
EJF'S CLIMATE POLICY BRIEFING

for the Taiwanese Government

November 2022

The world is facing multiple severe impacts from human-induced climate change, with billions of people already suffering from drought, wildfires, floods and more. If Taiwan can demonstrate how good climate governance should be carried out, it would establish a leading position in the global community of nations that are taking action on climate change.



Liyutan Reservoir, the sixth largest reservoir in Taiwan, was at its lowest level ever during the 2020/2021 drought. © EJF

Executive summary

The world is facing multiple severe impacts from human-induced climate change, with billions of people already suffering from drought, wildfires, floods and more. In 2018, the United Nations Intergovernmental Panel on Climate Change (IPCC) warned that a 2°C rise would see the loss of virtually all coral reefs, extreme heatwaves for a third of the planet and more.¹ To avoid these disastrous consequences, scientists have warned that we must limit global temperature rise to only 1.5°C above pre-industrial levels and reach net-zero by 2050,² a target that more than 120 countries have committed to achieving.³ While many governments around the world have made commitments that are a step in the right direction, we are not doing enough individually or collectively to secure a habitable planet. Currently, we remain on a pathway to 3°C of temperature rise, even if all pledged commitments for 2030 are met.⁴ In its February 2022 press release launching the *Climate Change 2022: Impacts, Adaptation and Vulnerability* report, the IPCC warned of multiple unavoidable climate hazards over the next two decades with global warming over 1.5°C, with the additional severe impacts including irreversible and increasing risks for infrastructure and low-lying coastal settlements.⁵ Therefore, EJF calls for all countries to eradicate carbon emissions from their economies by 2035 at the latest to ensure a safe, sustainable future for us all.

To rapidly and sustainably cut carbon emissions, every country and economic sector has a role to play. Taiwan contributes 0.8% to global carbon emissions every year, but due to a heavy reliance on fossil fuels for energy and a manufacturing-dominated industry structure, Taiwan's per capita emissions are higher than some G7 countries such as Japan and Germany.⁶

Taiwan must take political and economic action on climate change. Politically, Taiwan's climate leadership will be key in influencing other Asian countries to act, especially the world's largest carbon emitter, China. Economically, Taiwan is the leading producer of some cutting-edge, and at the same time energy-intensive, technological products. This includes semiconductors, which the global economy heavily relies on. More extreme weather events that postpone production in the short term or even damage the supply chain permanently could threaten global supplies of these products.

Taiwan's action on climate change so far

Taiwan prides itself as a democratic country respecting human rights and embracing innovation. In past decades, its track record on several critical social issues such as freedom of speech, the transition of political power and gender equality have all proven Taiwan's ability to mobilise society and lead major transformations. However, when it comes to tackling the climate crisis, it has been criticised domestically and internationally for lack of action. Taiwan has been rated as a country with "very poor" performance on climate change by Germanwatch since 2012,⁷ and ranked 21st for total fossil fuel CO₂ emissions and 22nd for CO₂ emissions per capita worldwide.⁸

In 2021, Taiwan's President Tsai Yin-Wen pledged to reach net-zero by 2050⁹; however, the government only set a 20% reduction target by 2030.¹⁰ In Taiwan's plan to reach net zero and early progress in climate legislation, there are several important problems including insufficient transparency, unclear distribution of responsibilities among government departments and inappropriate reviewing processes for policy plans. Most published policies are high-level national guidelines targeting 2050, and it is unclear how mid-term targets will be set and how many resources will be devoted to achieving those targets. While the 2050 pledge is not enough to roll back the worst impacts of our heating world, Taiwan's current climate policies paint a doubtful picture of its ability to meet even this commitment.

In 2021, EJF published the [EJF Climate Manifesto](#) to provide a roadmap for every country as to what can and should be done to stay below 1.5 degrees of global warming. Using that manifesto as a benchmark, this briefing first outlines the importance of each issue covered. It then provides a comprehensive analysis of the current legal framework governing Taiwan's climate governance and policy plans, identifying the major gaps and providing recommendations to address them.

