

# LOCAL GOVERNMENT POLICY ON THE IMPACT OF CLIMATE CHANGE IN COASTAL REGIONS BASED ON THE CONCEPT OF GREEN AUTONOMY (ENVIRONMENTAL AUTONOMY)

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## Abstract

*The current centralized regime is preventing the implementation of climate change policy in line with the needs of affected regions. Consequently, many regions with distinctive coastal and small-island characteristics have been adversely affected by centralized policy largely due to a lack of regional government authority to establish climate change mitigation policy tailored to local needs. In this context, mitigation efforts based on green autonomy, namely the authority of regional government to establish climate change mitigation policy, are essential. Therefore, this research aims to identify the form of regional government policy addressing the impacts of climate change in coastal and small island regions, based on environmentally friendly autonomy. A doctrinal legal method was used with a descriptive-analytical approach, specifically a juridical-normative analysis that provides a descriptive analysis of regional government authority in climate change prevention. The results showed that the concept of climate change based on green autonomy emphasizes regional authority, independence, and independence in environmental management, particularly climate change efforts. This approach is operationalized by establishing cross-sectoral policy across structured and non-structured stages, starting with preparing coastal spatial plans consistent with regional interests without excluding national objectives. In conclusion, the concept of green autonomy offers a value contribution for government consideration in establishing climate change mitigation policy, and represents a new legal development for regional government in implementing concurrent authority matters.*

**Keywords:** *climate change; green autonomy; policy.*

## Abstrak

Regime sentralisasi saat ini menghambat implementasi kebijakan perubahan iklim sesuai dengan kebutuhan wilayah yang terdampak. Akibatnya, banyak wilayah dengan karakteristik pesisir dan pulau kecil yang unik telah mengalami dampak negatif dari kebijakan sentralisasi, terutama karena kurangnya kewenangan pemerintah daerah untuk menetapkan kebijakan mitigasi perubahan iklim yang disesuaikan dengan kebutuhan lokal. Dalam konteks ini, upaya mitigasi berdasarkan otonomi hijau, yaitu kewenangan pemerintah daerah untuk menetapkan kebijakan mitigasi perubahan iklim, sangatlah penting. Oleh karena itu, penelitian ini bertujuan untuk mengidentifikasi bentuk kebijakan pemerintah daerah dalam menangani dampak perubahan iklim di wilayah pesisir dan pulau-pulau kecil, berdasarkan otonomi ramah lingkungan. Metode hukum doktrinal digunakan dengan

pendekatan deskriptif-analitis, khususnya analisis yuridis-normatif yang memberikan analisis deskriptif mengenai kewenangan pemerintah daerah dalam pencegahan perubahan iklim. Hasil penelitian menunjukkan bahwa konsep perubahan iklim berdasarkan otonomi hijau menekankan pada kewenangan regional, kemandirian, dan kemandirian dalam penge-lolaan lingkungan, khususnya upaya mitigasi perubahan iklim. Pendekatan ini diimplementasikan melalui pembentukan kebijakan lintas sektor pada tahap terstruktur dan tidak ter-struktur, dimulai dengan penyusunan rencana tata ruang pesisir yang sesuai dengan kepen-tingan regional tanpa mengesampingkan tujuan nasional. Kesimpulannya, konsep otonomi hijau memberikan kontribusi nilai bagi pertimbangan pemerintah dalam menetapkan kebijakan mitigasi perubahan iklim, dan mewakili perkembangan hukum baru bagi pemerintah daerah dalam melaksanakan urusan kewenangan bersamaan.

**Kata kunci:** kebijakan; otonomi hijau; perubahan iklim.

## Introduction

Climate change is a long-term alteration in temperature and weather patterns,<sup>1</sup> contributing to global warming, which in turn impacts the sustainability of humanity and natural resources.<sup>2</sup> The implications of climate change include reduced food productivity, poor water management, poor air quality, rising sea levels, and the sinking of small islands.<sup>3</sup> This problem has become an international issue, as not all countries can control the phenomenon. In response, the United Nations Framework Convention on Climate Change (UNFCCC) was established as a governance mechanism under the United Nations to assist countries in addressing climate change.<sup>4</sup> The Indonesian Government, similar to many others, has recognized the importance of climate change mitigation efforts by implemen-ting various conferences and treaties. One demonstration of this commitment is the ratification of the Paris Agreement, enacted as Law Number 16 of 2016 concerning the Ratification of the Paris Agreement to the UNFCCC, which aims to enhance the protection of Indonesian territories highly vulnerable to the impacts of climate change.<sup>5</sup>

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<sup>1</sup> Xinran Chen et al., “The Impact of Central Heating on the Urban Thermal Environment Based on Multi-Temporal Remote Sensing Images,” *Remote Sensing* 14, no. 10 (2022), <https://doi.org/10.3390/rs14102327>.

<sup>2</sup> Naveen Kumar Arora and Isha Mishra, “Sustainable Development Goal 13: Recent Progress and Challenges to Climate Action,” *Environmental Sustainability* 6, no. 3 (September 8, 2023): 297–301, <https://doi.org/10.1007/s42398-023-00287-4>.

<sup>3</sup> Baktiar Leu, “Dampak Pemanasan Global Dan Upaya Pengen-Daliannya Melalui Pendidikan Lingkungan Hidup Dan Pendidikan Islam,” *AT-TADBIR* 1, no. 2 (2021): 1–15, <https://doi.org/10.51700/attadbir.v1i2.207>.

<sup>4</sup> Ni Putu Rai Yuliantini and Davira Syifa Rifdah Suwatno, “Ratifikasi Terhadap Traktat Persetujuan Paris (Paris Indonesia Dalam Upaya Mitigasi Dan Adaptasi),” *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

<sup>5</sup> Alif Duta Hardenta and Ardianto Budi Rahmawan, “Manifestasi Partisipasi Publik Dalam Doktrin Kepercayaan Publik Bagi Pemenuhan Komitmen Perubahan Iklim Indonesia,” *Jurnal Hukum Lingkungan Indonesia* 9, no. 1 (February 26, 2023): 157–86, <https://doi.org/10.38011/jhli.v9i1.493>.

The continuation of the Paris Agreement ratification is not restricted to a specific timeframe. The Indonesian Government commitment to climate change management remains a key topic in the Long-Term Development Plan from 2025 to 2045. This plan serves as a guideline for advancing progress across various sectors of society, including social, cultural, religious, economic, scientific, political, legal, defense, civil service, human resource, and natural resource, particularly environmental and spatial planning.<sup>6</sup> More importantly, the development plan naturally contains the foundations or main points of discussion for the Indonesian Government geopolitical and geostrategic perspectives for a specific timeframe.<sup>7</sup> One of the key agendas is the formulation of policy to address the impacts of climate change at the Central Government and provincial and Regency/City levels.

