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11 November 2024

World Cities Report 2024

Context: The United Nations Human Settlements Programme (UN-Habitat) has released the "World Cities Report 2024: Cities and Climate Action", a crucial document assessing how urban areas are impacted by and contribute to climate change. The report underscores a troubling rise in global temperatures and highlights the growing funding gap hindering cities' efforts to adapt.

Key Findings from the Report:

- **Rising Temperatures and Growing Risks:**
  - » By 2040, more than 2 billion urban residents will face a 0.5°C increase in temperature.
  - » This increase will amplify the intensity of extreme weather events, including:
    - Heatwaves affecting public health in densely populated areas.
    - Erratic rainfall, leading to increased risks of flooding.
    - More frequent and severe cyclones and storms.
  - » Urban areas, particularly mega-cities, are increasingly vulnerable to climate-induced shocks, making climate resilience a top priority.
- **Cities as Both Victims and Culprits:**
  - » Urban areas are disproportionately exposed to climate change, while also being major contributors to the problem due to:
    - ➢ Greenhouse gas emissions from dense populations, high energy consumption, and economic activities.
  - » Mega-cities, which house millions of people and significant assets, are particularly vulnerable to climate shocks such as flooding, heatwaves, and storm surges.
  - » The continued expansion of these cities increases their exposure to potentially catastrophic climate events.
- **The Climate Investment Gap:**
  - » Cities require an estimated $4.5 to $5.4 trillion annually to develop and maintain climate-resilient infrastructure.
  - » However, current climate finance for cities stands at only $831 billion, a fraction of the amount needed.
  - » The funding gap limits cities' ability to invest in essential infrastructure like flood defenses, green spaces, and energy-efficient buildings, leaving them more vulnerable to climate risks.

Climate Vulnerability and Inequality:

- The report highlights that the most vulnerable populations are those already facing structural inequalities:
  - » Informal settlements and slums, often situated in high-risk areas, lack adequate infrastructure to protect residents from extreme weather events.
  - » These communities are disproportionately affected by climate-related disasters and have fewer resources to adapt or recover.

Declining Green Spaces and the Risk of "Green Gentrification":

- From 1990 to 2020, the share of green space in urban areas decreased from 20% to 14%.
- The loss of green spaces worsens the urban heat island effect, where cities become hotter than surrounding rural areas due to dense infrastructure and reduced vegetation.
- The phenomenon of "green gentrification" occurs when climate interventions, such as creating parks or green spaces, inadvertently lead to the displacement of low-income residents as property values rise.

Recommendations:

- Revenue raising based on enabling conditions e.g. through debt, creating PPPs, and establishing instruments to mobilize climate finance.
- Integrating climate action into urban planning and Supporting bottom-up(Locally-led) climate adaptation efforts for effectively building resilience.
- Strengthening social protection programmes, adopting nature-based solutions that address climate shocks.

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About UN-Habitat

- UN-Habitat is the UN agency responsible for promoting socially and environmentally sustainable cities.
- Established in 1978 following the first UN Conference on Human Settlements (Habitat I).
- Its headquarters is located in Nairobi, Kenya.
- UN-Habitat works with governments, civil society, academic institutions, and the private sector to advance sustainable urban development.

RNA Editing

Context: In a recent scientific advancement, Wave Life Sciences, a U.S.-based biotechnology company, achieved a pioneering clinical application of RNA editing to treat a genetic disorder, specifically α-1 antitrypsin deficiency (AATD).

About RNA Editing:

- RNA editing refers to the modification of messenger RNA (mRNA) nucleotides after DNA has created the mRNA but before the mRNA is used in protein synthesis.
- Unlike DNA editing, which permanently alters the genome, RNA editing allows temporary modifications that do not alter the underlying genetic code.

RNA Comprises:

- **Exons:** Coding regions responsible for protein production.
- **Introns:** Non-coding segments removed before translation.
- RNA editing modifies the exons or the coding regions, allowing scientists to alter protein outcomes without changing the DNA itself.

Types of RNA Editing:

- **Addition:** A new nucleotide is inserted into the RNA sequence.
- **Deletion:** A nucleotide is removed.
- **Substitution:** One nucleotide is replaced with another.

Mechanism Behind RNA Editing:

- The RNA editing technique relies on enzymes known as adenosine deaminases acting on RNA (ADAR). These enzymes specifically modify adenosine bases in RNA, changing them into inosine, which can then be read differently during protein synthesis.
- Scientists use a guide RNA (gRNA) to direct ADAR to a target mRNA sequence, allowing precise alterations in the RNA and enabling it to produce a modified protein as needed. This approach was used by Wave Life Sciences in their WVE-006 therapy to address AATD, underscoring RNA editing's therapeutic potential.

