DAILY CURRENT AFFAIRS

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THE ISSUE OF INDIA'S ECONOMIC GROWTH VERSUS EMISSIONS

The issue of India's economic growth versus emissions

The Indian economy has consistently showcased its robust growth over the past few decades. But higher economic growth is believed to have come with increasing environmental pressure, notably through higher greenhouse gas (GHG) emissions. However, India's Economic Survey (2023-24) claims that India has decoupled its economic growth from GHG emissions, as between 2005 and 2019, India's GDP grew at a compound annual growth rate (CAGR) of 7%, while emissions rose at a CAGR of just 4%. This raises a crucial question: has India really decoupled its economic growth from GHG emissions? And, what does this mean for sustainable development?

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A look at the claim made in the Economic Survey (2023-24), of India having decoupled its economic growth from greenhouse gas emissions

What it means

Decoupling refers to breaking the link between economic growth and environmental degradation. Historically, economic growth is found to be positively related with environmental degradation, as this growth is believed to be a driver of GHG emissions. However, with the growing climate crisis, the imperative to reduce emissions while ensuring continued economic growth has gained global traction.

Decoupling has largely been classified into two types: absolute decoupling and relative decoupling. Absolute decoupling occurs when the economy grows, while emissions decrease. This is the ideal form of decoupling, where countries grow economically without increasing environmental harm. However, relative decoupling happens when both GDP and emissions grow, but the rate of GDP growth surpasses the rate of emissions growth. While this signifies progress, at the same time, it acknowledges that emissions continue to rise.

Decoupling of economic growth and GHG emissions is important. On one hand, it offers a path to sustainable growth and development, a way for nations to grow and improve living standards without exacerbating climate change. On the other, it comes as a response to rising demand for degrowth and sparks the ongoing debate between green growth and degrowth. Proponents of green growth argue that it is possible to maintain or even increase economic growth while reducing environmental harm. In contrast, degrowth advocates suggest that economic growth itself is the primary driver of ecological degradation and should be curbed in favour of reducing resource consumption. But proponents of degrowth overlook the fact that countries, in addition to tackling rising GHG emissions and the climate change, are also required to tackle low standards of living, energy poverty and ensure a decent life, which could be taken care of through economic growth.

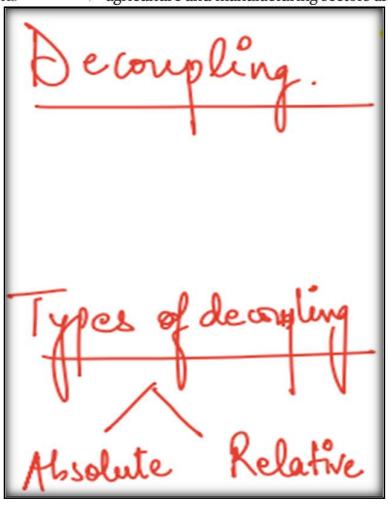
The claim

The claim of India's decoupling made in the Economic Survey comes from comparing GDP and emissions growth rates between 2005 and 2019. The Survey does not specify whether this represents absolute or relative decoupling. Using various decoupling indicators discussed in OECD (2002), we examine the status of the economy-wide and sector-wise decoupling status for India. Since the 1990s, with significant trade liberalisation, India has been experiencing steady and stable economic growth. Hence, we are examining how GDP and emission generation are growing in India with respect to the levels of 1990. While there has been no absolute decoupling in India, since 1990, GDP in India has grown at a much higher pace than the GHG emissions in the country, indicating economy-wide relative decoupling. Since, the agriculture and manufacturing sectors are among the major contributors of emission generation in India, it is also important to understand whether these sectors have also achieved decoupling or not, which has been assessed by comparing rate of growth of GVA of the respective sector with the rate of growth of GHGs emitted by the sector. From 1990, India's GDP has grown six-fold, while GHG emissions have only tripled.

Efforts must continue

From the data, it seems that India may have achieved relative decoupling, where emissions are still rising but at a slower pace than the economy. This achievement, while commendable, falls short of the ultimate goal of absolute decoupling, where economic growth can continue even as emissions fall. While most countries fall short of achieving absolute decoupling and still experience rising emissions as GDP increases, many countries have at least managed to achieve a declining rate of growth of emissions. Given that India is a developing country which has not even peaked its emissions yet, emissions are expected to increase with economic growth. Hence, achieving absolute decoupling is not going to happen anytime soon. While India's relative decoupling is a step in the right direction, the path to absolute decoupling is still a long and complex journey. Efforts must still be taken and it will be a significant challenge. This remains a necessary target if India is to meet its long-term climate commitments. Policies and measures that support renewable energy, emission mitigation, and sustainable development will be crucial in ensuring that economic growth and environmental preservation can coexist, ensuring a prosperous and sustainable future for India.

