ForumIAS

Mains Marathon

Compilation

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Index

Discuss the societal implications of breeding ferocious dogs within urban communities. Examine how these practices affect human-animal relationships and public safety, proposing measures to mitigate negative impacts.

Introduction: Give a brief context to the question
Body: Highlight the implications of ferocious dogs on society and measures to mitigate the impact.
Conclusion: Way forward

The Department of Animal Husbandry and Dairying recently issued a letter to states where it requested local bodies to not issue any licenses or permits for the sale and breeding of dogs it considers to be 'ferocious' and 'dangerous for human life'.

Societal implications of breeding ferocious dogs

- **Public Safety**: Ferocious dogs present a significant risk to public safety, particularly in densely populated urban areas where interactions with humans are common. Their aggressive tendencies towards strangers can result in biting incidents or attacks, causing injuries or even fatalities.
- **Human-Animal conflict**: Breeding ferocious dogs exacerbates the conflict between humans and animals. It perpetuates a cycle of fear and mistrust between the two, leading to negative interactions and potential harm to both humans and animals.
- **Animal Welfare**: Breeding ferocious dogs for aggression often entails unethical treatment, including neglect, abuse, and mistreatment. These dogs endure harsh training and substandard living conditions, causing both physical and psychological harm.
- **Spread of Rabies**: Unvaccinated, aggressive dogs contribute to the spread of rabies, a deadly disease in India.

Measures to mitigate these impacts

- **Promote Responsible Dog Ownership**: Educational campaigns can encourage responsible pet ownership, including proper training, socialization, and licensing of dogs.
- **Sterilization and Vaccination Programs:** Mass sterilization and vaccination drives can help control the population of stray dogs and prevent the spread of rabies.
- **Promoting Indigenous Breeds:** Encouraging the adoption of well-adapted Indian breeds Tibetan Spaniel, Lhasa Apso, and Tibetan terrier can create a safer and more culturally relevant human-animal dynamic in cities.
- **Animal Shelters and Rehabilitation:** Well-funded animal shelters can provide care for strays and abandoned dogs, while rehabilitation programs can help potentially dangerous dogs become suitable companions in controlled environments.
- **Community Dog Patrols:** Training programs can create community dog patrols with well-socialized canines, fostering a sense of security and promoting the positive aspects of human-animal relationships.

Conclusion

Implementing these measures can pave the way for a future where urban communities in India enjoy a safe and mutually beneficial relationship with dogs. Prioritizing responsible pet ownership, enforcing breed regulations, and fostering a culture of reverence for all animals are vital steps toward achieving a harmonious coexistence.

Examine the role of artificial intelligence in enhancing governance and public service delivery. Discuss the ethical considerations and potential risks involved in integrating AI into government functions.

Introduction: Give a contextual introduction
Body: Highlight role of AI in governance and service delivery and what risks are associated with it?
Conclusion: Way forward

European Parliament passed the Artificial Intelligence Act (AI Act, 2024) which is a remarkable law & among the first set of comprehensive regulations to govern AI. It is also the first regulatory regime that recognizes and appreciates different levels of AI, and their varied kinds of utility and potential harms. AI has the potential to significantly enhance governance and public service delivery by streamlining processes, improving decision-making, and increasing efficiency.

Role of AI in governance & public service delivery

- **Predictive Analytics:** AI can forecast future events or trends based on historical data, enabling proactive interventions in areas such as healthcare, crime prevention, and disaster management. By anticipating needs and risks, governments can better plan and allocate resources to address emerging challenges.
- **Fraud Detection:** AI algorithms can detect anomalies in financial transactions, helping to identify and prevent fraud in social welfare programs and tax collection.
- **Enhanced Citizen Engagement:** AI technologies like chatbots and virtual assistants can improve citizen engagement by providing personalized assistance, answering queries, and facilitating access to government services. This enhances the overall citizen experience and fosters greater transparency and accountability.
- **Data-Driven Decision Making**: AI can analyze vast amounts of data to identify patterns and trends, allowing policymakers to make informed decisions based on evidence rather than intuition.