Table 1: Major gaps identified in current actions

Area	Major gaps
Governance	<ul style="list-style-type: none"> • A lack of the ‘whole of government’ approach • Insufficient mitigation targets
Finance	<ul style="list-style-type: none"> • Insufficient climate budget • Opaque government fund portfolios • Heavy fossil fuels subsidies
Human Rights	<ul style="list-style-type: none"> • No regular climate-related human rights assessment • Lack of meaningful citizen participation
Nature	<ul style="list-style-type: none"> • Nature-based solutions are marginalised • Ocean ecosystems are neglected



Jhuoshuei River, the longest river in Taiwan, was nearly dried up during the 2020/2021 drought. © EJF

Principles of national climate policy – key areas for action

The following principles consist of the majority of the actions set out in EJF's Climate Manifesto. These actions - selected specifically for Taiwan - would make Taiwan a global leader in the fight against climate change if fully implemented, demonstrating to the world that political will is the key to achieving a climate safe future. Throughout this implementation, it is of fundamental importance to incorporate transparency and civil inclusion to ensure a real, sustainable transition for all instead of duplicating or enhancing existing climate inequalities.

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Governance and leadership - the 'whole of government' approach

EJF believes that efforts to address climate change should be at the top of the agenda for governments at every level. We need a 'whole of government' approach which integrates mitigating and adapting to global heating into every political portfolio. This approach should be led by an ambitious vision from the heads of government and make use of the full capacity of executive authorities. Government climate change-related targets also need to be enshrined in law and supported by the promulgation of the laws and regulations needed to facilitate delivery. We must stress the importance of governments leading rapid transitions to zero carbon economies. The longer we wait, the higher the cost to our economies, to people and to our shared planet.

Enhance public climate finance

Carefully targeted fiscal incentives can drive both large-scale low-carbon infrastructure development and new technological innovation, along with the switch to zero-carbon and carbon-neutral goods and services. According to the International Renewable Energy Agency's latest report in 2022, the world would need to invest US\$ 5.7 trillion annually until 2030 to keep the temperature rise below 1.5°C.¹¹ These "costs" today are an investment in our collective future well-being. In fact, although most of the funding is expected to come from the private market, public funds are important to facilitate and stimulate private investments. There is also a moral imperative for governments to spend public funds on protecting their people from the effects of climate change.

Divestment from fossil fuels is a critical move to reduce climate change impacts and to provide funding for climate finance. As of June 2022, 191 municipal and/or national governments and 192 private and/or public pension funds around the world have committed to different levels of divestment from fossil fuels,¹² including an announcement from China which pledged to stop funding the construction of new coal-fired power projects overseas.¹³ The G7 has collectively further committed to ending new direct public support for the international unabated fossil fuel energy sector by the end of 2022.¹⁴ It is critical that the portfolio allocation and transition and climate risk of these funds be transparent for public scrutiny. Monitoring mechanisms are also needed to ensure commitments are fulfilled.¹⁵

Another major source of climate funds should come from carbon pricing and removing all subsidies or indirect financial incentives for carbon production and use. The production of fossil fuels relies on heavy subsidies from governments, and the retail price of fossil fuels does not reflect the real cost of environmental and societal damage they create. According to the International Monetary Fund (IMF), removing fossil fuels subsidies in 2015 would have lowered global CO₂ emissions by 28% and reduced deaths resulting from air pollution by 46%.¹⁶ 197 Countries have committed in the Glasgow Climate Pact to phase-out inefficient fossil fuel subsidies¹⁷ and this commitment should also be matched by countries outside the United Nations Framework Convention on Climate Change (UNFCCC).

Protecting human rights in the era of climate breakdown

Climate breakdown presents an existential threat that jeopardises our well-being and basic human rights. Justice is central to the task of halting global heating. The people that have historically contributed the least to greenhouse gas (GHG) emissions, and benefitted the least from carbon-fuelled economic growth, are those suffering first and worst from the impacts of climate change. Inequalities are both the cause and effect of climate vulnerability. Climate-induced inequalities appear among and between countries but also appear within different groups in smaller areas, such as within cities. These include, but are not exclusive to, Indigenous peoples, children, women, migrants and displaced persons, persons with disabilities, persons with low income and LGBTQI+ persons.¹⁸ Intersecting forms of discrimination and marginalisation based on factors such as gender, age, income or social status significantly increase exposure and susceptibility, and undermine the ability to cope with and recover from climate impacts.

Despite the climate vulnerability borne by Indigenous peoples, many demonstrate strong resilience linked to ecologically-sensitive ways of living and the use of traditional knowledge. Data from the Amazon show that levels of carbon emissions from deforestation are significantly lower in Indigenous territories and protected areas than elsewhere.¹⁹ For many Indigenous peoples, maintaining the balance between humans and the natural world and securing it for future generations is deeply embedded in cultural values.²⁰ This approach to what we now call 'sustainability' holds valuable lessons for the entire world. In the formation of climate policies, not only should Indigenous peoples be consulted in any decision that affects them and their lands, but we also need to put their knowledge front and centre as we navigate our way to a green and just world.