The views expressed are personal



Introduction

- India has demonstrated robust economic growth over the past few decades.
- Economic Survey (2023-24) claims a **decoupling** of economic growth from GHG emissions:
  - Between 2005-2019:
    - GDP grew at a CAGR of 7%.
    - GHG emissions grew at a CAGR of 4%.
- Raises key questions:
  - Has India truly decoupled economic growth from GHG emissions?
  - What does this mean for sustainable development?

Understanding Decoupling

- **Definition**: Breaking the link between economic growth and environmental degradation.
  - **Historical Context**:
    - Economic growth often correlates with higher environmental degradation.
    - Climate crisis necessitates reducing emissions while maintaining growth.

Types of Decoupling

- **Absolute Decoupling**:
  - Economy grows while emissions decrease.
  - Ideal scenario for sustainable development.
- **Relative Decoupling**:
  - Economy and emissions both grow, but GDP growth outpaces emission growth.
  - Indicates progress but acknowledges rising emissions.

Importance of Decoupling

- **Sustainable Growth**:
  - Enables nations to improve living standards without worsening climate change.
- **Response to Degrowth Debate**:
  - **Green Growth**: Advocates maintaining economic growth while reducing environmental harm.
  - **Degrowth**: Suggests curbing economic growth to reduce ecological degradation.
  - **Critique of Degrowth**: Overlooks challenges like low living standards, energy poverty, and the need for economic growth in developing nations.
- **India's Decoupling Claim**
  - Based on Economic Survey's comparison of GDP and emissions growth rates (2005- 2019).
  - Lack of clarity on absolute vs. relative decoupling.
  - Analysis:
    - **Economy-wide Relative Decoupling**:
      - Since 1990:
      - GDP grew six-fold.
      - GHG emissions tripled.
    - GDP growth has significantly outpaced emissions growth.

- **Sectoral Analysis**:
  - Agriculture and manufacturing are major contributors to emissions.
  - Compared growth of sectoral GVA with sectoral GHG emissions growth

Key Findings

- **Relative Decoupling Achieved**: Emissions continue to rise but at a slower pace than GDP growth.
- **Absolute Decoupling Not Achieved**: Emissions are still increasing.
- **Sectoral Insights**: Agriculture and manufacturing show varying levels of progress in decoupling.

Challenges and Future Path

- **Challenges**:
  - India has not peaked its emissions yet.
  - Absolute decoupling remains a distant goal for a developing nation.
  - Emissions are expected to rise with economic growth.
- **Efforts for Sustainable Development**:
  - Policies to support:
    - Renewable energy.
    - Emission mitigation.
    - Sustainable development initiatives.
  - Long-term goal: Absolute decoupling to meet climate commitments.

STUDY BRINGS INDIAN STAR TORTOISE TO EVIDENCE BASED CONSERVATION

Study brings Indian star tortoise to evidence-based conservation

Researchers have identified two genetically distinct groups of the species. The genetic divergences showed up as differences in physical features that could inform strategies on where and how to release and conserve rescued tortoises, Subhasree Sahoo, a Ph.D. student and first author of the study, says

Sanjukta Mondal
BENGALURU

The Indian star tortoise (*Geochelone elegans*) is a sight to behold, with its obsidian shell and the striking sun-yellow star patterns adorning it. These tortoises are hardy herbivores and are popular as exotic house pets – but they shouldn't be. It's illegal to own one in India but also unethical since they are vulnerable in the wild.

Endemic to the subcontinent, Indian star tortoises reside in arid pockets of northwest India (bordering Pakistan), South India, and Sri Lanka. However, members of the species have also been found in people's homes as far afield as Canada and the U.S. The increasing demand for them as pets has entangled them in one of the largest global wildlife trafficking networks.