The impacts of climate change are significantly felt by Regency/City government, which has autonomy in managing the environment, marine, land, and airspace. For example, in Indramayu Regency, West Java Province, sea level rise caused by climate change has submerged almost half of Gosong Island and Cendekian, leaving only a few square meters of land with a height of less than 2 meters. Meanwhile, Biawak Island experienced a decrease in region of 0.22 km<sup>2</sup>/year. In several sub-districts with sea and coastal regions, such as Eretan, Karangsong, and Juntinyuat, tidal water (high tide) rises almost every year. Tidal water is a rise in sea level that causes damage to submerged residential regions and public facilities. A similar situation is also felt by the Cirebon Regency government, especially the Samadikun coastal regions, affected by tidal water caused by rising sea levels originating from climate change, as illustrated below:

#### 1.1. Figure of the increase in tidal flooding in coastal regions in Indramayu

Regency, West Java Province, caused by climate change

Karangsong Coastal Region      Eretan Coastal Region, North Coast



Source: Results of research conducted by the author, 2023.

<sup>6</sup> Saeful Kholik, "Kewenangan Pemerintah Daerah Terhadap Antisipasi Pengendalian Perubahan Iklim Kerusakan Lingkungan Laut Di Kabupaten Indramayu Dalam Rezim Sentralisasi," *Yustitia* 9, no. 1 (2023): 69–84, <https://doi.org/10.31943/yustitia.v9i1.171>.

<sup>7</sup> Anita Anita, Rusfandi Rusfandi, and Meidy Triasavira, "Pencegahan Alih Fungsi Lahan Serta Penataan Ruang Dalam Rangka Mewujudkan Pembangunan Berkelanjutan," *Jurnal Jendela Hukum* 9, no. 1 (2022): 93–106, <https://doi.org/10.24929/fh.v9i1.2052>.

The impact of climate change, particularly rising sea levels, is being experienced by nearly all regencies/cities with seas, coastal regions, and small islands in Indonesia. Aside from the Javanese archipelago, Sumatran archipelago is also experiencing rising sea levels, with the impact of climate change almost engulfing small islands from Aceh to Papua.<sup>8</sup> The impact of climate change on sea level rise threatens coastal regions and small islands, creating a serious problem. Based on the analysis of these issues, policy grounded in the concept of environmentally friendly autonomy are needed to address or control climate change through multi-level governance mechanisms, with policy implemented from the Regency/City up to the central Government.

The concept of "Green Autonomy" (Environmental Autonomy) advocated in this study emphasizes the independence and freedom of Regency/City government to implement and establish environmental management and control policy under central government oversight. Autonomy in environmental management serves as the initial basis for the Regency/City Regional Government to take timely and appropriate policy action in response to environmental damage or escalating climate change impacts at the local level. These policies must remain firmly in line with national political priorities and legal framework. The direction of legal politics towards the implementation of autonomy in environmental management, especially climate change control, represents a strategy or initial step for the Indonesian Government in addressing environmental problems. Support for green autonomy reflects the practical application of sustainable development principles, focusing on managing the environment for the present without reducing or damage for future generations. Therefore, green autonomy, or environmental autonomy, is a policy framework for the Regency/City Regional Government to strengthen local government authority and independence in preventing, overcoming, and mitigating climate change. This conceptual view referred to Sustainable Development Goal (SDG) Goal 13 Climate Action, which is to integrate climate change mitigation actions into national planning policy and strategies, down to local government.<sup>9</sup> It also considered the Sendai Framework for Disaster Risk Reduction (SFDRR), which aims to increase community resilience to disasters.<sup>10</sup> This framework emphasizes responsibility and provides authority from the central to regional government to prevent and reduce disaster risks.

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<sup>8</sup> The Conversation, "Akibat Perubahan Iklim: Kenaikan Air Laut Nyaris Melahap Pulau Kecil Sepanjang Aceh-Papua," *The Conversation*, 2021, <https://theconversation.com/akibat-perubahan-iklim-kenaikan-air-laut-nyaris-melahap-pulau-kecil-sepanjang-aceh-papua-170870>.

<sup>9</sup> Anastasia Mortimer et al., "Localizing Sustainable Development Goal 13 on Climate Action to Build Local Resilience to Floods in the Hunter Valley: A Literature Review," *Sustainability (Switzerland)* (Multidisciplinary Digital Publishing Institute (MDPI), March 1, 2023), <https://doi.org/10.3390/su15065565>.

<sup>10</sup> Boyi Li et al., "An Earth Observation Framework in Service of the Sendai Framework for Disaster Risk Reduction 2015–2030," *ISPRS International Journal of Geo-Information* 12, no. 6 (June 1, 2023): 1–20, <https://doi.org/10.3390/ijgi12060232>.

The government awareness of the need to implement autonomy in environmental management, protection, and policy-making, including efforts to control climate change, reflects the understanding that the central government cannot bear the burden alone. Climate change disproportionately impacts autonomous regions with unique marine, coastal, and small island characteristics. Within this framework, autonomy is understood as intersecting with environmental governance, whereby regional autonomy serves as an instrument for designing and implementing environmental management policy and climate change control measures. Further reinforcement of this autonomy is evident in the government desire to always protect the environment. The background research of the Vision-Mission of Indonesia Emas 2025-2045 states that:

*Regions need to be granted greater responsible autonomy, and the central Government must reduce policy and regulations. The central Government needs to establish a legal framework to ensure development is consistent with national goals, allowing greater scope for regional diversity. Regions need to make various improvements to create greater scope for communities well-being. Trust between the central government and the regions needs to be continuously built to encourage more development initiatives by the regions.*<sup>11</sup>

In other words, granting substantial autonomy, including equitable regional development to ensure basic environmental rights and independence in policy-making, will support and facilitate the government efforts to prevent climate change. However, the implementation of environmental-focused autonomy policy has not fully addressed the challenges of climate change control. The persistence of the centralized regulatory approach, particularly under the Omnibus Law regime, has contributed to policy inconsistencies in climate change mitigation efforts, especially those affecting sea levels, coastal regions, and small islands. A literature review published by Lianti in 2023 reported that the Indonesian government actions in addressing climate change have not been experienced progressively.<sup>12</sup> Furthermore, A. Ulum (2022) stated that the legal perspective on climate change, shaped by international agreements, can be translated to the local level.<sup>13</sup> The comparative literature shows an unresolved research gap and deficiencies regarding the form of policy or authority of Regency/City Government in implementing control or prevention of climate change impacts in coastal regions and small islands based on the concept of regional autonomy. This research is highly original and lacks articles discussing similar issues.

<sup>11</sup> Kementerian PPN/BAPPENAS, "Background Study Visi Dan Misi Indonesia Emas 2045" (Indoensia, 2019).

<sup>12</sup> Lita Lianti and Putri Dwi Utami, "Efektifitas Tindakan Pemerintah Indonesia Dalam Menyikapi Persoalan Perubahan Iklim Ditinjau Dari Perspektif Hukum Administrasi Negara," *Jurnal Panorama Hukum* 8, no. 1 (2023): 85–93, <https://doi.org/10.21067/jph.v8i1.7697>.