Nature is the solution to multiple crises

A failure to prevent climate breakdown will fatally undermine all conservation efforts, across species and ecosystems. At the same time, healthy ecosystems are fundamental to combatting global heating. Nature-based solutions to climate change are those relating to the living world – such as forests, wetlands, oceans and more – and they provide a low-cost, fair and just tool in the fight against climate breakdown. Nature-based solutions can contribute 37% of the climate mitigation efforts needed to meet the Paris climate goal,²¹ offering us a lifeline in the fight to stop climate catastrophe. EJF calls for 50% of the Earth to be conserved for nature, whilst ensuring the full protection and traditional usage rights of Indigenous peoples. By setting aside at least 50% of Earth's surface, with special emphasis on the most ecologically important habitats on land and sea, we can ensure the protection of at least 85% of our planet's biodiversity and prevent the mass extinction that science has repeatedly warned us of.²² Acting boldly on biodiversity must be central to our climate action.

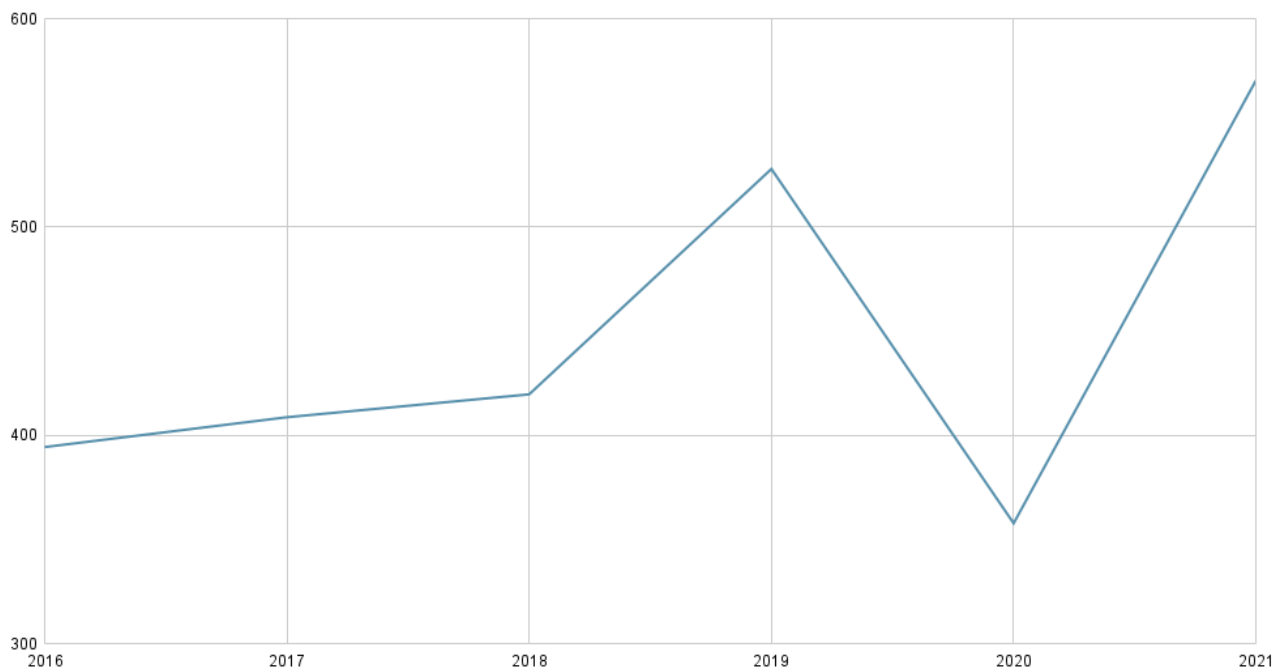
Alongside the importance of terrestrial ecosystems like forests, protecting the 'blue carbon' stored in coastal and marine ecosystems, such as mangroves and seagrass meadows, is a critical element of a nature-based intervention plan for fighting global heating. The importance of this has gained more attention recently in the United Nations conferences on both climate and the ocean.^{23/24} Mangrove forests can store up to four times more carbon per hectare than terrestrial tropical rainforests,²⁵ and are home to rich biodiversity. They provide critical food sources and protection from waves and wind from the oceans for coastal communities. As for seagrass meadows, scientists estimate that globally they may store up to 19.5 gigatonnes of carbon.²⁶ Alongside their carbon storage function, seagrasses play a critical role as breeding grounds and nurseries that underpin healthy fish populations.²⁷ To protect our ocean and halt climate breakdown, we need a global network of ecologically representative marine protected areas (MPAs) to cover at least 30% of the high seas and coastal waters no later than 2030.²⁸ To make the best use of nature-based solutions, relevant laws and policy goals should be in place to protect biodiversity, and adequate resources should be allocated to ensure enforcement.