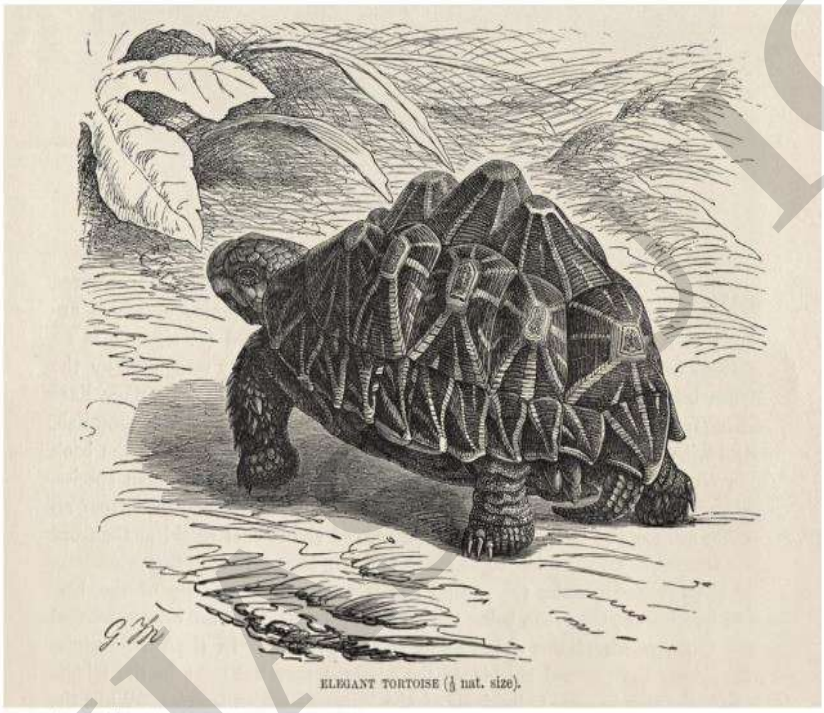
The Indian star tortoise is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in Schedule I of the Wildlife (Protection) Act 1972, which provides the highest level of protection to animals in Indian law. Despite this, officials have already seized hundreds of tortoises being smuggled through the Chennai and Singapore airports and across the India-Bangladesh border this year.

Wildlife biologist Sneha Dharwadkar, co-founder of an NGO called Freshwater Turtles and Tortoises of India, is worried that unscientific releases of the seized tortoises could worsen their fate. "We can no longer simply take confiscated tortoises and release them in nearby forests," Dharwadkar wrote in an email.

To find an alternative, researchers from the Wildlife Institute of India and Panjab University explored the diversity and natural distribution in India by sequencing the genomes of Indian star tortoise in zoos, wildlife reserves, and protected areas.

The study identified two genetically distinct groups of Indian star tortoises: northwestern and southern.

The genetic divergences showed up as differences in physical features that could inform strategies on where and how to release and conserve rescued tortoises, Subhasree Sahoo, a PhD student at the Wildlife Institute of India, Dehradun, and first author of the study, said.



An engraving of an Indian star tortoise. THE ROYAL NATURAL HISTORY (1896)

THE GIST

Endemic to the subcontinent, Indian star tortoises reside in arid pockets of northwest India (bordering Pakistan), South India, and Sri Lanka

The Indian star tortoise is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in Schedule I of the Wildlife (Protection) Act 1972

Officials have already seized hundreds of tortoises being smuggled through the Chennai and Singapore airports and across the India-Bangladesh border this year

Same but different

Millions of years ago, *Geochelone*, the group that includes the Indian star tortoise, spread across the Indian subcontinent after the latter split from the Gondwana supercontinent and collided with Eurasia.

Over time, parts of the subcontinent became arid and encouraged the growth of savannahs and open grasslands in northwestern and peninsular India, which are now the tortoises' natural habitats.

But the creation and expansion of savannahs came at the expense of humid forests: the increasingly seasonal nature of the monsoons restricted them to parts of southwest India and Sri Lanka. This separation of humid and dry areas paralleled the splitting of the tortoises into northern and southern groups about 2 million years ago.

To find genetic evidence of this split, the researchers of the new study collected tortoise tissue samples from 14 locations.

"These tortoises are very rare to encounter, so I chose the rainy season because that's the breeding season. They're the most active. That's also what poachers do," Sahoo said. With the help of frontline forest staff and local communities living near the tortoises' natural range, she was able to collect 38 samples from northwestern India and 44 from southern India.

Researchers prefer tortoises' blood samples for genetic testing but even small mistakes when drawing blood can cause profuse bleeding. This is manageable in controlled environments like zoos or wildlife reserves, and less so in the wild.

"When I was in Kakatiya Zoo in Telangana, a zookeeper told me, 'Madam, why do you want to take blood? You can take the scutes, right? They come off very easily'," Sahoo said. Scutes are keratin layers found on the tortoises' limbs, neck, and shell. "I peeled off some scute from the zoo in Kakatiya and tested [it] in the lab, and it worked just fine."

The increasing demand for them as pets has entangled them in one of the largest global wildlife trafficking networks

Once collected, the researchers extracted DNA from the tissue samples. Then they sequenced the mitochondrial genes cytochrome B and NADH dehydrogenase 4. The gene for cytochrome B is highly conserved and used to identify subspecies-level differentiation and later to detect smaller genetic variations between the samples.