Ethical considerations & Potential risks

- **Algorithmic Bias**: AI algorithms can perpetuate existing biases in society if trained on biased data. This could lead to unfair treatment of certain demographics when applying for benefits or receiving services.
- **Privacy Issues**: The use of AI in government raises concerns about data privacy and security. Citizens' personal information needs robust safeguards to prevent misuse.
- **Accountability and Transparency**: When AI makes decisions that negatively impact citizens, it's crucial to understand how the decision was reached and hold someone accountable for the outcome.
- **Job Displacement:** Automation through AI could lead to job losses in public service sectors. Governments need to develop retraining programs to equip workers with new skills.
- **Algorithmic Warfare**: AI could be misused for surveillance or manipulation, impacting democratic processes and civil liberties.

Conclusion

Through diligent examination of ethical implications and potential risks, AI can emerge as a potent instrument for bolstering governance and improving public service delivery, fostering a society that is more efficient, citizen-focused, and fair.

Evaluate the impact of Artificial Intelligence, especially Generative AI, on electoral processes in democratic nations. Discuss the potential benefits and threats posed by AI to the integrity of elections, and suggest measures to mitigate its negative impacts.

Introduction: Contextual Introduction
Body: Highlight the impact of AI on the electoral process, its benefits, threats associated with it, and measures to mitigate its impact.
Conclusion: Way forward

The rapid advancement of Artificial Intelligence (AI), particularly Generative AI (GAI), poses both opportunities and threats to electoral processes in democratic nations. Here's an evaluation of its impact, potential benefits, threats, and measures to mitigate negative impacts:

Positive Impact:

- AI can enhance efficiency in voter registration, voter authentication, and ballot counting processes, leading to faster and more accurate results.
- Predictive analytics powered by AI can help political parties and candidates better understand voter sentiments and preferences, allowing them to tailor their campaigns effectively.

Negative Impact:

- AI-generated disinformation and deep fake content can manipulate public opinion, spread false narratives, and undermine the integrity of elections.
- Malicious actors can exploit AI algorithms to micro-target specific voter groups with tailored propaganda, leading to polarization and division within society.

Potential Benefits of AI:

- **Enhanced Efficiency**: AI can streamline various aspects of the electoral process, including voter registration, candidate profiling, and result tabulation, leading to quicker and more transparent elections.
- **Improved Voter Engagement**: AI-powered chatbots and virtual assistants can engage with voters, providing them with relevant information about candidates, issues, and voting procedures, thereby increasing voter participation.

Threats Posed by AI:

- **Disinformation Campaigns:** AI-generated deep fakes and fake news can manipulate public opinion, spread false narratives, and undermine trust in democratic institutions.
- **Vulnerability to Manipulation**: AI algorithms may be susceptible to bias, manipulation, or hacking, potentially leading to electoral fraud or manipulation of election outcomes.

Mitigation Measures:

- **Regulation and Oversight:** Implementing regulations to govern the use of AI in electoral processes, including transparency requirements for political advertising and measures to combat disinformation.
- **Cybersecurity Measures**: Strengthening cybersecurity protocols to safeguard electoral infrastructure from hacking attempts, data breaches, and other cyber threats.
- **Public Awareness and Education**: Promoting media literacy and critical thinking skills to help voters discern fact from fiction and resist manipulation by AI-generated content.
- **Algorithmic Transparency:** Ensuring transparency and accountability in AI algorithms used for electoral purposes, including auditing and independent oversight mechanisms.

Conclusion

Apart from elections, India's digital advancement necessitates a cautious approach towards AI, acknowledging its unproven nature and potential for disruption, especially with AGI. While India's leadership in digital innovations offers opportunities, the risks associated with AGI demand careful consideration.

Discuss how India's approach towards Nepal under the current geopolitical circumstances can ensure a balanced and mutually beneficial relationship.

Introduction: Contextual Introduction
Body: What should be India's approach towards Nepal in the current situation?
Conclusion: Way forward

India's relationship with Nepal, a landlocked country nestled between India and China, is crucial for its national security and regional influence. However, recent years have seen some strain that necessitates India's approach towards Nepal should aim to foster a balanced and mutually beneficial relationship.