Climate change in Taiwan

Taiwan's contributions to climate change and the resultant impacts have been increasing in recent years. Taiwan's GHG emissions doubled from 114.39 Mt CO₂e in 1990 to 230.56 Mt CO₂e in 2001 and peaked at 280.02 Mt CO₂e in 2007.²⁹ During this period, Taiwan has seen a faster-rising temperature than the world's average. Taiwan's annual average temperature has risen 1.6°C from 1898 to 2020, and a steady increase of 0.29°C has been observed in the most recent three decades.³⁰ As an island country, Taiwan is vulnerable to both extreme weather events and long-term climate disasters such as sea level rise.³¹

Unpredictable weather has been observed in Taiwan in recent years. Historically, summer is the peak season for typhoons to affect Taiwan. The heavy rainfall is essential for water supply but also risks potentially disastrous floods, landslides or damage to infrastructure. In the past three decades, the pattern is becoming less predictable and more extreme.³² In 2009, Typhoon Morakot hit the southern part of Taiwan, causing a landslide that buried the whole village of Siao-Lin (小林). The incident killed 681, injured 1,555 people and in total resulted in NT\$199.83 billion of economic loss.³³ The accumulated and short-term rainfall brought by Typhoon Morakot was the highest amount ever recorded in Taiwan.³⁴ At the other extreme, from autumn 2020 to spring 2021, Taiwan suffered its worst and longest drought in half a century due to insufficient rain. The year 2020 was the first time in 62 years that there was not a single typhoon passing Taiwan³⁵, and the drought resulted in NT\$16.5 billion of economic loss.³⁶ Frequent extreme weather events have raised agricultural economic loss per hectare to a record high, reaching NT\$570,000 per hectare in 2021.³⁷

Agricultural Economic Loss (NT\$ thousand/Hectare)



2016-2021 annual agricultural economic loss (NT\$ thousand/Hectare). Source: Council of Agriculture



The only house left in Siao-Lin (小林) village after the whole village was buried due to Typhoon Morakot. Source: 柯金源³⁸

According to the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), the possibility of high temperature and extreme rainfall events will rise significantly if the current heating trend continues. It has warned that under the worst-case scenario, in the late 21st century Taiwan would see³⁹:

- daily highest temperatures above 36°C to increase by 48.1 days,
- the average annual maximum one-day rainstorm intensity to increase by 41.3%,
- the number of typhoons affecting Taiwan to decrease by 55%, of which 50% meet the definition of a violent typhoon and their rainfall to increase by about 35%.

In 2015, in response to the Paris Agreement, the Environmental Protection Administration (EPA) introduced the Greenhouse Gas Reduction and Management Act (GHGRMA)⁴⁰ as the overarching law to lead the country's efforts to fight against climate change. It required national action guidelines, action plans and a 50% national emission reduction goal by 2050 (compared with the emissions of 2005). However, how adaptation should be implemented was not clearly stated. Due to several shortcomings in the implementation, such as an absence of financial incentives, it has become apparent that the GHGRMA is ineffective. In 2020, the EPA admitted failing to reach the 2% reduction target set for 2020 and suggested that there is a need to amend the law.⁴¹

On top of the existing issues, the President's recent declaration on net-zero by 2050, alongside increasing pressure from international and domestic civil society, means improvements to the law are necessary. As a result, the EPA proposed the Climate Change Response Act (CCRA)⁴² in 2021.

After carefully reviewing the CCRA and relevant plans, we identified several gaps in climate governance, public finance, human rights and nature-based solutions. The following sections provide detailed analysis and recommendations for improvement.

Problems with the Taiwanese government's action on climate

Fragmented climate governance

The importance of climate policy is not recognised by the Taiwanese government, with a lack of climate awareness and capacity to address this issue in governmental leadership. The National Development Council (NDC) is the highest authority under the Executive Yuan (EY), governing Taiwan's future development.⁴³ In its efforts to address the climate crisis, the NDC has introduced two climate-related national action plans, the National Climate Change Adaptation Action Plan (2013-2017)⁴⁴ and Taiwan's Pathway to Net-Zero Emissions in 2050.⁴⁵ However, policies included in the National Climate Change Adaptation Action Plan were judged ineffective by NGOs, MPs and scholars, particularly as a result of a failure to include a proper assessment of climate impacts in adaptation policies.⁴⁶ Instead, the NDC mostly put together existing policies related to disaster reduction.