RNA Editing vs. DNA Editing

Aspect	DNA Editing	RNA Editing
Permanence	Permanent genome alterations that are irreversible.	Temporary, fading over time for reversibility.
Immune Response	Often involves bacterial-derived tools (e.g., CRISPR) that may trigger immune reactions.	Uses ADAR, naturally found in human cells, lowering immune risks.

Advantages of RNA Editing:

- **Temporary Modifications:** RNA editing allows changes that wear off over time, giving patients flexibility to discontinue if any issues arise.
- **Reduced Immune Reaction:** As ADAR enzymes naturally exist in human cells, RNA editing may present a lower risk of immune responses compared to DNA editing, making it suitable for patients requiring repeated treatments or those sensitive to immune triggers.

Current Challenges in RNA Editing

- Despite its potential, RNA editing faces several hurdles:
  - **Temporary Effects:** Since RNA changes are not permanent, treatments need to be administered repeatedly to maintain the desired effect.
  - **Delivery Limitations:** Current delivery methods, such as lipid nanoparticles and adeno-associated virus (AAV) vectors, can be limited in capacity, especially for larger therapeutic molecules. This restricts RNA editing's potential to treat complex diseases and necessitates innovation in delivery techniques.

Conclusion:

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RNA editing presents a transformative step in genetic medicine, offering precision and adaptability in treating genetic disorders. By combining the flexibility of temporary modifications with a lower risk of immune responses, RNA editing may pave the way for personalized, responsive treatments. With further progress in overcoming its current limitations, RNA editing stands to revolutionize how genetic and complex diseases are approached, opening new avenues for innovative therapies aimed at enhancing patient outcomes and quality of life.

UNEP Adaptation Gap Report 2024

Context: The United Nations Environment Programme (UNEP) recently released its "Adaptation Gap Report 2024: Come Hell and High Water". The report assesses global progress in climate adaptation and highlights the urgent need for increased efforts, especially financial commitments, as COP29 approaches.

What is the Adaptation Gap?

- The Adaptation Gap is the difference between the actual measures being implemented to adapt to climate change and the level of adaptation needed to meet societal and environmental goals.
- It reflects resource limitations and competing priorities that prevent the full-scale implementation of climate resilience strategies.

Key Findings from the Adaptation Gap Report 2024

- **Adaptation Finance Gap:**
  - The adaptation finance gap for developing countries is estimated at $187–359 billion per year.
  - 2022 adaptation finance flows increased to $27.5 billion, but actual annual needs are much higher, with $387 billion needed annually by 2030.
- **Progress in Adaptation Finance:**
  - International public adaptation finance to developing countries rose from $22 billion in 2021 to $28 billion in 2022.
  - The Glasgow Climate Pact goal of doubling adaptation finance to $38 billion by 2025 from 2019 would address only about 5% of the total adaptation finance gap.
- **The Significance of Adaptation:**
  - Adaptation efforts can help halve global climate risk.
  - For instance, investing $16 billion annually in agriculture could prevent 78 million people from facing hunger and starvation due to climate change.
- **Urgency for Increased Adaptation Efforts:**
  - Nations must significantly increase adaptation efforts at COP29, especially in terms of financial commitments.
  - A shift is needed from reactive to anticipatory, strategic, and transformational adaptation.

Recommendations for Bridging the Adaptation Gap:

- The report provides several recommendations to bridge the adaptation finance gap and scale up efforts:
  - **Adopt an Ambitious New Collective Quantified Goal for Climate Finance:** A new goal for climate finance, including adaptation funding, should be agreed upon at COP29.
  - **Strengthen Enabling Factors:** Strengthen institutions, governance, and financial instruments necessary for effective adaptation.
  - **Shift to Transformational Adaptation:** Move away from short-term, project-based approaches to more long-term, transformational adaptation that addresses systemic climate risks.

Global and National Adaptation Initiatives:

- **Paris Agreement:** Aims to enhance adaptive capacity and support the most vulnerable countries.
- **UAE Framework for Global Climate Resilience:** Includes 11 global adaptation targets to improve resilience across sectors.

- **Adaptation Fund:** Supports projects to enhance resilience in developing countries under the Kyoto Protocol.

India's National Adaptation Actions:

- **National Action Plan on Climate Change (NAPCC):** Includes eight national missions focused on climate change, including renewable energy, water conservation, and more.
- **National Adaptation Fund for Climate Change (NAFCC):** Finances adaptation projects, especially in vulnerable states.
- **Sectoral Schemes:** Programs like MISHTI (Mangrove Initiative) and Amrit Dharohar focus on enhancing climate resilience.