<sup>13</sup> Andi Nurul Ulum, Muhammad Yunus, and Irvansyah Irvansyah, "Peran Dan Langkah Mitigasi Perubahan Iklim Di Indonesia," *Jurnal Restorative Justice* 6, no. 2 (2022): 125–39, <https://doi.org/10.35724/jrj.v6i2.4664>.

Based on the background above, this research aims to examine the form of Regency/City Government policy for mitigating climate change, and the implications for sea level rise in coastal regions and small islands based on the concept of green autonomy, to achieve Indonesia Emas 2045. The urgency of prioritizing green autonomy is grounded in the potential to inform climate change policy by clarifying the scope, certainty, and limitations of early prevention and mitigation measures at the regency/city government level.

## Methods

This research aims to develop a policy concept for the Regional Government to address the impacts of climate change, including sea-level rise, coastal regions, and small islands, based on the concept of green autonomy (Environmental Autonomy) to achieve Indonesia Emas 2045. The concept can be achieved through a doctrinal legal research approach, a method for establishing validity by using data sourced from legal norms or regulations within the community.<sup>14</sup> The sources used include statutory and relevant legal materials, which were then analyzed using descriptive analysis.<sup>15</sup>

## Results and Discussion

### Regional/City Government Policy on Climate Change and Rising Sea Levels in Coastal Regions and Small Islands

Along with technological advancements and rising human needs, global pressure on the environment also continues to increase. This environmental pressure directly impacts climate change, locally, regionally, and globally.<sup>16</sup> The impacts of climate change, particularly in Indonesia,<sup>17</sup> an archipelagic nation, are experienced most acutely by communities living in coastal regions and small islands, posing a threat and necessitating spatial control.<sup>18</sup> Marine space, in particular, is probable to have a greater impact in the future. When the Govern-

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<sup>14</sup> Muhammad hendri Yanova, Parman Komarudin, and Hendra Hadi, "Metode Penelitian Hukum: Analisis Problematika Hukum Dengan Metode Penelitian Normatif Dan Empiris," *Badamai Law Journal* 8, no. 2 (2023): 394–408.

<sup>15</sup> Maret Priyanta, "Implikasi Konsep Kesesuaian Kegiatan Pemanfaatan Ruang Laut Dalam Pengelolaan Sumber Daya Kelautan Berkelanjutan," *Jurnal Wawasan Yuridika* 5, no. 1 (2021): 1–20, <https://doi.org/10.25072/jwy.v5i1.361>.

<sup>16</sup> Nurul Ain Zulhaimi, Joy Jacqueline Percira, and Nurfashareena Muhamad, "Global Research Landscape of Climate Change, Vulnerability, and Islands," *Sustainability (Switzerland)* (Multidisciplinary Digital Publishing Institute (MDPI), September 1, 2023), <https://doi.org/10.3390/su151713064>.

<sup>17</sup> Asti Amelia Novita, "Environmental Governance and Climate Change Adaptation in Indonesia," *Jurnal Ilmiah Administrasi Publik* 007, no. 01 (April 1, 2021): 46–55, <https://doi.org/10.21776/ub.jiap.2021.007.01.6>.

<sup>18</sup> Celene B. Milanés et al., "Climate Change and Spatial Justice in Coastal Planning in Cuba and Brazil," *Ambiente e Sociedade* 23, no. 1 (2020): 1–23, <https://doi.org/10.1590/1809-4422ASOC20190184R1VU2020L6TD>.

ment or all stakeholders fail to implement concrete, preventive measures worldwide, the negative impacts of climate change on marine spaces and coastal regions will undoubtedly become more widespread.<sup>19</sup>

Marine resources in coastal regions and small islands are transboundary and are highly vulnerable to global environmental change<sup>20</sup>, characterized by atmospheric warming. This phenomenon leads to an increase in sea water temperature of approximately 0 °C, which has an impact on melting ice in polar regions and a rise in sea levels of around 0.8 meters to 1.5 meters throughout the 20th century. The Indonesia coastal regions, atmospheric warming should be observed as a phenomenon of sea level rise (SLR), resulting from melting polar ice due to global warming. The impacts include eroded coastal beaches, erosion, floods, and sea intrusion, changes in infrastructure in coastal regions, affecting marine biota life, and small islands.<sup>21</sup>

Given that the impacts of climate change undoubtedly threaten the sustainability of life on Earth,<sup>22</sup> the Government is striving to implement state responsibility.<sup>23</sup> Nationally, the Indonesian Government has established policy to prevent climate change through Law of the Republic of Indonesia Number 16 of 2016 concerning the Ratification of the Paris Agreement to the UNFCCC.<sup>24</sup> Article 7, among other provisions, stipulates that all parties are required to participate in the adaptation planning and action process in determining policy for mitigating climate change. This legal provision imposes an obligation on both the central and regional government to implement adaptation strategies and address climate change through policy planning to mitigate impacts on sea levels, coastal regions, and small islands within respective autonomous regions.

Regional government policy regarding climate change mitigation impacting coastal regions and small islands depends on geographic conditions, natural resources, and regional priorities. The main forms of policy planning implemented include disaster mitigation, adaptation, public education, and participation. First, disaster mitigation focuses on efforts to reduce the risk of adverse climate

<sup>19</sup> David C. Major et al., "Adaptation to Climate Change in Small Island Settlements," *Ocean and Coastal Management* 212 (October 15, 2021), <https://doi.org/10.1016/j.ocecoaman.2021.105789>.

<sup>20</sup> Xiao Wang et al., "Pollution Load Coordination and Eco-Compensation for Trans-Boundary Water Pollution Control: The Case of the Tri-Border Region of the Yangtze Delta," *Sustainability (Switzerland)* 16, no. 3 (2024): 1–20, <https://doi.org/10.3390/su16031151>.

<sup>21</sup> Freddy Numberi, *Perubahan Iklim Implikasinya Terhadap Kehidupan DI Laut, Pesisir Dan Pular-Pular Keci*, ed. Henry Supriadi Simaremare, Drs. Firts Kiriho, Drs. Theo Wimuri, Edisi Kedu (Indonesia: Fortuna Prima Makmur, 2009).

<sup>22</sup> Adelle Thomas et al., "Climate Change and Small Island Developing States," *Annual Review of Environment and Resources*, 2020, <https://doi.org/10.1146/annurev-environ-012320-083355>.

<sup>23</sup> Daud Silalahi, *Lahirnya Hukum Lingkungan Dengan Perkembangannya Dalam Perspektif Internasional Dan Regional*, ed. Sadikin Gani Meliyana Frederika, Kristianto Silalahi, Maurice Silalahi (Indoensia: Yayasan Lawencron, 2018).

<sup>24</sup> KLHK, "Laporan Inventarisasi GRK 2020 Dan Monitoring, Pelaporan, Verifikasi (MPV)," Kementerian Lingkungan Hidup Dan Kehutanan, 2020, 1–143.

change impacts, as outlined in integrated spatial planning (RTRW). Second, adaptation focuses on adjustments before and after the impacts of climate change, in accordance with the carrying capacity and resilience of coastal regions and small islands. Third, public education and participation constitute a critical policy component, as regional government policy are crucial for engaging the public to actively participate in disseminating information and implementing climate change mitigation measures in affected coastal regions.