A key missing element in the NDC's policy plan is the principle of 'whole of government', meaning there is no clear obligation for the NDC or other ministries to implement or be held accountable for the plans the NDC introduced. Taiwan's Pathway to Net-Zero Emissions in 2050 is, for now, regarded as the highest-level national guidance to fulfil the commitment to reach net zero.⁴⁷ However, neither Taiwan's Pathway to Net-Zero Emissions in 2050, the existing GHGRMA nor the coming CCRA requires a whole of government approach to implementing climate policy. This has left the EPA remaining the sole authority that carries the responsibility to reach net zero and adapt to the climate crisis.

The EPA, as a lower-ranking government agency, lacks the influence to lead or coordinate ministries above its level. However, this concern was not resolved even after a governmental plan to elevate the EPA's level was launched.⁴⁸ The lack of capacity has been exposed since the EPA became the competent authority of adaptation in 2015, as the problem of ineffective adaptation policies remains the same. The widespread doubts over the EPA's ability to manage all climate-related issues, which involve a broad range of expertise, continue.

Regarding mitigation, though the laws partially allocate responsibilities to other ministries for reporting emissions and generating reduction action plans, the EPA still cannot hold them accountable.⁴⁹ The CCRA inherited the six divisions of carbon emission established by the GHGRMA and designated different ministries and agencies to monitor emissions and implement reduction (see table 2 below). However, the EPA does not have the authority to question the targets set by other departments nor monitor their progress. This lack of coordination and leadership has resulted in poor enforcement and rising emissions: from 2015 to 2020, the emissions are only reduced by 1.8%.⁵⁰ This major impediment to effective action can be observed in the failure to reduce carbon emissions in the energy sector.

Table 2: The six emission sectors in GHGRMA and CCRA

Emission sector	Ministry in charge
Energy sector	Ministry of Economic Affairs
Manufacturing sector	Ministry of Economic Affairs
Transportation sector	Ministry of Transportation and Communication
Residential and commercial sector	Ministry of the Interior
Agriculture sector	Council of Agriculture
Environment sector	Environment Protection Administration

Heavily relying on fossil fuels has made the energy sector the most dominant historic GHG emitter in Taiwan: in 2021, coal and gas generated 44.3% and 37.2% of total electricity respectively,⁵¹ and the energy sector accounts for more than 80% of total emissions since 1990, exceeding 90% since 2016.⁵² The figures are expected to grow, as electricity demand is predicted to increase by 2.3% from 2022 to 2028, exceeding the 1.6% growth in the past decade.⁵³ Most of the electricity has been used to supply the manufacturing sector, which has used more than 50% of electricity generated since 2004. Its consumption reached record levels at 161,400GWh in 2021.⁵⁴ As both the energy and manufacturing sectors are overseen by the Ministry of Economic Affairs, the EPA has no effective way to reduce emissions without authority over energy structure and demands.

The CCRA tries to solve some of these problems by designating responsibilities to different ministries. However, these texts are only mentioned in the supplement, which is not legally binding, instead of the main articles of the law. This means other government departments have no real obligations to take climate action. The CCRA also designed a coordination mechanism chaired by the mission-based Sustainable Development Council (the Council) of the EY. Though building such a mechanism is a welcome attempt to build a higher-level coordination mechanism, the Council has a poor record of convening regularly,⁵⁵ which impedes their ability to carry out their function effectively.

Without obligations to act on climate change, ministries will not share these responsibilities or allocate resources for this purpose. This arrangement would marginalise climate policy and lower its priority on the political agenda, creating a significant barrier for Taiwan to reach net zero by 2050.



