

AUGUST 2ND WEEK VITALS COMPILATION

Critically examine the potential of biochar, the by-products of its production, and its role in sustainable construction. Also, discuss the challenges in its adoption and suggest measures for national sustainability strategies. (250 Words)

» Biochar, a **carbon-rich product** obtained from the pyrolysis of **organic biomass** in limited oxygen, offers significant promise for **climate mitigation, soil enhancement, renewable energy,** and **sustainable construction.**

» Yet, it remains underutilized on a global scale. Its potential lies in its **multi-sectoral** impact and **long-term benefits.**



By-products and Energy Generation

» The production of biochar through pyrolysis yields by-products like **syngas** and **bio-oil**. These volatile compounds can be captured and **used as fuels.**

» Syngas, a mixture of **hydrogen, carbon monoxide,** and **methane,** can be combusted to generate electricity or upgraded into synthetic fuels.

» Similarly, bio-oil can be refined for use in industrial heating or even as a precursor for biodiesel. These energy outputs make biochar production a potential hub for decentralized clean energy solutions in rural areas.



Role in Construction Sector

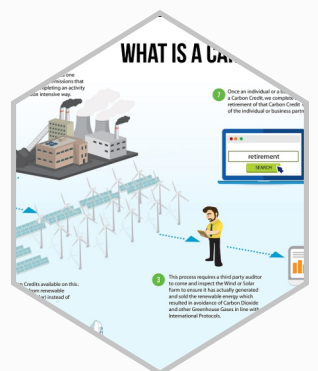
» In the construction sector, **biochar** can be used as an **additive in concrete, bricks, and plasters.**

» Its porous structure helps improve **insulation, regulate indoor humidity,** and **even sequester carbon** in buildings for decades.

» **Biochar-mixed** concrete has shown potential to reduce the **carbon footprint** of buildings and enhance the mechanical properties of construction materials.

Biochar's Challenges

» Despite its **proven carbon sequestration ability,** biochar remains underrepresented in **global carbon credit systems.** One major reason is the lack of standardized methodologies to measure and verify its **long-term carbon stability** and impact.



» Additionally, **inconsistent policy frameworks, poor awareness,** and **limited pilot-scale** demonstration projects hinder its credibility among **investors** and **policymakers.**

AUGUST 2ND WEEK VITALS COMPILATION

Strategic and Policy Measures

- » Strong policy support through **carbon credits** and subsidies can make production financially viable.
- » Building local pyrolysis infrastructure with community participation can ensure steady biomass supply and usage.
- » **Research and Development** into standardizing quality and application across sectors (**agriculture, energy, construction**) will build confidence in its benefits.
- » Lastly awareness campaigns and training for **farmers, builders,** and entrepreneurs will **drive grassroots-level acceptance.**



In the context of India-US bilateral trade negotiations, critically examine the concerns of farmers, livestock rearers, and fisherfolk that have influenced India's stance. How do these concerns reflect the challenges of balancing global trade commitments with domestic livelihood security? (250 Words)

- » The **prolonged India-US bilateral trade negotiations** have repeatedly run into roadblocks.
- » While the **focus is often on tariffs and market access**, Prime Minister Modi's **explicit mention of farmers, livestock rearers, and fisherfolk highlights deeper structural concerns.**
- » **These stakeholders are at the heart of India's rural economy** and are disproportionately affected by trade liberalization.



Agricultural Concerns

- » **Smallholder Dominance:** Indian agriculture is largely composed of small and marginal farmers who rely heavily on subsidies and Minimum Support Prices (MSPs) for survival.
- » **US Market Demands:** The United States seeks greater access to India's agricultural markets—especially dairy, grain, and poultry—by advocating for lower tariffs and fewer trade barriers.
- » **Threat to Livelihoods:** Liberalizing trade could lead to an influx of cheaper American produce, threatening the viability of Indian farmers who face high input costs and fragmented landholdings.
- » **Food Security Debate:** India's public grain procurement system, vital for food and income security, is criticized by the US as trade-distorting, creating friction in global trade negotiations.



AUGUST 2ND WEEK VITALS COMPILATION

Dairy Sector

- » **Small-Scale Dairy Dominance:** India's dairy sector is largely unorganized and powered by small-scale livestock rearers, making it vulnerable to external competition.
- » **US Dairy Push:** The United States seeks market access for its hormone-treated, high-yield dairy products, which are produced at industrial scale.
- » **Cultural & Health Concerns:** India opposes bovine growth hormones like rBST due to religious sensitivities and health concerns for both humans and animals.
- » **Livelihood Risks:** An influx of cheap US dairy products could destabilize the incomes of millions of Indian cattle and buffalo rearers.



Fisherfolk

- » **Fishing Backbone:** India's coastal economy relies heavily on small-scale, traditional fishing communities for livelihoods and food security.
- » **Subsidy Disputes:** The US challenges India's fishing subsidies under WTO norms, despite their role in supporting vulnerable communities facing climate and ecological stress.
- » **Risk of Industrial Dominance:** Reducing subsidies could render artisanal fishing economically unviable, paving the way for industrial-scale operators to dominate.
- » **Compliance Burden:** US demands for sustainable practices and traceability could impose costly requirements on Indian fisherfolk, who lack the infrastructure to meet them.