Through these policy planning approaches, regional government can mitigate risks and develop concepts to anticipate the impacts of climate change, contributing to a more equitable model for affected coastal regions.<sup>25</sup> Disaster mitigation is carried out with the participation of the central government, regional government, and/or the community.<sup>26</sup> However, at the implementation level, this policy must be accompanied by cross-sectoral coordination among government institutions, adequate funding, systemic monitoring and evaluation, as well as the granting of broader authority to the Regency/City Regional Government. Without these measures, there is a tendency for delayed responses to the impacts of climate change.

The enactment of the Omnibus Law has shifted the climate change mitigation regime to a centralized policy and authority structure, with regions implementing only central policy, especially in disaster mitigation. Therefore, the role of indigenous, local, and traditional communities, and even Regency/City Government, in managing coastal regions and small islands is limited, unclear, and lacks authority.<sup>27</sup> This is because the authority is confined to the provincial government, leaving Regency/City government without definitive authority. The limitation is evident in the relationship between the Nationally Determined Contribution (NDC) and Regional Government, which is guided by Presidential Regulation Number 98 of 2021 concerning the Implementation of the Carbon Economy. Naturally, adhering to this centralized policy pattern will create uncertainty for local institutions in climate change management, resulting in slower mitigation of disasters caused by climate change and rising sea levels.

Based on the results, there is a need to strengthen policy on mitigation, adaptation, education, and community participation, grounded in autonomy or decentralization, which ultimately confer authority to Regional Government in

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<sup>25</sup> Philia Christi Latue, Susan E. Manakane, and Heinrich Rakuasa, "Policy Review and Regional Development in Disaster Mitigation (Case Study: 2004 Aceh Tsunami and 2011 Tōhoku Tsunami)," *International Journal of Multidisciplinary Approach Research and Science* 1, no. 03 (2023): 288–301, <https://doi.org/10.59653/ijmars.v1i03.165>.

<sup>26</sup> Nur Hamid et al., "Pengaruh Kondisi Sosial Ekonomi Terhadap Pemberdayaan Masyarakat, Mitigasi Bencana, Dan Dampak Abrasi Di Kragan-Rembang," *Jurnal Al-Ijtimaiyyah* 9, no. 1 (June 30, 2023): 96, <https://doi.org/10.22373/al-ijtimaiyyah.v9i1.17731>.

<sup>27</sup> Muhammad Mumtaz, "Intergovernmental Relations in Climate Change Governance: A Pakistani Case," *Global Public Policy and Governance* 3, no. 1 (2023): 116–36, <https://doi.org/10.1007/s43508-023-00066-1>.

climate change mitigation efforts with implications for rising sea levels and impacts on coastal regions and small islands. Autonomy can be granted through structural and non-structural approaches. Structural approaches are implemented by optimizing infrastructure. Meanwhile, non-structural approaches can be implemented through strengthening and establishing a common understanding between the private sector and Regency/City, provincial, and central government. Through this approach, local government will be more responsive to establishing policy for disaster mitigation efforts caused by climate change.

### **The Concept of Green Autonomy in Response to Climate Change, Rising Sea Levels in Coastal Regions and Small Islands**

The Indonesian Government's hopes and goals for becoming a developed nation are evident in its human resource development plan and balanced natural resources program. This is evident in the planning outlined in the Government's Vision program, Indonesia Emas 2025-2045. Indonesia's vision is to become a global megatrend nation, outlined through four pillars: Human Development and Mastery of Science and Technology, Sustainable Economic Development, Equitable Development, and Strengthening National Resilience and Governance.<sup>28</sup> The continuity of these four pillars outlines the foundation for Indonesia's development targets for greater progress and advancement in various fields, including the environment and equitable development managed within a system of governance based on independence or autonomy. In its implementation, particularly in the region of regional autonomy in the management of natural resources and the environment, several obstacles arise, including the authority and responsibility of regional government in addressing global environmental issues and problems such as climate change.

The world currently faces a serious challenge of increasing global warming, both in the form of extreme weather and long-term climate change, which has a broad impact on many aspects of human life. As an archipelagic country with a tropical climate, Indonesia is highly vulnerable to the impacts of climate change. From an environmental perspective, potential problems include disruption of coastal ecosystems, resulting in the loss and destruction of biodiversity and the sinking of small islands, both inhabited and uninhabited (forests and wildlife). Meanwhile, from a social and economic perspective, this condition can affect the incomes of farmers and fishermen in the region. The impact of climate change will continue to increase over the next 30 years. Sea levels are projected to rise by 50 cm in 2040 compared to 2000. This condition increases the length of coastline vulnerable to climate change impacts to 1,820 km by 2045.<sup>29</sup> The impact of climate change must be addressed through inter-sectoral collaboration, including

<sup>28</sup> Kementerian PPN/BAPPENAS, "Background Study Visi Dan Misi Indonesia Emas 2045."

<sup>29</sup> Kementerian PPN/BAPPENAS.

the private sector, as well as central, provincial, and Regency/City government.<sup>30</sup> The Central Government has planned various programs to address climate change, particularly rising sea levels that threaten coastal regions and small islands, including disaster mitigation. However, implementation faces obstacles, particularly due to a lack of alignment (disharmony) between the central and regional government in climate change disaster mitigation policy. This is based on the limited authority to manage natural resources, particularly marine and coastal regions, which impacts climate change mitigation efforts.

Law No. 23 of 2014 concerning Regional Government<sup>31</sup> and Law No. 32 of 2009 concerning Environmental Protection and Management stipulate the division of authority within the mandatory functions of Regency/City Government.<sup>32</sup> This includes the implementation of regulations establishing the Paris Agreement to the UNFCCC, which mandate a cross-sectoral role in climate change mitigation.<sup>33</sup> However, this legal basis has not been effectively implemented. The regulation clearly states that regional government has authority, at the lowest level, to control climate change through regional regulations, guidance, and even law enforcement. In the implementation, the current centralized regime presents a biased or unclear picture of regional government authority. This is evident in several regulations, which do not clearly define the limits of authority, resulting in each policy, or even a climate change mitigation program, having distinct lines of authority.

The enactment of Presidential Regulation (Perpres) No. 98 of 2021 concerning the Implementation of Carbon Economic Values only regulates the operationalization of efforts to achieve the National Development Planning (NDC) target through climate change mitigation and adaptation.<sup>34</sup> However, it does not regulate the implementation or the limits on the authority of the Regency/City regional government to implement climate change mitigation efforts. This implies that the Presidential Regulation clarifies the unclear authority to establish control policy and law enforcement measures to prevent climate

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<sup>30</sup> Z Afni, Triono D Hakim, and Vita Amelia, ‘*Penguatan Literasi Masyarakat Pesisir Pulau Bengkalis Terhadap Kebijakan Perubahan Iklim*,’ *Community Empowerment* 6, no. 9 (2021): 1664–73.