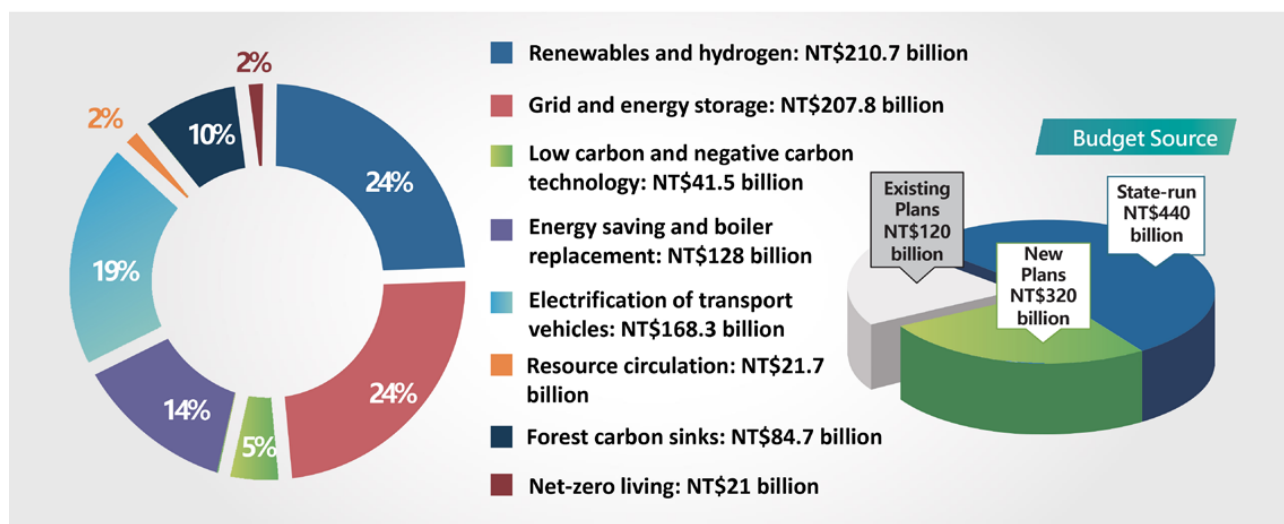
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Fossil-addicted public finance

In current climate policy, there is no strong financial incentive for the private and public sectors to reduce emissions or invest in low-carbon transitions, nor are there penalties for not doing so. Though carbon taxes and carbon trading are mentioned in the GHGRMA, they have not been implemented, and there are no clear roadmaps for enacting pricing on emissions. While the CCRA is expected to require carbon reductions for the private sector through financial tools, there is still no plan for transitioning public spending and investments to a post-carbon economy.

The Taiwanese government has long been criticised for shortfalls on its financial commitments to tackling climate change.⁵⁶ In Taiwan's Pathway to Net-Zero Emissions in 2050, the NDC plans to secure a budget of NT\$900 billion by 2030 and NT\$68.2 billion in 2023⁵⁷ to implement the strategies laid out in the policy document. However, to reach net-zero by 2050, transition-focused spending from the government should be raised to 8% of GDP annually between 2021 to 2025 and 8.8% between 2026 to 2030, according to analysis from McKinsey.⁵⁸ Taiwan's annual spending on climate finance should therefore exceed NT\$1,931.7 billion, considering its GDP is expected to reach NT\$24,145.8 billion in 2023.⁵⁹ This means at least an additional NT\$1,863 billion in 2023 and NT\$15,000 billion by 2030 is needed on top of the committed budget.

A Budget of Nearly NT\$900 billions by 2030 for Major Plans of 2050 Net-zero Transition



Budget allocation for plans in Taiwan's Pathway to Net-Zero Emissions. Source: National Development Council

The Taiwanese government sets a climate budget of nearly NT\$900 billion by 2030, while McKinsey's analysis suggests at least 8% of GDP should be invested, meaning at least NT\$15,000 billion is needed on top of the committed budget.

Climate finance is referred to as green finance in some policy plans. The Financial Supervisory Commission (FSC) launched the Green Finance Action Plan 1.0 in 2017, 2.0 in 2020 and 3.0 in 2022, aiming to encourage climate-related financing. The three plans covered credit, investment, fundraising for capital markets, information disclosure and prudential supervision.⁶⁰ Though the action plans had some mandatory targets for private financial institutions, they neglected the important role of public funding in leading the transition, providing only vague encouragement for government funds to invest sustainably in the 2.0 action plan.

There are five government funds in Taiwan: the Postal Savings Fund, Labor Pension Fund, National Development Fund, Labor Insurance Fund and Public Service Pension Fund, with a sum of NT\$14.5 trillion as of the end of 2021 (see table 3 below).^{61/62/63} The five funds have different levels of transparency and investment policies but overall lack information on the assessment of climate risk. None of them have short- or long-term plans to divest from fossil fuels.

