

Special issue explores path to pollution-free planet: UNEP's strategic vision

USA, June 11, 2024 /EINPresswire.com/ -- A new special issue of *Frontiers of Environmental Science & Engineering* presents groundbreaking research on strategies for achieving a pollution-free planet. This collection explores diverse approaches, from advanced wastewater treatment technologies to digital management systems, offering a comprehensive blueprint for a sustainable future.

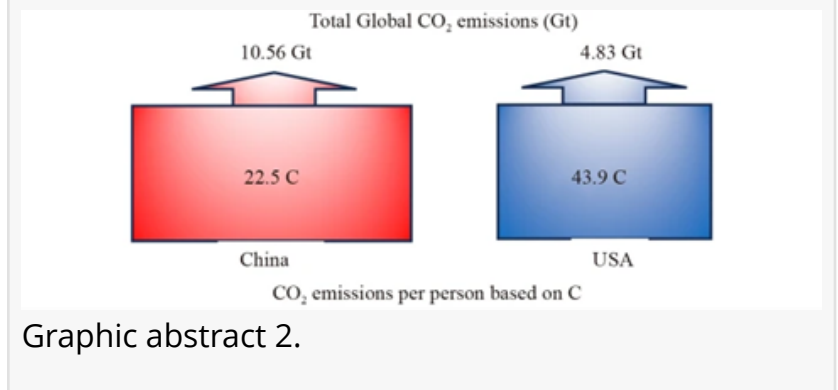
The United Nations Environment Programme's (UNEP) Medium-Term Strategy for 2022-2025 emphasizes this critical goal. As we near the end of this strategy period, significant strides have been made. Curated by esteemed scholars, this issue provides valuable insights into current advancements and future directions in environmental protection and pollution control.

Achieving a pollution-free planet is a monumental task that requires coordinated efforts across various sectors. *Frontiers of Environmental Science & Engineering* (FESE), an international journal, is publishing a special issue (DOI: [10.1007/s11783-024-1826-1](https://doi.org/10.1007/s11783-024-1826-1)) on strategies for environmental sustainability and pollution reduction. The special issue offers a collection of twelve articles that delve into different facets of this endeavor. From theoretical foundations to practical applications, these articles highlight innovative solutions and the challenges that lie ahead.

Jiuhui Qu, the editor-in-chief of FESE, remarks, "This special issue represents a significant step forward in our understanding of how to move towards a pollution-free planet. The collaborative efforts showcased in these articles highlight the importance of interdisciplinary research and



Graphic abstract 1.



Graphic abstract 2.

international cooperation."

Included in the special issue:

- Pathways toward a pollution-free planet and challenges (DOI: 10.1007/s11783-024-1827-0)

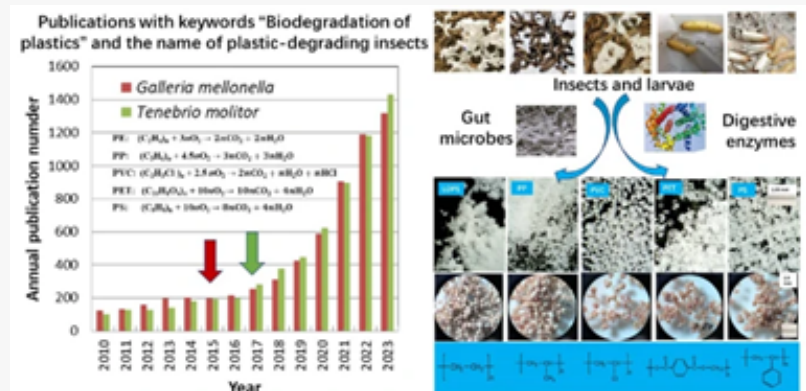
Researchers from Tsinghua University and Shenzhen University propose pathways to achieve a pollution-free planet by balancing pollutant discharge and decontamination capacities. Emphasizing the "Principle of Equilibrium," the study highlights key factors like quantitative purification, green source control, minimizing side-effects, and precise digital management. This framework addresses significant challenges and advancements needed for sustainable environmental protection.



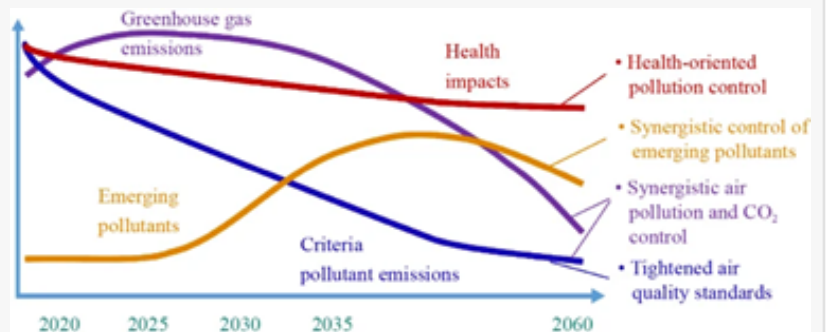
Graphic abstract 3.

- Your personal choices in transportation and food are important for lowering carbon emissions (DOI: 10.1007/s11783-024-1830-5)

Researchers from Penn State University's Institute of Energy and the Environment and Chinese institutions examine personal carbon emissions from transportation, food choices, and home energy use. They introduce "D" and "C" units to simplify understanding of energy use and carbon emissions. The study highlights the impact of lifestyle choices on carbon emissions, offering a framework for reducing environmental footprints and combating climate change.



Graphic abstract 4.



Graphic abstract 5.