<sup>31</sup> Ridja, Mau, and Bakry, ‘*Jurnal Ilmiah Global Education*,’ *Jurnal Ilmiah Global Education* 4, no. 3 (2018): 1482–89, [ejournal.nusantaraglobal.ac.id/index.php/jige](http://ejournal.nusantaraglobal.ac.id/index.php/jige).

<sup>32</sup> Bara Firmansyah, Fenty Puluhulawa, and Lisnawaty W. Badu, ‘*Penerapan Undang-Undang Nomor 32 Tahun 2009 Pasal 109 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup*,’ *Perkara: Jurnal Ilmu Hukum Dan Politik* 2, no. 1 (January 19, 2024): 336–58, <https://doi.org/10.51903/perkara.v2i1.1672>.

<sup>33</sup> Ni Putu Rai Yuliantini and Davira Syifa Rifdah Suwatno, ‘*Ratifikasi Terhadap Traktat Persejukan Paris (Paris Agreement) Sebagai Wujud Implementasi Komitmen Indonesia Dalam Upaya Mitigasi Dan Adaptasi Perubahan Iklim*,’ *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

<sup>34</sup> Government of Indonesia, ‘*Enhanced Nationally Determined Contribution Republic of Indonesia 2022*,’ 2022.

change.<sup>35</sup> Under this regulation, the authority is limited to providing guidance, control, and reducing Greenhouse Gas (GHG) emissions. However, the component of the Presidential Regulation does not detail the limitations on regional government authority for control, law enforcement, and recovery of regions affected by climate change, based on carrying capacity and resilience, such as coastal regions and small islands.<sup>36</sup> This creates an imbalance in the scope of the authority, leading to regional policy determination based on autonomy.

Given the current situation, a legal policy direction based on autonomy is needed to prevent climate change, accommodating all components, from the central to regional government, as well as customary, local, and traditional communities.<sup>37</sup> Therefore, a systematic approach requires climate change policy grounded in green autonomy or decentralization. The legal basis for implementing the green autonomy concept is based on Article 18 of the 1945 Constitution of the Republic of Indonesia, which establishes the principle of implementing regional government affairs and the broadest possible autonomy.<sup>38</sup> This principle establishes a governance paradigm in which regional government, afforded sufficient flexibility, can formulate and implement policy within mandatory functions, such as environmental management, based on specific regional characteristics. However, the policy must remain consistent with general regulations and not conflict with the norms, standards, procedures, and criteria established by the central Government. Within the context of climate change, regional government can adapt policy to local conditions.

The philosophical foundation of green autonomy lies in policymaking independence grounded in an environmental management approach, including measures to control climate change. Regions need to be granted greater responsible autonomy, and the central government should reduce policy and regulations. The role of the central government should focus on establishing a legal framework to ensure development is in line with national goals, allowing greater space for regional diversity. In this context, regional government are expected to exercise policy creativity and adaptive governance to enhance community welfare. Trust between the regional and the central government needs to

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<sup>35</sup> Ulfa Anggraini, Suparna Wijaya, and Saiful Lathif, "Tinjauan Kebijakan Pendanaan Perubahan Iklim Di Indonesia," *Journal of Law, Administration, and Social Science* 3, no. 1 (2023): 72–92, <https://doi.org/10.54957/jolas.v3i1.411>.

<sup>36</sup> Amarulla Octavian et al., "Upaya Perlindungan Pesisir Dan Pulau-Pulau Kecil Pemerintah Provinsi Sumatera Barat Dari Ancaman Abrasi Dan Perubahan Iklim," *Jurnal Ilmu Lingkungan* 20, no. 2 (2022): 302–15, <https://doi.org/10.14710/jil.20.2.302-315>.

<sup>37</sup> Giorleny Altamirano Rayo, Eric S. Mosinger, and Kai M. Thaler, "Statebuilding and Indigenous Rights Implementation: Political Incentives, Social Movement Pressure, and Autonomy Policy in Central America," *World Development* 175 (2024): 1–17, <https://doi.org/10.1016/j.worlddev.2023.106468>.

<sup>38</sup> Kadek Cahya Susila Wibawa, "Pembaharuan Hukum Melalui Pembentukan Undang-Undang Payung Otonomi Daerah Untuk Mewujudkan Kesejahteraan Sosial," *Jurnal Hukum Progresif* 11, no. 2 (2023): 82–93, <https://doi.org/10.14710/jhp.11.2.82-93>.

be continuously built, enabling more prevention initiatives and strengthening decentralization as well as regional autonomy in support of equitable regional development towards Indonesia Emas 2045.<sup>39</sup>

The future goals and policy of the Indonesian Government emphasize equitable regional development by integrating the investment climate with environmental balance.<sup>40</sup> Regional autonomy plays a crucial role in the development of environmental management, climate change, and spatial planning.<sup>41</sup> The importance of autonomy for climate change is stipulated in Article 38, paragraph 7 of Regulation of the Minister of Environment and Forestry of Indonesia Number 12 of 2024 concerning the Implementation of NDC in Climate Change Management. This article states that the implementation of climate change mitigation actions can be carried out through relevant regional government organizations.<sup>42</sup> In other words, the Regency/City Regional Government has autonomy to determine lower-level policy for establishing environmentally friendly policy. Based on these provisions, the conceptualization of the grand design of green autonomy for climate change can be described as follows:

### 1.2. Grand Design of Green Autonomy Against Climate Change



Source: Formulated by the Author, 2025.

<sup>39</sup> Kementerian PPN/BAPPENAS, "Background Study Visi Dan Misi Indonesia Emas 2045."

<sup>40</sup> Ilham Rasyid and Jessica Roma Felixiani Keviola, "Gerakan Earth Hour Tangerang Dalam Perspektif Politik Lingkungan," *Ijd-Demos* 2, no. 2 (August 26, 2020): 185–98, <https://doi.org/10.37950/ijd.v2i2.42>.

<sup>41</sup> Resky Christian Sambur, "Tata Kelola Ruang Terbuka Hijau Di Kota Manado," *Jurnal Politico* 10, no. 1 (2021): 1–16.

<sup>42</sup> Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia, "Peraturan Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia Nomor 12 Tahun 2024 Tentang Penyelenggaraan Kontribusi Yang Ditetapkan Secara Nasional Dalam Penanganan Perubahan Iklim" (2024).

The grand design of the green autonomy concept intersects with broader policy objectives, particularly shared interest in addressing the impacts of climate change with several other components, including the investment climate, which is not accompanied by a sustainable, tiered, and complementary government policy authority on environmental aspects from the central to the Regional Government. Therefore, Law Number 16 of 2016 concerning the Ratification of the Paris Agreement conceptualizes the integration of the investment climate with government policy, obliging all parties, including Regency/City Government,<sup>43</sup> to autonomously address the long-term impacts of climate change, especially in coastal regions and small islands. Given these phenomena and obligations, Regency/City Government can autonomously implement environmentally friendly policy, known as “green autonomy”, to anticipate the impacts of climate change.