- **Respect Nepal's Sovereignty**: India must acknowledge Nepal's status as a sovereign nation and respect its territorial integrity. Any interference or attempts to undermine Nepal's sovereignty can strain bilateral relations. India should refrain from interfering in Nepal's internal affairs and instead focus on building trust and cooperation.
- **Enhance Economic Cooperation**: Economic cooperation forms the backbone of bilateral relations. India should focus on enhancing trade and investment ties with Nepal, promoting economic development and prosperity in both countries. This could involve facilitating cross-border trade, investment, and infrastructure development projects that benefit both nations.
- **Cultural and People-to-People Exchanges**: Strengthening cultural and people-to-people ties can foster greater understanding and goodwill between India and Nepal. Promoting tourism, educational exchanges, and cultural events can help build bridges between the two countries and promote mutual appreciation of each other's heritage and traditions.
- **Addressing Border Issues Amicably**: India and Nepal share a long and porous border, which can sometimes lead to border disputes and tensions. Both countries must address these issues through diplomatic channels in a spirit of cooperation and goodwill. Respecting existing agreements and mechanisms for border management can help prevent escalations and maintain peace along the border.
- **Cooperation on Regional and Global Issues**: India and Nepal can collaborate on regional and global issues of mutual interest, such as climate change, disaster management, and regional security. By working together in multilateral forums like SAARC and BIMSTEC, both countries can contribute to regional stability and prosperity.
- **Dialogue and Diplomacy**: Open and regular dialogue between the leadership of India and Nepal is essential for building trust and resolving any differences that may arise. Diplomatic channels should remain open for constructive engagement and negotiation, ensuring that any issues are addressed through peaceful means.

Conclusion

By embracing a collaborative approach that emphasizes mutual benefit and acknowledges Nepal's autonomy, India can forge a more robust and equitable relationship with its neighbor. Such an approach would not only advance their respective national interests but also foster regional stability and prosperity.

Consider the key features of TEPA, including investment targets, trade in goods, and services liberalization, and its strategic implications for India's economic growth and employment generation.

Introduction: Describe TEPA.
Body: Highlight features and implications of TEPA
Conclusion: Way forward

The India-EFTA Trade and Economic Partnership Agreement (TEPA) is a comprehensive agreement that covers trade in goods, trade in services, investment, intellectual property rights, competition, government procurement, trade facilitation, trade remedies, dispute settlement, and other areas of mutual interest with the EFTA (European Free Trade Association) countries — Switzerland, Norway, Iceland and Liechtenstein.

Key Features

- **Investment**: TEPA aims to attract $100 billion in investments from EFTA nations to India over 15 years, with the goal of generating one million jobs. Additionally, the agreement permits India to retract tariff concessions if the specified investment objectives are not achieved, motivating EFTA countries to contribute to India's economic development.
- **Trade in Goods:** The agreement grants EFTA nations tariff concessions, improving their access to India's market. India will phase out tariffs on many goods over 7 to 10 years, benefiting EFTA exports like seafood, fruits, coffee, oils, processed foods, smartphones, medical equipment, textiles, and machinery.
- **Trade in Services**: Liberalization of services trade facilitates greater mobility of skilled professionals between India and EFTA countries. Indian service providers, particularly in sectors like yoga instruction, traditional medicine, and highly skilled professions, gain access to new markets in EFTA countries, fostering cross-border collaborations and knowledge exchange.
- **IPR**: TEPA includes provisions on Intellectual Property Rights (IPR) to address concerns raised by EFTA countries about India's patent regime. Compliance with these provisions could provide more certainty and protection for innovators and investors, promoting technology transfer and innovation-driven growth.
- **Sustainable Development**: The agreement also features a chapter on Trade and Sustainable Development (TSD), which commits to environmental protection and labor standards. These provisions aim to promote sustainability while requiring India to comply with international environmental and labor agreements.

Strategic Implications

- **Potential for Growth**: Increased FDI, improved infrastructure, and technology transfer can boost economic growth.
- **Job Creation:** New investments and a more competitive service sector can generate jobs.
- **Challenges**: Lowering trade barriers and opening service sectors can lead to job losses in some industries.
- **Government's Role**: Policies for skill development, retraining programs, and promoting domestic industries can help address these challenges.

Conclusion

India's successful FTA conclusion with developed nations like Switzerland and Norway signals its dedication to trade liberalization amid global protectionism.

Critically analyze the effectiveness of existing regional frameworks in addressing the strategic and economic challenges in the Indian Ocean region. Propose a roadmap for the formation of a new 'Indian Ocean Cooperation Organisation'.