UNESCO Global Education Monitoring Report 2024

Context: Despite significant global efforts over decades to improve education access, the UNESCO Global Education Monitoring Report 2024 reveals that 251 million children and youth remain out of school worldwide.

Key Findings from Report:

- **Global Progress in Education is Stagnating:**
  - » 110 million more children and youth have entered school since the adoption of the UN Sustainable Development Goal on Education in 2015.
  - » 40 million more young people are completing secondary school compared to 2015.
  - » Despite these improvements, the number of out-of-school children and youth has only decreased by 1%, meaning 251 million children and adolescents still lack access to education globally.
- **Stark Regional Disparities in Education Access:**
  - » In low-income countries, around 33% of school-aged children remain out of school, compared to just 3% in high-income countries.
  - » Over half of the world's out-of-school children are located in the sub-Saharan Africa region, highlighting severe regional inequalities in education access.
- **Challenges in Education Financing:**
  - » The report highlights education financing as a critical barrier to achieving universal access to education.
  - » 40% of countries spend less than 15% of their total public expenditure and less than 4% of GDP on education, which falls short of international benchmarks.
  - » The funding gap between low-income and high-income countries is vast. In 2022, low-income countries spent just $55 per learner on education, compared to $8,543 per learner in high-income countries.
- **The Growing Burden of Debt Servicing:**
  - » The increasing burden of debt servicing is straining national education budgets.
  - » In Africa, many countries spent as much on debt servicing in 2022 as they did on education.
  - » Globally, the share of official development assistance (ODA) allocated to education has fallen, from 9.3% in 2019 to 7.6% in 2022, reflecting a widening funding gap.

Innovative Financing Mechanisms to Address the Education Crisis:

- To overcome these challenges, UNESCO is calling for innovative financing mechanisms to help bridge the education funding gap. One such mechanism is the debt-for-education swap, which would allow heavily indebted countries to convert debt repayments into investments in education.
- **Debt-for-Education Swaps:**
  - » UNESCO advocates for the creation of a multilateral platform where unsustainable national debts can be converted into sustainable education financing.
  - » This approach would enable countries burdened by debt to redirect part of their debt relief toward funding education projects, ensuring access to education for future generations.
  - » This initiative builds on existing frameworks such as the G20's Common Framework for Debt Restructuring and partnerships with multilateral funding organizations like the Global Partnership for Education (GPE).
- **G20 and UNESCO Synergies:**
  - » The 2024 Global Education Meeting in Fortaleza, Brazil, which took place from October 31 to November 1, 2024, brought together global leaders and education ministers to discuss the state of

global education.

» A key outcome of the Global Education Meeting was the Fortaleza Declaration, endorsed by over 40 education ministers. The declaration outlined critical actions needed to ensure that education becomes a key driver of social justice and sustainable development.

Power Packed News

Zambia

India and Zambia recently convened the 6th Session of their Joint Permanent Commission in Lusaka, reinforcing long-standing bilateral relations. This meeting marks another step in India's ongoing efforts to strengthen economic and diplomatic ties with African nations, with a particular focus on trade, investment, and cultural exchange.

About Zambia:

- Located in south-central Africa, Zambia is a landlocked country characterized by its high plateau terrain. It is named after the Zambezi River, which drains most of the country, except for a small area in the north.
- Zambia is bordered by eight countries: the Democratic Republic of the Congo to the north, Tanzania to the northeast, Malawi to the east, Mozambique to the southeast, Zimbabwe and Botswana to the south, Angola to the west, and Namibia to the southwest.
- Its economy is heavily dependent on copper mining, a major contributor to its GDP. Zambians primarily speak Bantu languages, part of the Niger-Congo family.
- Zambia is home to significant landmarks such as Victoria Falls on the Zambezi River and Lake Kariba, the largest artificial reservoir by volume, created by the Kariba Dam.
- Its capital, Lusaka, serves as the political and economic hub of the country.

'AUSTRAHIND' 2024

- The third edition of the annual joint military exercise "AUSTRAHIND" between India and Australia was commenced recently in Pune.
- Conducted alternately in both nations, AUSTRAHIND aims to enhance interoperability between Indian and Australian forces, especially for joint sub-conventional operations in semi-urban and semi-desert environments under the United Nations mandate. The last edition took place in Australia in December 2023.

- This year's exercise is organized in two main phases: combat preparation and tactical training, followed by a validation phase.
- Key activities include establishing a Joint Operations Centre, occupying designated areas in response to hypothetical terrorist threats, and conducting joint counter-terrorism operations such as raids, search-and-destroy missions, and more.
- Scheduled to continue until 21 November, both sides will also exchange best practices in tactics, techniques, and operational procedures at the Overseas Training Node.