Based on the green autonomy concept, the formulation of climate change mitigation policy addressing rising sea levels in coastal regions and small islands incorporates several key elements. First, policy implementation must be carried out through cross-sectoral governance, requiring an initial mapping of governmental functions and authorities in each region. This mapping of authority becomes a benchmark for delineating institutional responsibilities and enabling the optimal convergence of programs. Second, policy implementation should follow a bottom-up approach, beginning from the regional to the central government, with an emphasis on compiling, diversifying, and ensuring data availability to affected regions. This data should inform the prioritization of mitigation efforts at the regional level. Third, synchronization between central and regional planning policy should be institutionalized through coordination meetings. The meetings function as a mechanism to resolve problems and mitigate disasters impacted by climate change.<sup>44</sup>

The application of the green autonomy concept enables the implementation of an autonomous disaster mitigation framework. This framework affects the design of disaster mitigation activities, which will be adjusted to the specifics of each region without exceeding the authority of the central government. Under this approach, autonomous climate change mitigation efforts may take the form of several integrated measures including (1) Anticipatory programs for increasing SLR in an integrated manner, (2) Responsive control of seawater pollution, (3) Marine partner programs, (4) Strengthening natural systems (Coastal habitat rehabilitation, Coastal vegetation planting, Region conservation and species

<sup>43</sup> Davira Syifa Rifdah Suwatno, “Ratifikasi Terhadap Traktat Persejukan Paris (Paris Agreement) Sebagai Wujud Implementasi Komitmen Indonesia Dalam Upaya Mitigasi Dan Adaptasi Perubahan Iklim,” *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

<sup>44</sup> Kemendagri, “Dampak Kenaikan Muka Air Laut Harus Dilaksanakan Lintas Urusan Pemerintahan” (Indonesia, 2024), [https://bangda.kemendagri.go.id/berita/baca\\_konten/1396/kemendagri\\_dampak\\_kenaikan\\_muka\\_air\\_laut\\_harus\\_dilaksanakan\\_lintas\\_urusan\\_pemerintahan](https://bangda.kemendagri.go.id/berita/baca_konten/1396/kemendagri_dampak_kenaikan_muka_air_laut_harus_dilaksanakan_lintas_urusan_pemerintahan).

conservation), and (5) Regional and international cooperation Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).<sup>45</sup>

The principle of green autonomy policy reflects an ideological perspective on the relationship between humans and nature, emphasizing freedom and independence in environmental protection and management. The policy measures outlined above reflect the conceptualization of green autonomy through adjustments to the Regency/City regional government preventive and innovative policy to anticipate climate change in affected regions, such as coastal regions and small islands.<sup>46</sup> This approach grants extensive authority to all stakeholders, from the central down to the provincial and Regency/City governments, to implement policy for environmental protection, management, and climate change mitigation in the respective regions, within established boundaries.

The implementation of green autonomy programs or policy is closely related to the concept of green or ecological democracy (eco-democracy or ecocracy).<sup>47</sup> Ecocracy serves as the starting point for determining state or central government policy (legal policy), which should be harmonized with autonomous regional government policy to implement environmental protection and management across land, sea, and airspace. The concept of autonomous ecocracy can be embodied in a local policy system anchored on the central government, which may be implemented by adapting to the characteristics of environmental issues, particularly climate change. Therefore, the integration of regional autonomy within an ecocratic framework offers a pathway for developing innovative and context-sensitive policy solutions that align with the Government's long-term vision of Indonesia Emas 2045.

## Conclusion

The concept of green autonomy (Environmental Autonomy) is a form of authority reformulated through provincial and Regency/City government policy to address climate change mitigation. It specifically ensures the authority of regional government with unique characteristics in coastal regions and small islands impacted by climate change. Green autonomy is implemented through disaster mitigation, adaptation, education, and community participation. Disaster mitigation in coastal regions and small islands is the responsibility of the central and regional government, as well as other sectors. This conceptual approach addresses the need for certainty regarding the authority and scope of regional government to address and prevent

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<sup>45</sup> Freddy Numberi, *Perubahan Iklim Implikasinya Terhadap Kehidupan DI Laut, Pesisir Dan Pulan-Pulan Kecil*.

<sup>46</sup> Heri Andreas et al., "Early Pictures of Global Climate Change Impact to the Coastal Area (North West of Demak Central Java Indonesia)," in *AIP Conference Proceedings*, vol. 1857, 2017, <https://doi.org/10.1063/1.4987101>.

<sup>47</sup> Eko Nurmandiansyah, "Konsep Hijau: Penerapan Green Constitution Dan Green Legislation Dalam Rangka Eco-Democracy," *Veritas et Justitia* 1, no. 1 (June 30, 2015): 183–219, <https://doi.org/10.25123/vej.1422>.

change at the lowest level. Therefore, the concept of green autonomy contributes to the development of national law, grounded in Article 18 of the 1945 Constitution, to implement regional autonomy and prevent climate change. The concept is also consistent with the international SDG Goal 13: Climate Action and the Sendai Framework for Disaster Risk Reduction (SFDRR), emphasizing that climate change mitigation is a shared responsibility, with local government, particularly, playing a key role in preventing the impacts.

The policy implications of the green autonomy concept include strengthening the capacity of regional government in mitigating climate change. Regional autonomy offers flexibility to formulate plans and implement climate change mitigation policy tailored to the region, thereby increasing community participation and systematic collaboration. Furthermore, the concept of green autonomy is a concrete policy recommendation for the Indonesian Government to better align regional autonomy with environmental protection objectives, as articulated in the 2045 National Long-Term Development Plan (RPJPN), which underpins the vision of Indonesia Emas 2045.

## Suggestion

Climate change affects land, sea, and airspace, with particularly significant consequences for the marine environment. One concrete example is the impact of rising sea levels on coastal regions and small islands with marine characteristics. Addressing these challenges require policy that supports disaster mitigation efforts through multi-level governance. The mitigation efforts may be pursued through structural and non-structural approaches. The structural approach is achieved by optimizing infrastructure, while non-structural measures can be realized through strengthening and aligning perceptions among the private sector, the central, provincial, and Regency/City governments in the preparation of spatial planning for coastal regions and small islands. Based on the results, the concept of green autonomy comprises several key elements, including (a) the implementation of climate change mitigation policy addressing sea-level rise through cross-sectoral efforts, (b) a staged, multi-level governance system that starts with the diversification and availability of existing data on affected regions, which is then used to establish priority scales for regional mitigation efforts, (c). synchronization of central and regional planning policy in the form of coordination meetings.

## References

Afni, Z, Triono D Hakim, and Vita Amelia. "Penguatan Literasi Masyarakat Pesisir Pulau Bengkalis Terhadap Kebijakan Perubahan Iklim." *Community Empowerment* 6, no. 9 (2021): 1664–73.