The researchers also screened 10 microsatellite markers: short DNA sequences that repeat in a particular location in the genome. They serve as a genome's fingerprint and are helpful to identify how individuals of the same species are related, how they mate, and recent changes in their population.

The results revealed that even after illegal poaching and unscientific releases, the northwestern group remains largely genetically unchanged whereas the southern group is highly diverse.

"For a long time, on-ground practitioners have suspected the presence of at least two evolutionarily significant units, or ESUs – populations of organisms considered distinct for conservation purposes," Dharwadkar said. "This paper provides a reliable confirmation of that."

Restoring natural order

Sandeep Kumar Gupta, nodal officer at the Wildlife Institute of India, Dehradun, and corresponding author of the study said that since different Indian star tortoises are found in different areas, it's crucial to not mix the populations during release. Doing so might lower their genetic diversity and depress breeding rates.

Sahoo also raised the concern of shell-pyramiding in captive-bred star tortoises. These tortoises develop pyramid-shaped shells instead of the dome-like shells in the wild due to nutritional deficiencies, and can further complicate mating and breeding issues.

Gupta also emphasised greater public awareness of the legality of keeping certain species as pets and the importance of adhering to national laws on this front.

Overall, the team expressed belief in its paper that the findings could benefit both national and international agencies with evidence-based conservation of the Indian star tortoise.

(Sanjukta Mondal is a chemist-turned-science-writer with experience in writing popular science articles and scripts for STEM YouTube channels. sanjuktamondal.sm@gmail.com)

Context :

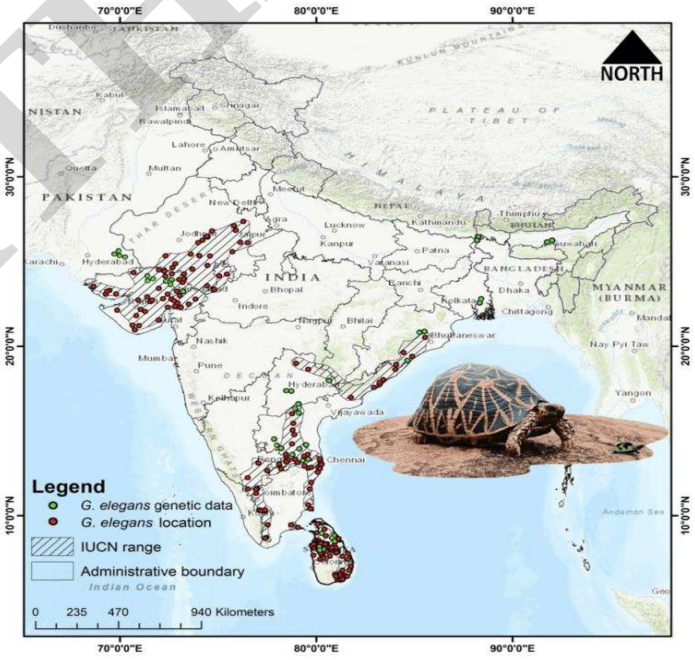
- The Indian star tortoise (*Geochelone elegans*) is a visually striking species known for its obsidian shell adorned with sun-yellow star patterns. While these hardy herbivores are popular as exotic pets, owning one is illegal and unethical in India due to their vulnerability in the wild. The species is entangled in global wildlife trafficking, further exacerbating their plight.

Indian star tortoise – A conservation challenge

- It is a species of tortoise found in dry areas and scrub forests of India, Pakistan and Sri Lanka. It is accustomed to monsoon seasons. These tortoises are easily recognizable by their star-patterned shells.
- It is a diurnal animal that is mostly active in the morning and late in the afternoon.
- **Behaviour and Temperament:** Indian star tortoises do not like being handled. They can get stressed out and get ill if handled frequently.
- **Food Habits:** Star tortoises are herbivores. They need plenty of fresh and dark leafy greens and grasses.

Habitat and Distribution

- **Native Range**: Endemic to the Indian subcontinent.
  - Found in **arid regions of northwest India**, **South India**, and **Sri Lanka**.
- **Illegal Presence**: Individuals have been discovered in homes as far as Canada and the U.S., driven by the high demand for exotic pets



Legal Protection

- **CITES**: Listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), ensuring strict trade regulations.
- **Indian Wildlife Protection**: Included in Schedule I of the Wildlife (Protection) Act, 1972, granting the species the highest level of legal protection.
- **Seizures**:Hundreds of tortoises have been confiscated in trafficking attempts through Chennai, Singapore airports, and the IndiaBangladesh border.