- Recent advances, challenges, and perspectives on carbon capture (DOI: 10.1007/s11783-024-1835-0)

The study, led by researchers from Zhejiang University of Technology, investigates recent advances, challenges, and perspectives on carbon capture technologies. It highlights the

importance of carbon capture, utilization, and storage (CCUS) in achieving net zero emissions. The research comprehensively reviews state-of-the-art capture technologies and materials, and identifies key research needs such as material design, process optimization, and economic assessments. This work is crucial for addressing global climate change and advancing industrial applications of CCUS.

- Radical innovation breakthroughs of biodegradation of plastics by insects: history, present and future perspectives (DOI:10.1007/s11783-024-1838-x)

The study, led by researchers from Stanford University, focuses on biodegradation of plastics by insect larvae from the Tenebrionidae and Pyralidae families. It highlights discoveries of plastic-degrading abilities and explores mechanisms behind biodegradation, including the role of gut microbiomes. The research offers potential sustainable solutions for plastic waste management. This work represents a significant step towards addressing global plastic pollution through biological means.

- Challenges and perspectives of air pollution control in China (DOI: 10.1007/s11783-024-1828-z)

The study, conducted by researchers from Tsinghua University, explores the major challenges and strategies for air pollution control in China. It proposes a health-oriented air pollution control strategy and emphasizes the need for tighter air quality standards. The research highlights the importance of synergistic control of air pollutants and greenhouse gases, adopting a "one-atmosphere" approach. This work is significant for improving public health and achieving the "Beautiful China" goal, offering valuable insights for policymakers and environmental scientists.

- A Beautiful China Initiative Towards the Harmony between Humanity and the Nature (DOI: 10.1007/s11783-024-1831-4)

The study, conducted by researchers from the Chinese Academy of Environmental Planning, focuses on the Beautiful China Initiative (BCI). It summarizes the progress and experiences of BCI, analyzes challenges, and provides policy recommendations for sustainable development. The research highlights the importance of top-level design, coordinated planning, and a robust support system to advance the BCI. This work is crucial for achieving ecological civilization and offers a "Chinese solution" for global sustainable development.

And more articles addressing multiple environmental aspects:

- Effects of acid deposition control in China: a review based on responses of subtropical forests (DOI: <https://doi.org/10.1007/s11783-024-1837-4>)

- Advances and perspectives in environmental health research in China (DOI: <https://doi.org/10.1007/s11783-024-1836-z>)

- Paving the way toward soil safety and health: current status, challenges, and potential solutions (DOI: <https://doi.org/10.1007/s11783-024-1834-1>)

- Needs and challenges of optical atmospheric monitoring on the background of carbon neutrality in China (DOI: <https://doi.org/10.1007/s11783-024-1833-2>)

- Intensifying electrified flow-through water treatment technologies via local environment

modification (DOI: <https://doi.org/10.1007/s11783-024-1829-y>)

DOI

10.1007/s11783-024-1826-1

Original Source URL

<https://doi.org/10.1007/s11783-024-1826-1>

Funding information

Pathways toward a pollution-free planet and challenges: The authors would like to thank Chinese Academy of Engineering, under the Brand Project Scheme Funding (Project Number: 2022-30-35-02) for the financial support.

Your personal choices in transportation and food are important for lowering carbon emissions: This research was funded as a part of the goal for broader impacts in the National Science Foundation grant CBET-2027552 (BL), as well as by Penn State University through the Stan and Flora Kappe endowment (BL).

Recent advances, challenges, and perspectives on carbon capture: This research was supported by the Zhejiang Provincial Natural Science Foundation of China (No. LDT23E0601), the “Pioneer” and “Leading Goose” R&D Program of Zhejiang (China) (No. 2022C03146), the National Natural Science Foundation of China (Nos. U23A20677 and 20026610) and the National Funded Postdoctoral Researcher Program of China (No. GZC20232363).

Radical innovation breakthroughs of biodegradation of plastics by insects: history, present and future perspectives: The authors gratefully acknowledge the National Natural Science Foundation of China (Grant No. 52170131) and the Woods Institute for Environment at Stanford University (USA) (Award 1197667-10-WTAZB) for supports.

Challenges and perspectives of air pollution control in China: This work was supported by the National Natural Science Foundation of China (No. 22188102) and the National Key R&D Program of China (No. 2022YFC3702905). We also thank the support from Tsinghua-TOYOTA Joint Research Center.

A Beautiful China Initiative Towards the Harmony between Humanity and the Nature: None.
Effects of acid deposition control in China: a review based on responses of subtropical forests: The authors are grateful for the financial support from the National Key Research and Development Project (No. 2022YFC3700600), the National Natural Science Foundation of China (Nos. 42303061 and 42277204), the Norwegian Directorate for Higher Education and Skills (HK-DIR, projects UTF-2016-long-term/10089 and UTF-2020/10180), and the Young Talent Fund of Association for Science and Technology in Shaanxi, China (20230704).

Advances and perspectives in environmental health research in China: We thank the

Environment and Health Branch of Chinese Society for Sustainability for organizing and Hainan University for hosting the workshop. We thank all participants of the workshop for stimulating discussion. This work is partially supported by the Ministry of Science and Technology of China (No. 2022YFC3702600).

Paving the way toward soil safety and health: current status, challenges, and potential solutions: This study was supported by the National Key Research and Development Program of China (No. 2021YFC1809204).

Needs and challenges of optical atmospheric monitoring on the background of carbon neutrality in China: The authors would like to acknowledge the financial supports for the work provided by the Strategic Research and Consulting Project of Chinese Academy of Engineering (Nos. 2023-XBZD-18, 2023-JB-05, and 2023-XZ-37).

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This press release can be viewed online at: <https://www.einpresswire.com/article/719075735>

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