Altamirano Rayo, Giorleny, Eric S. Mosinger, and Kai M. Thaler. "Statebuilding and Indigenous Rights Implementation: Political Incentives, Social Movement Pressure, and Autonomy Policy in Central America." *World Development* 175 (2024): 1–17.

[https://doi.org/10.1016/j.worlddev.2023.106468.](https://doi.org/10.1016/j.worlddev.2023.106468)

Andreas, Heri, Dhota Pradipta, Hasanuddin Z. Abidin, and Dina A. Sarsito. “Early Pictures of Global Climate Change Impact to the Coastal Region (North West of Demak Central Java Indonesia).” In *AIP Conference Proceedings*, Vol. 1857, 2017. <https://doi.org/10.1063/1.4987101>.

Anggraini, Ulfa, Suparna Wijaya, and Saiful Lathif. “Tinjauan Kebijakan Pendanaan Perubahan Iklim Di Indonesia.” *Journal of Law, Administration, and Social Science* 3, no. 1 (2023): 72–92. <https://doi.org/10.54957/jolas.v3i1.411>.

Anita, Anita, Rusfandi Rusfandi, and Meidy Triasavira. “Pencegahan Alih Fungsi Lahan Serta Penataan Ruang Dalam Rangka Mewujudkan Pembangunan Berkelanjutan.” *Jurnal Jendela Hukum* 9, no. 1 (2022): 93–106. <https://doi.org/10.24929/fh.v9i1.2052>.

Arora, Naveen Kumar, and Isha Mishra. “Sustainable Development Goal 13: Recent Progress and Challenges to Climate Action.” *Environmental Sustainability* 6, no. 3 (September 8, 2023): 297–301. <https://doi.org/10.1007/s42398-023-00287-4>.

Bara Firmansyah, Fenty Puluhulawa, and Lisnawaty W. Badu. “Penerapan Undang-Undang Nomor 32 Tahun 2009 Pasal 109 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup.” *Perkara: Jurnal Ilmu Hukum Dan Politik* 2, no. 1 (January 19, 2024): 336–58. <https://doi.org/10.51903/perkara.v2i1.1672>.

Chen, Xinran, Xingfa Gu, Yulin Zhan, Dakang Wang, Yazhou Zhang, Faisal Mumtaz, Shuaiyi Shi, and Qixin Liu. “The Impact of Central Heating on the Urban Thermal Environment Based on Multi-Temporal Remote Sensing Images.” *Remote Sensing* 14, no. 10 (2022). <https://doi.org/10.3390/rs14102327>.

Daud Silalahi. *Lahirnya Hukum Lingkungan Dengan Perkembangannya Dalam Perspektif Internasional Dan Regional*. Edited by Sadikin Gani Meliyana Frederika, Kristianto Silalahi, Maurice Silalahi. Indoensia: Yayasan Lawencron, 2018.

Freddy Numberi. *Perubahan Iklim Implikasinya Terhadap Kehindapan DI Laut, Pesisir Dan Pulau-Pulau Kecil*. Edited by Hnery Supriadi Simaremare Drs. Firts Kiriho, Drs. Theo Wimuri. Edisi Kedu. Indonesia: Fortuna Prima Makmur, 2009.

Government of Indonesia. “Enhanced Nationally Determined Contribution Republic of Indonesia 2022,” 2022.

Hamid, Nur, Nur Faridatul Jauza’, Agus Riyadi, and M. Mudhofi. “Pengaruh Kondisi Sosial Ekonomi Terhadap Pemberdayaan Masyarakat, Mitigasi Bencana, Dan Dampak Abrasi Di Kragan-Rembang.” *Jurnal Al-Ijtima’iyah* 9, no. 1 (June 30, 2023): 96. <https://doi.org/10.22373/al-ijtimaiyyah.v9i1.17731>.

Hardenta, Alif Duta, and Ardianto Budi Rahmawan. “Manifestasi Partisipasi

Publik Dalam Doktrin Kepercayaan Publik Bagi Pemenuhan Komitmen Perubahan Iklim Indonesia.” *Jurnal Hukum Lingkungan Indonesia* 9, no. 1 (February 26, 2023): 157–86. <https://doi.org/10.38011/jhli.v9i1.493>.

Kemendagri. “Dampak Kenaikan Muka Air Laut Harus Dilaksanakan Lintas Urusan Pemerintahan.” *Indonesia*, 2024. [https://bangda.kemendagri.go.id/berita/baca\\_kontent/1396/kemendagri\\_dampak\\_kenaikan\\_muka\\_air\\_laut\\_harus\\_dilaksanakan\\_lintas\\_urusan\\_pe](https://bangda.kemendagri.go.id/berita/baca_kontent/1396/kemendagri_dampak_kenaikan_muka_air_laut_harus_dilaksanakan_lintas_urusan_pe) merintahan.

Kementerian PPN/BAPPENAS. “Background Study Visi Dan Misi Indonesia Emas 2045.” Indoensia, 2019.

Kholik, Saeful. “Kewenangan Pemerintah Daerah Terhadap Antisipasi Pengendalian Perubahan Iklim Kerusakan Lingkungan Laut Di Kabupaten Indramayu Dalam Rezim Sentralisasi.” *Yustitia* 9, no. 1 (2023): 69–84. <https://doi.org/10.31943/yustitia.v9i1.171>.

KLHK. “Laporan Inventarisasi GRK 2020 Dan Monitoring, Pelaporan, Verifikasi (MPV).” *Kementerian Lingkungan Hidup Dan Kehutanan*, 2020, 1–143.

Latue, Philia Christi, Susan E. Manakane, and Heinrich Rakuasa. “Policy Review and Regional Development in Disaster Mitigation (Case Study: 2004 Aceh Tsunami and 2011 Tōhoku Tsunami).” *International Journal of Multidisciplinary Approach Research and Science* 1, no. 03 (2023): 288–301. <https://doi.org/10.59653/ijmars.v1i03.165>.

Leu, Baktiar. “Dampak Pemanasan Global Dan Upaya Pengen-Daliannya Melalui Pendidikan Lingkungan Hidup Dan Pendidikan Islam.” *AT-TADBIR* 1, no. 2 (2021): 1–15. <https://doi.org/10.51700/attadbir.v1i2.207>.

Li, Boyi, Adu Gong, Longfei Liu, Jing Li, Jinglin Li, Lingling Li, Xiang Pan, and Zikun Chen. “An Earth Observation Framework in Service of the Sendai Framework for Disaster Risk Reduction 2015–2030.” *ISPRS International Journal of Geo-Information* 12, no. 6 (June 1, 2023): 1–20. <https://doi.org/10.3390/ijgi12060232>.

Lianti, Lita, and Putri Dwi Utami. “Efektifitas Tindakan Pemerintah Indonesia Dalam Menyikapi Persoalan Perubahan Iklim Ditinjau Dari Perspektif Hukum Administrasi Negara.” *Jurnal Panorama Hukum* 8, no. 1 (2023): 85–93. <https://doi.org/10.21067/jph.v8i1.7697>.