Table 3: The five government funds and their size

Fund Name	2021 Fund Size (NT\$ billion)
Postal Savings Fund	7,445.3
Labor Pension Fund	4,093.3
National Development Fund	1,335.3
Labor Insurance Fund	844.7
Public Service Pension Fund	749.7

Source: National Development Fund, Chunghwa Post Co., Ltd., Pension Fund Association

The Postal Savings Fund is larger than the other four funds combined yet is the least transparent in where its investments have been made. It lacks any investment policies that consider climate impacts and does not disclose any of its investee companies except for its own subsidiary company.⁶⁴

The National Development Fund was established to support industry development, including green energy industries.⁶⁵ We assess that it has the highest transparency among all government funds and discloses its entire portfolio.⁶⁶ In terms of investment policy, it has signed the “Institutional Investors Stewardship Code”, but it only commits to monitoring the overall environmental performance by the companies it invests in, with no specific climate-related content.⁶⁷ As of the end of June 2022, it has invested a sum of NT\$4.9 billion in 15 companies categorised as being in green energy-related industries. However, this only represents 3.65% of the fund.⁶⁸

The total amount of fossil fuel subsidies provided by the Taiwanese government, including explicit and implicit ones, was NT\$78 billion (US\$2.6 billion) in 2018.

Both the Labor Pension Fund and Labor Insurance Fund are managed by the Bureau of Labor Funds under the Ministry of Labor. The ten largest investee companies of the two funds are disclosed every six months.^{69/70} It is stated in its authorisation act that “without sacrificing the income of the Funds, the corporate social responsibilities and the enterprise ethics of the investment targets shall be taken into consideration.”⁷¹ The Bureau of Labor Funds also claims in its sustainability reports that it invests based on environmental or more broadly, environment, social and governance (ESG) related investment criteria.⁷² However, as these commitments and criteria are ambiguous and there is no further explanation on how climate impacts are being reviewed in the investment process, it is unclear whether their portfolios exclude fossil fuels or other industries with high GHG emissions.

The Public Service Pension Fund also publishes its ten largest investment targets twice a year.⁷³ Though it has a Social Responsible Investment chapter in its Investment Policy Statement,⁷⁴ the actual investment policy does not mandate any ESG factors or index when screening potential investment targets.

Table 4: The transparency and climate considerations of the five government funds

Fund Name	Transparency Ranking	Climate-focused Investment Policy	Climate Risk Assessment	Divestment Plan
Postal Savings Fund	Low	None	None	None
Labor Pension Fund	Medium	Partial	None	None
National Development Fund	Medium	Partial	None	None
Labor Insurance Fund	Medium	Partial	None	None
Public Service Pension Fund	Medium	Partial	None	None

Transparent information, climate-focused investment policy and obligatory divestment plans are crucial for the government funds to ensure people’s savings and future are safe from climate disasters. They are also essential to secure public funding and make sure Taiwan has the necessary resources to meet its net-zero target.

Taiwan’s reliance on fossil fuels is enabled by large government subsidies for fossil fuels. According to the IMF, the total amount of fossil fuel subsidies provided by the Taiwanese government, including explicit and implicit ones, was NT\$78 billion (US\$2.6 billion) in 2018.⁷⁵ Explicit subsidies include direct support to producers and incentives contributing to the lower retail price. Implicit subsidies are indirect and cover cases where the true costs of a given product are not reflected in prices or quantified. For fossil fuel subsidies, this includes health impacts, traffic accidents and the broader effects of carbon emissions and the global heating they drive.⁷⁶

According to annual budget plans, the Taiwanese government spent at least NT\$1.6 billion in 2022 and plans to spend NT\$2.2 billion in 2023 on explicit subsidies for fossil fuels, of which more than NT\$1 billion goes to the fishing industry as fuel subsidies.⁷⁷ Fuel subsidies enable vessels to fish further and longer at sea, posing threats to biodiversity and human rights and are therefore frequently considered a form of harmful subsidy. In 2018, Taiwan ranked as the 8th largest provider of harmful fisheries subsidies globally.⁷⁸

Table 5: Explicit fossil fuel subsidies in the Taiwanese government's 2022 and 2023 budget plans

Item	Budget source	2022 annual budget (NT\$ million)	2023 annual budget (NT\$ million)
Incentives for petroleum development, technology research and development plans	Petroleum Fund	74	74
Incentives for exploration and development of petroleum and gas programs		150	140
Subsidies for petroleum facilities, transportation costs and provision in mountainous regions, Indigenous townships and outlying islands		303	297
Fuel subsidies for fishing vessels	Fisheries Agency	1,017	1,631
Fuel subsidies for low-income households	CPC Corporation	80	80

