necessary. Some have argued Trump could create the reserve via an executive order directing the U.S. Treasury's Exchange Stabilization Fund, which can be used to purchase or sell foreign currencies, and to also hold bitcoin.

This reserve could include bitcoin seized from criminal actors by the government. That stands at around 200,000 tokens, worth about $21 billion at the current price, according to bitcointreasuries.net. Trump suggested in a July speech unveiling his bitcoin reserve plan that this stockpile could be the starting point.

Trump has not said if the government would add to that stockpile by buying more bitcoin in the open market. To do that, the government may have to issue debt, although some proponents of a bitcoin reserve say the United States could sell some of its gold reserves and use the proceeds to buy bitcoin.

What are the benefits of a bitcoin reserve?

In his July speech, Trump suggested a bitcoin reserve would help the U.S. dominate the global bitcoin market in the face of growing competition from China.

Other proponents argue that by holding a stockpile of bitcoin, which they say is likely to continue appreciating over the long term, the U.S. could reduce its deficit without raising taxes, strengthening the U.S. dollar.

A strong dollar would in turn give the United States more leverage over foreign adversaries like China and Russia, proponents say.

What are the risks?

Crypto sceptics say that, unlike most other commodities, bitcoin has no intrinsic use and is not crucial to the functioning of the U.S. economy.

Created in 2008, bitcoin remains too young and volatile to presume its value will continue to rise in the long term, while crypto wallets remain notoriously vulnerable to cyber attacks, they also argue. And given its volatility, any government purchases or sales could have an outsized impact on bitcoin's price.

Relevance: GS Prelims & Mains Paper III; Economics

2. Why scientists are recommending Punjab's farmers grow barley

Introduction

Recently, scientists suggested that barley should be grown in Punjab in a bid to diversify wheat-paddy monoculture in the state. Barley requires much less water to grow compared to paddy, and is healthier than wheat.

In recent years, the area under barley cultivation has dramatically shrunk across India, including in Punjab. In 1960-61, barley cultivation area stood at 3.20 million hectares in India, and 66,000 hectares in Punjab. However, it came down to 0.54 million hectares and 5,000 hectares in India and Punjab respectively.

Low water consumption, low input cost

Unlike barley, paddy and wheat require a huge amount of water to grow. Moreover, there is more input cost for growing paddy and wheat. For instance, to grow barley in one acre, a farmer would need 35 kg of seeds but for wheat would require 40 kg of seeds. Even the fertilisers required for farming paddy and wheat end up being more costly. To grow barley, 55 kg of urea and 25 kg of diammonium phosphate (DAP) are required. Whereas for wheat, almost double amounts of 110 kg urea and 55 kg DAP are recommended respectively.

Moreover, barley has less gluten compared to wheat, which is 80% gluten and can lead to serious health issues such as cancer, kidney damage, and leaky gut syndrome.

Barley provides better nutrients than other food grains. It contains a high amount of active ingredients, such as beta-glucan (5-10%), whereas wheat contains only 1.6% and rice contains 0.82%. It also contains phytochemicals, resistant starch, lignin, ferulic acid, phytosterols, and antioxidants.

Barley also comprises insoluble fibre, vitamins, protein, and other important elements.

Helps with diabetics

With 11.4% of the Indian population and 10% in Punjab being diabetic, barley could be a choice of grain with its glycemic index of 28 comparable to wheat. It keeps the sugar content in the blood low. In addition, beta-glucan also increases the effectiveness of insulin (an element essential for the digestion of sugar) as well as stimulates the production of another hormone called glucagon-like peptide-1, which produces and uses equal amounts of glucose. Beta-glucan makes a jelly-like substance in the intestine which reduces the feeling of hunger. It can also reduce the risk of obesity.

Keeps cholesterol in check

Beta-glucan also provides a base for health-beneficial bacteria and helps in the formation of short-chain fatty acids (SCFAs) quickly. The SCFA helps in keeping cholesterol levels in check by slowing down the production of cholesterol in the liver and intestines.

The indigestible fibres found in barley keep the gut strong and the liver healthy.

Challenges

More research is required to establish barley as a "superfood". It is clear that Punjab needs an alternative for paddy which is responsible for decreasing the levels of underground water, harming the environment, and pollution via stubble burning.

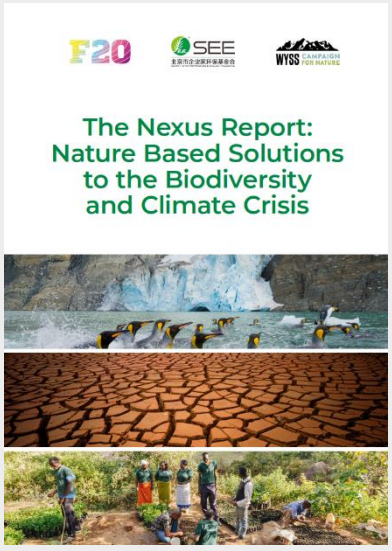
However, barley is a rabi crop and can replace only wheat. Crores were spent on developing harvesting machines for wheat and paddy. For introducing a new crop, more investment would be required, he added.