Major, David C., Paul Blaschke, Vivien Gornitz, Emily Hosek, Martin Lehmann, James Lewis, Heiko Loehr, et al. “Adaptation to Climate Change in Small Island Settlements.” *Ocean and Coastal Management* 212 (October 15, 2021). <https://doi.org/10.1016/j.ocecoaman.2021.105789>.

Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia. Peraturan Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia Nomor 12 Tahun 2024 Tentang Penyelenggaraan Kontribusi Yang Ditetapkan Secara Nasional Dalam Penanganan Perubahan Iklim (2024).

Milanés, Celene B., Ofelia Pérez Montero, Claudio Fabian Szlafsztein, and Márcia

Aparecida da Silva Pimentel. "Climate Change and Spatial Justice in Coastal Planning in Cuba and Brazil." *Ambiente e Sociedade* 23, no. 1 (2020): 1–23. <https://doi.org/10.1590/1809-4422ASOC20190184R1VU2020L6TD>.

Mortimer, Anastasia, Iftekhar Ahmed, Thomas Johnson, Liyaning Tang, and Margaret Alston. "Localizing Sustainable Development Goal 13 on Climate Action to Build Local Resilience to Floods in the Hunter Valley: A Literature Review." *Sustainability (Switzerland)*. Multidisciplinary Digital Publishing Institute (MDPI), March 1, 2023. <https://doi.org/10.3390/su15065565>.

Mumtaz, Muhammad. "Intergovernmental Relations in Climate Change Governance: A Pakistani Case." *Global Public Policy and Governance* 3, no. 1 (2023): 116–36. <https://doi.org/10.1007/s43508-023-00066-1>.

Novita, Asti Amelia. "Environmental Governance and Climate Change Adaptation in Indonesia." *Jurnal Ilmiah Administrasi Publik* 007, no. 01 (April 1, 2021): 46–55. <https://doi.org/10.21776/ub.jiap.2021.007.01.6>.

Nurmardiansyah, Eko. "Konsep Hijau: Penerapan Green Constitution Dan Green Legislation Dalam Rangka Eco-Democracy." *Veritas et Justitia* 1, no. 1 (June 30, 2015): 183–219. <https://doi.org/10.25123/vej.1422>.

Octavian, Amarulla, Marsetio Marsetio, Abimanyu Hilmawan, and Rizqi Rahman. "Upaya Perlindungan Pesisir Dan Pulau-Pulau Kecil Pemerintah Provinsi Sumatera Barat Dari Ancaman Abrasi Dan Perubahan Iklim." *Jurnal Ilmu Lingkungan* 20, no. 2 (2022): 302–15. <https://doi.org/10.14710/jil.20.2.302-315>.

Priyanta, Maret. "Implikasi Konsep Kesesuaian Kegiatan Pemanfaatan Ruang Laut Dalam Pengelolaan Sumber Daya Kelautan Berkelanjutan." *Jurnal Wawasan Yuridika* 5, no. 1 (2021): 1–20. <https://doi.org/10.25072/jwy.v5i1.361>.

Rasyid, Ilham, and Jessica Roma Felixiani Keviola. "Gerakan Earth Hour Tangerang Dalam Perspektif Politik Lingkungan." *Ijd-Demos* 2, no. 2 (August 26, 2020): 185–98. <https://doi.org/10.37950/ijd.v2i2.42>.

Ridja, Mau, and Bakry. "Jurnal Ilmiah Global Education." *Jurnal Ilmiah Global Education* 4, no. 3 (2018): 1482–89. [ejournal.nusantaraglobal.ac.id/index.php/jige](http://ejournal.nusantaraglobal.ac.id/index.php/jige).

Sambur, Resky Christian. "Tata Kelola Ruang Terbuka Hijau Di Kota Manado." *Jurnal Politico* 10, no. 1 (2021): 1–16.

Suwatno, Davira Syifa Rifdah. "Ratifikasi Terhadap Traktat Persetujuan Paris (Paris Agreement) Sebagai Wujud Implementasi Komitmen Indonesia Dalam Upaya Mitigasi Dan Adaptasi Perubahan Iklim." *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

The Conversation. "Akibat Perubahan Iklim: Kenaikan Air Laut Nyaris Melahap Pulau Kecil Sepanjang Aceh-Papua." *The Conversation*. 2021. <https://theconversation.com/akibat-perubahan-iklim-kenaikan-air-laut-nyaris-melahap-pulau-kecil-sepanjang-aceh-papua-170870>.

Thomas, Adelle, April Baptiste, Rosanne Martyr-Koller, Patrick Pringle, and Kevon Rhiney. "Climate Change and Small Island Developing States." *Annual Review of Environment and Resources*, 2020. <https://doi.org/10.1146/annurev-environ-012320-083355>.

Ulum, Andi Nurul, Muhammad Yunus, and Irwansyah Irwansyah. "Peran Dan Langkah Mitigasi Perubahan Iklim Di Indonesia." *Jurnal Restorative Justice* 6, no. 2 (2022): 125–39. <https://doi.org/10.35724/jrj.v6i2.4664>.

Wang, Xiao, Yumeng Wang, Yong Pang, Kan Wang, and Jie Yu. "Pollution Load Coordination and Eco-Compensation for Trans-Boundary Water Pollution Control: The Case of the Tri-Border Region of the Yangtze Delta." *Sustainability (Switzerland)* 16, no. 3 (2024): 1–20. <https://doi.org/10.3390/su16031151>.

Wibawa, Kadek Cahya Susila. "Pembaharuan Hukum Melalui Pembentukan Undang-Undang Payung Otonomi Daerah Untuk Mewujudkan Kesejahteraan Sosial." *Jurnal Hukum Progresif* 11, no. 2 (2023): 82–93. <https://doi.org/10.14710/jhp.11.2.82-93>.

Yanova, Muhammad hendri, Parman Komarudin, and Hendra Hadi. "Metode Penelitian Hukum: Analisis Problematika Hukum Dengan Metode Penelitian Normatif Dan Empiris." *Badamai Law Journal* 8, no. 2 (2023): 394–408.

Yuliartini, Ni Putu Rai, and Davira Syifa Rifdah Suwatno. "Ratifikasi Terhadap Traktat Persetujuan Paris ( Paris Indonesia Dalam Upaya Mitigasi Dan Adaptasi)." *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

—. "Ratifikasi Terhadap Traktat Persetujuan Paris (Paris Agreement) Sebagai Wujud Implementasi Komitmen Indonesia Dalam Upaya Mitigasi Dan Adaptasi Perubahan Iklim." *Jurnal Pendidikan Kewarganegaraan Undiksha* 10, no. 2 (2022): 328–37.

Zulhaimi, Nurul Ain, Joy Jacqueline Pereira, and Nurfashareena Muhamad. "Global Research Landscape of Climate Change, Vulnerability, and Islands." *Sustainability (Switzerland)*. Multidisciplinary Digital Publishing Institute (MDPI), September 1, 2023. <https://doi.org/10.3390/su151713064>.



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