Introduction: Give a brief description of IOR
Body: Analyse effectiveness of regional frameworks addressing issues of IOR
Conclusion: Way forward

The Indian Ocean Region (IOR) comprises of the Indian Ocean and the countries bordering it- Australia, India, Indonesia, Bangladesh, Maldives, Sri Lanka, Myanmar) and four island states (Mauritius, Seychelles, Comoros, and Madagascar.) IOR faces a complex web of strategic and economic challenges. Piracy, maritime security threats, unregulated fishing, and climate change all demand regional cooperation.

Effectiveness of existing regional frameworks

- **Fragmentation:** Because of overlapping memberships and purposes, existing frameworks are fragmented. For instance, several nations have memberships in both BIMSTEC and IORA, which results in minimal coordination and duplication of effort.
- **Restricted Scope**: Although current frameworks cover some areas of regional cooperation, they frequently don't offer full solutions for new problems including threats to maritime security, the effects of climate change, and economic inequality.
- **Implementation Challenges**: Despite the existence of declarations and agreements, resource limitations, ineffective bureaucracy, and political disputes among member states are obstacles to the implementation of projects within regional frameworks.
- **External Influence**: With their growing involvement in the Indian Ocean region, foreign powers—including significant international players like China—have an impact on the dynamics within pre-existing frameworks and occasionally threaten regional autonomy.

Roadmap for the formation of a new 'Indian Ocean Cooperation Organisation'

- **Flexible Structure:** To address particular possibilities and problems in the area, IOCO should have a flexible structure that permits regular working groups, task forces, and consultations.
- **Sustainable Financing:** In order to support its programs and operations, IOCO should investigate sustainable financing options such as donations from member states, foreign donors, and public-private partnerships.
- **Objectives:** IOCO should have clear objectives focused on promoting peace, stability, and sustainable development in the Indian Ocean region. It should prioritize addressing maritime security threats, enhancing economic cooperation, and fostering people-to-people exchanges.
- **Comprehensive Approach:** IOCO should adopt a comprehensive approach to address a wide range of issues including maritime security, environmental protection, disaster management, trade facilitation, and connectivity.
- **Inclusivity:** IOCO should strive for inclusivity by involving all Indian Ocean littoral states, as well as key stakeholders such as international organizations, non-governmental organizations, and private sector entities.

Conclusion

A new IOOC, built on inclusivity, shared vision, and strong implementation mechanisms, has the potential to effectively address the strategic and economic challenges of the Indian Ocean Region.

Discuss the role of hydropower cooperation in the economic development of Bhutan and its impact on India-Bhutan relations. How can the lessons learned from this cooperation be applied to India's relationships with other neighboring countries?

Introduction: Brief contextual introduction
Body: Highlight the role of hydropower in the economic development of Bhutan & lessons learned from this cooperation.
Conclusion: Way forward

Hydropower cooperation between India and Bhutan has played a pivotal role in the economic development of Bhutan and has significantly strengthened the bilateral relations between the two nations.

Role of hydropower cooperation in the economic development of Bhutan

- **Economic development of Bhutan**: Hydropower projects have been the cornerstone of Bhutan's economic growth, providing a steady stream of revenue through the sale of electricity to India. This revenue has been crucial for Bhutan's development initiatives, helping the country graduate out of the Least Developed Country status. The success of these projects has contributed to Bhutan's overall economic prosperity and stability.
- **Strengthened India-Bhutan Relations**: The hydropower cooperation has fostered a strong and enduring partnership between India and Bhutan. Both countries have recognized the importance of this collaboration in achieving their respective development goals. The trust and cooperation established through hydropower projects have paved the way for deeper diplomatic ties and strategic cooperation in other sectors.
- **Model for Regional Cooperation:** The India-Bhutan hydropower cooperation serves as a positive example of successful regional cooperation in South Asia. It demonstrates how neighboring countries can work together for mutual benefit, leveraging each other's strengths and resources to promote economic growth and development.