Conservation Challenges

1. **Unscientific Releases**:
    - Wildlife biologist Sneha Dharwadkar expressed concerns over improper releases of confiscated tortoises, which may worsen their fate.

2. **Genetic Studies**:
    - Research conducted by the Wildlife Institute of India and Panjab University identified two genetically distinct groups:
        - **Northwestern group**
        - **Southern group**
    - Differences in physical features and genetic makeup inform conservation and release strategies.

UPSC PYQ 2013

Q.1 Consider the following: (2013)

1. Star tortoise
2. Monitor lizard
3. Pygmy hog
4. Spider monkey

Which of the above are naturally found in India?

(a) 1, 2 and 3 only
(b) 2 and 3 only
(c) 1 and 4 only
(d) 1, 2, 3 and 4

CHANDIGARH LEADS IN ENFORCING CRIMINAL LAWS

Chandigarh leads in enforcing criminal laws

Union Territory is first in the country to implement three new laws in their entirety; it has ramped up Internet speed at police stations, provided new tablets to investigators, and set up videoconferencing facilities for speedy trials; the police also use the DigiLocker service to store digital evidence

Vijaita Singh
CHANDIGARH

Five months after three criminal laws came into effect in the country, Chandigarh has become the first among all States and Union Territories to implement the laws in their entirety.

To link key pillars of the criminal justice system – the police, forensics and judiciary – the Chandigarh administration has ramped up Internet speed at police stations, provided new tablets to investigators, and set up videoconferencing facilities for speedy trials.

The police are also using "Chitra Khoji", a facial recognition software developed by the government, to match photos of suspects with a database of photos of 1 crore prisoners.

DigiLocker, the government's cloud-based wallet to store documents such as driving licence and Aadhaar, is being used to upload crime scene videos and related information.

Director-General of Police S.S Yadav said since the laws were rolled out on July 1, the police had registered 1,179 first information reports (FIRs) and 245 chargesheets, and secured conviction in four cases.

Training session: Kanwardeep Kaur, Senior Superintendent of Police, Chandigarh, explains the various facets of the new criminal laws during a programme on Sunday. VIJAITA SINGH

The Bharatiya Nyaya Sanhita, Bharatiya Sakshya Adhiniyam, and Bharatiya Nagarik Suraksha Sanhita replaced the Indian Penal Code of 1860, the Indian Evidence Act of 1872, and the Code of Criminal Procedure of 1898, respectively.

As these laws require upgrading infrastructure and forensic capabilities, the States have been given five years to implement all aspects of the laws.

Conviction rate

Home Minister Amit Shah said on December 3 that the new laws had improved conviction rate from 58% to around 85%. Across the country, more than 11 lakh FIRs were filed under the new laws and judgments delivered in 9,500 cases, he added. The new laws have provisions for time-bound investigation and trial and registration of Zero FIRs irrespective of jurisdiction.

Senior Superintendent of Police Kanwardeep Kaur said the Chandigarh Police had registered 14 Zero FIRs since July 1 and all cases pertained to sexual offences against women.

"If a victim files a Zero FIR for a sexual offence at a police station, the police have to complete formalities such as medical examination and send the report online to the police station concerned," Ms. Kaur said.

The officer said a woman who was sexually assaulted in Delhi filed a case after arriving in Chandigarh, two months after the crime was committed, as she was under the influence of the accused.

The Chandigarh Police recently transferred another Zero FIR case to the Andaman and Nicobar Police as the crime occurred there and the victim, being a Chandigarh resident, chose to complain here.

There are 20 police stations in Chandigarh, including specialised units. As the new law mandates mandatory audiovisual recording of crime scenes and search-and-seizure procedures, police stations were provided 170 tablets, Mr. Yadav said.

"The audio-video recording has a time stamp and once uploaded on Digilocker, it cannot be tampered with as a hash value is generated. The courts can also access the recording. Since the video cannot be downloaded, the chain of custody is intact," Ms. Kaur said.

Digitising courts

At least two courts have become fully online and preparation is on to digitise 30 other courts.

"The new laws have provisions to produce an accused through videoconference in a court. It saves resources, fuel and is also safe. In heinous cases, online trial is preferred," the officer said.

Another official said owing to the sensitivity of the cases registered against alleged gangster Lawrence Bishnoi, he joins all cases in court through videoconference.

"In Chandigarh, 80 videoconferencing spots have been identified, which include hospitals, forensic stations and courts where government officials can depose. Five videoconferencing spots are also being set up at the offices of sub-divisional magistrates for private witnesses to depose online," Ms. Kaur said.