Conclusion

- » The India-US trade deal faces delays as India prioritizes protecting vulnerable farmers, livestock rearers, and fisherfolk over rapid market liberalization.
- » PM Modi's remarks highlight the need to balance global trade goals with domestic livelihood concerns.



AUGUST 2ND WEEK VITALS COMPILATION

Global warming alone is not responsible for disasters like the Uttarkashi flash floods; human greed and unplanned development play an equally damaging role. Explain the statement. (250 Words)

- » **Flash floods in the Himalayan region**, such as those recently witnessed in **Uttarkashi**, are tragic but no longer surprising.
- » While **climate change and intense monsoons are significant triggers**, they are not the only culprits.
- » **Human greed** manifesting as rampant, **unregulated development has played an equal**, if not greater, role in amplifying the scale of destruction.



Role of Climate Change

- » **Global warming has led to erratic weather patterns** across the globe, and the Himalayas are no exception.
- » **Rising temperatures are causing glaciers to melt** faster, increasing the volume of water in rivers.
- » When this is **combined with extreme rainfall events**, the **risk of flash floods grows exponentially**.
- » However, these are **natural phenomena made worse by anthropogenic actions**.



Unplanned Urbanization

- » The Himalayan region, once **sparsely populated and ecologically sensitive**, has seen a **surge in infrastructure development**.
- » **Roads are cut hastily into unstable slopes**; hotels and shops spring up with little regard for topography or drainage.

In Uttarkashi, for example, **buildings were constructed close to riverbanks and on vulnerable slopes** zones identified as “no-construction” areas by environmental experts.

Impact of Violations

- » **Environmental Impact Assessments (EIAs)** are either **bypassed or diluted** to make way for rapid construction.
- » **Illegal sand mining, deforestation, and poor land-use planning** weaken the region's ability to **absorb and withstand natural shocks**.
- » Local authorities often turn a blind eye due to **corruption** or political pressure, further **encouraging reckless behaviour**.
- » The **result** of this greed is **human tragedy**. Lives lost, livelihoods destroyed, and centuries-old ecosystems disrupted



AUGUST 2ND WEEK VITALS COMPILATION

Conclusion

- » **Climate change is real**, but it should not be used to deflect attention from reckless human actions.
- » **Human irresponsibility**, including unplanned and unsustainable development, worsens natural disasters.
- » **The Himalayan region holds ecological and cultural significance**, demanding greater respect and care.
- » **Sustainable and regulated development** is essential to prevent natural events from becoming human-made tragedies.



In the context of the ongoing Geneva Plastics Treaty negotiations, critically examine the challenges of achieving global consensus on plastic pollution which reflects deeper economic and geopolitical shifts. (250 words)

- » The ongoing **negotiations in Geneva for a global h** have brought to light a growing **rift between two major blocs of countries**.
- » At stake is not only the **future of plastic pollution** management but also the **balance of economic interests and environmental responsibility**.



Shift in the Global Plastics Industry

- » **Shift in Manufacturing:** Plastic production has moved from Europe to South and Southeast Asia in recent years.
- » **Economic Impact:** This shift has made several developing economies more dependent on the plastics industry for growth and employment.
- » **Industrial Pressure:** The industry now plays a critical role in these countries' economic structures.
- » **Policy Resistance:** As a result, these nations are hesitant to back global agreements that could limit plastic production.



Tussle of Two Blocs

- » **Bloc 1: Advocating for Production Cuts** It is often referred to as the **High Ambition Coalition**—includes the **European Union, Small Island Developing States (SIDS)**, and several **African and Latin American countries**.
- » This group argues that the only effective way to tackle **plastic pollution** is by addressing its **source**.



AUGUST 2ND WEEK VITALS COMPILATION

» They advocate for **legally binding limits on plastic production**, particularly **single-use plastics**, and greater regulation of **harmful chemical additives**.

» For them, **upstream solutions** are necessary to prevent the **flood of plastic** entering the environment.

» Bloc 2: Supporting Waste Management Solutions

» On the other side are the “**Like-Minded Countries**,” including the **United States, India, China**, and several **oil and petrochemical-producing nations**.

» These countries emphasize the role of **recycling, improved waste infrastructure**, and **innovation in product design**.

» They argue that **plastic** is essential for **economic development** and that the focus should be on **managing waste** rather than **limiting production**.

» Their approach is grounded in **feasibility, cost concerns**, and **protecting jobs** in the **plastics industry**.

Way Forward

» This rift highlights the classic tension between **environmental urgency** and **economic interest**.

» A **balanced treaty** must bridge these perspectives by integrating both **upstream** and **downstream solutions**.

» **Technology transfer, financial support** for **waste infrastructure**, and **phased reduction plans** may offer a **middle path**.