Lessons learned from the India-Bhutan hydropower cooperation:

- **Mutual Respect and Trust**: India-Bhutan cooperation underscores the importance of mutual respect and trust in fostering successful partnerships. India should extend similar respect and trust to its other neighboring countries, acknowledging their sovereignty and priorities.
- **Shared Development Goals:** Both India and Bhutan have aligned their development goals through hydropower cooperation. India should work towards identifying common development objectives with other neighboring countries and explore avenues for collaboration to achieve them.
- **Sustainable Development**: The focus on sustainability in hydropower projects highlights the importance of environmentally responsible development. India can prioritize sustainable development practices in its collaborations with other neighboring countries, ensuring that projects benefit the environment and local communities.
- **Strategic Diplomacy:** Hydropower cooperation has been a cornerstone of India-Bhutan diplomacy. India can leverage similar strategic diplomacy approaches in its relationships with other neighboring countries, emphasizing cooperation, dialogue, and mutual benefit.

Conclusion

Successful execution of Gelephu Mindfulness City in Bhutan has the potential to develop infrastructure in parts of eastern India like West Bengal and Assam which augurs well for the continued growth and development of India-Bhutan ties prioritizing India's Neighbourhood First policy approach.

Assess the impact of climate change on urban water security, using Bengaluru's water crisis as a case study. Discuss the strategies that urban areas can adopt to build resilience against such climate-induced challenges.

Introduction: Contextual Introduction
Body: Highlight the impact of climate change on water security & measures to deal with challenges.
Conclusion: Way forward

The water crisis in Bengaluru is escalating, resulting in considerable shortages across different regions. Reports indicate that drought has impacted 223 out of the 236 talukas in Karnataka, encompassing Mandya and Mysuru districts, which serve as the primary sources of water for Bengaluru.

Impact of climate change on urban water security

- **Unpredictable Rainfall Patterns**: Rainwater harvesting and reservoirs play a major role in Bengaluru's water supply. However, due to climate change, rainfall patterns have become more erratic, with extended dry spells interspersed with periods of intense rainfall. Planning is difficult and water management is disrupted by this unpredictability.
- **Groundwater Depletion**: Bengaluru's over-exploitation of its groundwater resources is a result of the city's quick urbanization and population expansion. This problem is made worse by climate change, which changes groundwater levels and recharge patterns, increasing reliance on non-sustainable water sources.
- **Rising Temperatures:** As evaporation rates quicken, reservoirs and other surface water bodies have less water available. Heatwaves exacerbate this problem, making water scarcity worse when demand is high.

Strategies that urban centers can adopt to deal with the issue

- **Diversification of Water Sources**: To become less dependent on surface and groundwater alone, urban regions like Bengaluru need to diversify their water sources. This entails looking into solutions including desalination, rainfall collection, and wastewater recycling.
- **Water Conservation and Demand Management**: One way to lessen the strain on the water resources that are now available is to put water conservation measures into place and encourage businesses, industries, and households to utilize water efficiently.
- **Infrastructure Investment**: Improving urban water security requires making infrastructure investments for water distribution, treatment, and storage.
- **Climate-Resilient Urban Planning**: Reducing the negative effects of climate change on water security requires integrating climate resilience into urban planning procedures.

Conclusion

Through promoting inclusive participation from all stakeholders and enacting robust policies that prioritize long-term sustainability over immediate benefits, Bengaluru can chart a path toward a future where every Indian can access safe and dependable groundwater.

Critically analyze the concept of disease elimination versus eradication with reference to the Indian context.

Introduction: Give a brief context to the introduction
Body: Difference between elimination and disease eradication
Conclusion: Way forward

India has a rich history of tackling infectious diseases. The latest report by the Carter Center shows that guinea worm disease was close to eradication. This would be the second disease after smallpox to be eradicated and the first one with no known medicines or vaccines.

Eradication vs. Elimination

- **Definition**: Disease elimination targets achieving zero transmission within a defined geographic area, marking a significant milestone in public health efforts. Disease eradication entails permanently ceasing the transmission of a pathogen globally, representing the ultimate goal of public health.
- **Diseases:** In the Indian context, disease elimination has been achieved for diseases such as polio and maternal and neonatal tetanus. In the Indian context, efforts towards disease eradication have primarily focused on diseases such as malaria, tuberculosis, and, more recently, COVID-19.
- **Factors**: Surveillance systems must be strengthened to detect and respond to any resurgence of the disease post-elimination. Achieving elimination nationwide may be challenging within the declared time frame for certain diseases, but feasible for others in specific regions. the feasibility of eradicating certain diseases nationwide may vary depending on factors such as disease prevalence, geographic distribution, and healthcare infrastructure.