Relevance: GS Prelims; Economics

3. Climate change and biodiversity loss are connected: Key takeaways from NEXUS report

Overall view

A new major scientific report has highlighted the strong interlinkages between some of the biggest challenges facing humankind such as climate change, biodiversity loss and hunger, and emphasised on the need for adopting an integrated approach in addressing these issues. Trying to deal with these challenges separately, while ignoring the interactions with and influences on others, was not just likely to be ineffective, but also counterproductive, according to the report.



The report, the first of its kind looking at the interconnections between these multiple crises, has been produced by Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), a global group of scientific experts. The group examined five major challenges — climate change, biodiversity loss, food insecurity, water scarcity, and health risks — and found that they were strongly interconnected.

It said the manner in which economic activities were currently being carried out had big negative impacts on biodiversity, climate change, food production, water and health. The unaccounted-for costs of these adverse effects are estimated to be at least $10-25 trillion a year.

What is IPBES?

IPBES is to biodiversity and natural ecosystems what the more famous Intergovernmental Panel on Climate Change (IPCC) is to climate change. It periodically examines all the existing scientific knowledge on biodiversity and nature to make an assessment of their current state. Just like IPCC, IPBES too does not produce new science. It only evaluates the existing knowledge to make consolidated assessments.

The information provided by IPCC, which came into being in 1988, have formed the scientific basis for climate change negotiations. The much younger IPBES, set up in 2012, informs several multilateral environmental processes, including the UN Convention on Biological Diversity (CBD), the Convention on Combating Desertification (CCD), the Ramsar Convention on Wetlands, Convention on International Trade in Endangered Species, and the Cartagena Protocol on Biosafety.

First Report

IPBES produced its first report in 2019 in which it assessed the threat to global biodiversity. That report found that as many as one million different species of plants and animals, out of an estimated eight million in total, were facing extinction threats, more than at any previous time, mainly due to the changes in natural ecosystems caused by human activities. It had said nearly 75 per cent of the Earth's land surface and 66 per cent of marine environments had been "significantly altered", and over 85 per cent of wetlands had been "lost".

The information in this report became the basis for the Kunming-Montreal Global Biodiversity Framework, an international agreement that was finalised in 2022. This agreement set 23 targets to be met by 2030 in order to halt and reverse biodiversity loss. These include what are known as the 30 x 30 targets — protecting at least 30 per cent of the land, freshwater and oceans, and restoring at least 30 per cent of degraded ecosystems by 2030.

What does the latest report say?

The latest assessment of IPBES is called the Nexus Report, which has highlighted the strong interlinkages between the five identified global challenges. Its key takeaway is that responses to all these challenges need to be harmonised so that positive actions taken on any one of

these does not result in negative impacts on others, something that is quite possible, as exemplified in several current approaches.

For example, an attempt to scale up food production, a positive action to deal with hunger and malnutrition, could have the unintended consequence of increasing stress on land and water resources and biodiversity. Exclusive focus on climate change could also go down on the same pathway. Similarly, protecting land and oceans could restrict choices on climate change and food security.

The report, therefore, argues that it was important to adopt synergistic approaches that deliver benefits across the spectrum.

Such synergistic approaches were available, the report said, and identified over 70 response options that produced positive outcomes across the five elements. Examples of such response measures included restoration of carbon-rich ecosystems such as forests, soils and mangroves, effective management of biodiversity to reduce risks of diseases spreading from animals to humans, promotion of sustainable healthy diets, and reliance on nature-based solutions wherever possible.

There were other response options that deliver benefits on two or three elements but not all. These were important but needed to be implemented carefully, the report said.

It said that the effort must be to find, and implement, actions that focus on sustainable production and consumption while also conserving and restoring ecosystems, reducing pollution, and mitigating the impacts of climate change.

How is damaging biodiversity leading to economic loss?

The report emphasised that nature and biodiversity were important not just for ecological and aesthetic reasons but also for purely economic reasons. It pointed out that more than half of the global GDP — about 58 trillion dollars worth of annual economic activity — was moderately to highly dependent on nature. Deterioration of natural ecosystems, therefore, could directly hurt productivity and adversely impact economic output.

As it is, the world has been witnessing biodiversity decline at the rate of about 2-6 per cent on an average every decade over the last half a century, the report said. It also highlighted that existing economic systems still offered trillions of dollars in incentives every year for actions that have direct negative impacts on biodiversity and natural ecosystems.

In another report released simultaneously, IPBES called for fundamental and transformative shifts in the way people view and interact with the natural world in pursuit of its well-being.

This report, being called the Transformative Change Report, said current, and previous, approaches to deal with ecological decline had failed, and a new and different approach was needed to halt the slide further.

This new and transformative approach, it said, must be based on four fundamental principles — equity and justice, pluralism and inclusion, respectful and reciprocal human-nature relationships, and adaptive learning and action.

It said the world needed to act immediately on such new approaches because the cost of delaying action would significantly increase the costs, almost doubling in just about a decade. There were also economic benefits to be had from immediate action. It said recent estimates suggested that more than 10 trillion dollars in business opportunities, and about 400 million jobs, could be generated by 2030 through sustainable economic approaches that rely on nature-positive economic models.

Relevance: GS Prelims & Mains Paper III; Enironment