Key Considerations in the Indian Context:

- **Vast Population and Diverse Geography**: India's sheer size and varied landscapes pose challenges in achieving uniform program reach. Localized pockets of high prevalence can persist even with national elimination. (e.g., Leprosy in Bihar and Chhattisgarh)
- **Socioeconomic Disparities**: Unequal access to healthcare, sanitation, and clean water disproportionately affects vulnerable communities, hindering elimination efforts.
- **Cross-Border Movement**: Open borders with neighboring countries can lead to the reintroduction of eliminated diseases. (e.g., Malaria).

Conclusion

Ending the epidemics of malaria, tuberculosis, and Neglected Tropical Diseases by 2030 is one of the Sustainable Development Goals set by the United Nations. Disease elimination and eradication represent complementary strategies in India's public health agenda, each requiring careful planning, resource allocation, and multisectoral collaboration. While elimination targets zero transmission within defined regions, eradication aims for global cessation of disease transmission. Success in these endeavors hinges on strong surveillance systems, political commitment, and coordinated efforts at regional and national levels.

Examine the role of Non-Personal Data (NPD) in enhancing governance and public service delivery in India.

Introduction: Contextual Introduction
Body: Role of NPD in governance and public service delivery
Conclusion: Way forward

The rapid digitization of government operations is paralleled by the accumulation of larger quantities of citizen data. This data typically falls into two categories: Personal Data, which contains identifying information about individuals, and Non-Personal Data (NPD), which excludes personal identifiers. NPD stands out as the predominant type of citizen data collected by the government, presenting opportunities to function as a 'public good'.

Benefits of NPD for Governance and Public Service Delivery

- **Evidence-Based Policymaking:** NPD serves as a foundational element for evidence-based policymaking in various sectors such as healthcare, education, urban planning, and agriculture. This allows them to formulate targeted policies and interventions that address specific needs and challenges effectively.

- **Resource Optimization:** Identifying areas with high demand for specific services (healthcare, education) allows for better resource allocation.
- **Transparency and Accountability**: Publicly available anonymized datasets can enhance transparency in government spending and program effectiveness.
- **Supporting Innovation and Economic Growth:** NPD serves as a valuable resource for fostering innovation and driving economic growth. By facilitating access to anonymized data from various sectors, governments can incentivize entrepreneurs, researchers, and startups to develop new products, services, and solutions that address societal challenges and create economic opportunities.
- **Ensuring Privacy and Data Security:** While leveraging NPD for governance and public service delivery, it's essential to prioritize privacy and data security Building public trust in data handling practices is crucial for ensuring the responsible use of NPD for societal benefit.
- **Improved Targeting**: Social welfare programs can be better targeted towards eligible beneficiaries using anonymized socio-economic data.
- **Predictive Maintenance:** Analyzing sensor data from infrastructure (power grids, water supply) can predict maintenance needs and prevent disruptions.
- **Personalized Services**: Public services can be tailored to specific needs based on anonymized demographic or geographic data. (e.g., Educational resources targeted towards regional skill gaps).

Conclusion

India has enormous potential to enhance public service delivery and governance by utilizing NPD. To fully realize this promise, though, a few key issues must be resolved, including data security, governance, and quality control. India can usher in a new era of data-driven decision-making for the good of its people by overcoming these obstacles.

Evaluate the significance of international cooperation in water diplomacy for fostering regional stability and peace. Illustrate with examples the historical and contemporary relevance of water as a resource in international relations.

Introduction: Contextual Introduction
Body: Significance of water diplomacy and relevance of water as a resource.
Conclusion: Way forward

Under the ***'World Water Assessment Programme UNESCO*** released the 2024 edition of the flagship United Nations World Water Development Report, "***Water for Prosperity and Peace***" as a part of UN-Water on the occasion of World Water Day, on March 22, with the theme ***"Leveraging water for peace***" highlighting the significance of international cooperation in water diplomacy.

Significance of water diplomacy in regional stability and peace

- **Scarcity Feeds Conflict**: Since freshwater is a limited resource, rivalry for it can quickly turn into hostilities between nations, particularly those that share aquifers or rivers. Conflict is avoided by international cooperation, which guarantees equitable and sustainable water distribution.
- **Common Problems, Common Solutions**: Water-related problems, such as pollution, flooding, and droughts, have no national boundaries. All stakeholders gain from cooperative efforts in flood management, infrastructure development, and water quality monitoring since they foster a sense of shared responsibility.
- **Building Trust Through Cooperation**: Water diplomacy encourages communication and mutual respect among countries. Collaborating on water management fosters cooperation and communication, which improves the climate for settling other political disputes.

Historical Examples

- A potential confrontation between India and Pakistan was avoided by the World Bank-brokered Indus Waters Treaty (1960), which outlined the rights of water sharing for the Indus River system.
- Ethiopia, Egypt, and Sudan have been at odds over the Grand Ethiopian Renaissance Dam (GERD) on the Nile River. The goal of ongoing international negotiations is to create a cooperative framework for dam operation and water sharing.

Contemporary Relevance

- The Mekong River Commission, established by riparian countries in Southeast Asia, promotes joint water management, mitigating floods and droughts while ensuring sustainable development for all members.
- The Middle East, a water-scarce region, is increasingly turning to water diplomacy initiatives like the Blue Peace Middle East, which utilizes water cooperation as a tool for regional peacebuilding.

Conclusion

The global community requires an advanced model of cross-border water governance, which advocates for fair and efficient allocation of water resources among nations that share them. While significant strides have been made over the ages in promoting peace, the looming threat of freshwater scarcity poses a grave risk to our collective welfare and stability. This imperative is particularly vital in the context of the 2030 Agenda and the attainment of Sustainable Development Goals (SDGs).

Examine the potential of Small Modular Reactors (SMR) and other technological advancements in nuclear power for reducing carbon emissions. Discuss how these technologies can contribute to the destigmatization of nuclear energy.

Introduction: Contextual Introduction
Body: Highlight the potential of SMR & how such technologies can help in the destigmatization of nuclear energy.
Conclusion: Way forward

As per the International Atomic Energy Agency (IAEA), SMRs are advanced nuclear reactors with a power generation capacity ranging from less than 30 MWe to 300 MWe. Conventional Nuclear power plants have generally suffered from time and cost overruns. As an alternative, several countries are developing small modular reactors (SMRs) to complement conventional Nuclear power plants.

Potential of SMR in nuclear power for reducing carbon emissions

- **Reduced Carbon Footprint:** Like traditional nuclear reactors, SMRs generate electricity through nuclear fission, a process that doesn't emit greenhouse gases during operation.
- **Scalability and Flexibility:** SMRs are smaller and more modular than conventional reactors. This allows for deployment in areas with lower energy demands and facilitates a gradual shift towards nuclear power.
- **Enhanced Safety Features:** Many SMR designs incorporate inherent safety features, minimizing the risk of accidents and meltdowns.
- **Flexibility:** SMRs can be integrated with Renewable Energy to fulfill the need for flexibility, producing energy services, and low-carbon co-products. These can include electricity, hydrogen, synthetic fuels, hot process gases, or steam. When coupled with variable energy sources SMRs can mitigate fluctuations on a daily and seasonal basis.

How can SMR contribute to the destigmatization of nuclear energy?

- **Refueling interval**: Standard plants require refueling every one to two years, however SMR-based power plants may only need to do so every three to seven years. Some SMRs have an operating life expectancy of thirty years without refilling.

- **Safety features**: Extensive use of passive safety features in SMR designs, which rely on the laws of physics to shut down and cool the reactor under abnormal circumstances, provide inherent safety. In most cases, these technologies don't need a power supply and can handle accidents without the assistance of a person or a computer.
- **Economical**: SMRs require a low capital outlay and/or a phased capital expenditure. They have the adaptability to allow co-generation, supply heat for desalination and manufacturing, etc.
- **Compact design**: Compared to big reactors and renewable energy sources, SMRs require less area for operations. Parts of outdated or closed fossil fuel-based power facilities are expected to be repurposed by SMRs.

Conclusion

SMR may complement large-size reactors to increase the nuclear share in the energy mix and achieve Net Zero Emissions goals. The UN Climate Change Conference (COP28), held in Dubai (UAE) in December 2023, underscored the crucial role of nuclear energy in achieving climate objectives & highlighted the necessity of tripling nuclear energy capacity by 2050 to address climate challenges effectively.