Source: Directorate-General of Budget, Accounting and Statistics

In June 2022, the World Trade Organization (WTO) reached an agreement to ban fisheries subsidies that support illegal, unreported and unregulated (IUU) fishing, fishing of already overfished stocks and fishing on unregulated high seas.⁷⁹ The WTO also committed to discussing regulating capacity-enhancing subsidies, including fuel subsidies, in 2023. However, the Taiwanese government has not yet committed to eliminating fossil fuel subsidies for fishing vessels, only agreeing to research an alternative plan by 2024.⁸⁰ EJF's investigation results have shown how harmful fisheries subsidies negatively impact the biodiversity, climate and livelihood of coastal communities.⁸¹

Based on IMF's estimation, there are more than NT\$70 billion of explicit or implicit subsidies that are not shown in the governmental budget allocation, mostly used to support national gas and electricity consumption. Taiwan's price of electricity has been capped since 2019 and only partially raised until 2022,⁸² and the price of gas has not increased since June 2021.⁸³ However, these decisions and the spikes in international fuel prices due to the war in Ukraine have resulted in tremendous losses for state-owned power and petroleum companies. The loss is estimated to reach NT\$300 billion by the end of 2022.⁸⁴ Although revenues generated by these state-owned companies' assets will be used to cover some of the loss, most of the deficit will be covered by the government's annual budget.⁸⁵

Unprotected human rights

To improve human rights standards in Taiwan's legal system, Taiwan introduced the Act to Implement the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights in 2009 and established the Presidential Office Human Rights Consultative Committee.⁸⁶ In 2018, members of the Committee raised the need to identify major human rights issues and develop action plans to address them. These plans were later included in the National Human Rights Action Plan (NHRAP), launched in May 2022.

However, initially, the NHRAP did not include any climate-related human rights policies in the early draft until EJF made repeated recommendations,⁸⁷ indicating a lack of awareness of the climate risk to human rights from the top tier of Taiwanese leadership. The final published version of the NHRAP recognised that farmers, Indigenous peoples, people with disabilities and elderly people are particularly vulnerable in climate crises.⁸⁸ However, this recognition was not translated into appropriate mitigation or adaptation plans to protect their rights. The current version of the NHRAP is only a summary of existing climate policies without obligations on any ministries or clear roadmaps to review the progress.

The government has demonstrated a lack of competence in managing sudden- or slow-onset climate crises in the past years. Officials have often abruptly introduced policies responsible for maladaptation – causing even greater damage – without consulting relevant stakeholders. For example, during the 2020 to 2021 drought, the government shut down the irrigation water supply without prior consultation or notification. The decision resulted in 95,000 hectares of rice either dying in the dried paddy fields just before harvest, or never being planted.^{89/90} This was the largest area ever that was forced to stop irrigation by government policy.⁹¹



An irrigation tunnel in Miaoli during the 2020/2021 drought. The tunnel was never dried up before, according to EJF's interviews with local farmers. © EJF



An Indigenous sea hunter who is about to hunt. © EJF

EJF's interview with some Taiwanese Indigenous sea hunters also found that the CCRA and NHRAP are not prepared to support people that have lost their traditional lifestyles or livelihoods due to climate change. Due to changes in climate patterns and more severe natural disasters, the natural habitats that sea hunters rely on for hunting are harmed, forcing some of them to give up their original ways of living and culture.^{92/93} In some cases, people are forced to leave their homes to look for alternative livelihoods and become "climate refugees".⁹⁴ Globally, activists have warned that the increasingly large numbers of climate refugees around the world risks a humanitarian crisis. However, in Taiwan, there are no laws to identify or protect climate refugees.

The ignorance of the unique and unequal impacts of climate change on vulnerable groups could further marginalise them.⁹⁵ Still, neither the CCRA nor the NHRAP provides sufficient protection for their rights.



The eastern coast of Taiwan was covered with driftwood after Typhoon Morakot. The coastal coral ecosystem has not recovered until now, according to EJF's interviews with the Indigenous sea hunters. Source: 柯金源⁹⁶

Neglected nature

Nature-based solutions to the climate crisis are not valued as they should be in Taiwan's current policies. In Taiwan's Pathway to Net-Zero Emissions in 2050, carbon sinks are recognised as one of the 12 key strategies to mitigate climate change, with a major role in offsetting emissions that are hard to abate.⁹⁷ However, the Taiwanese government is only able to calculate and monitor forest carbon sinks, with very little understanding regarding the capacity of the oceans to sequester carbon.

According to the 2022 national GHG inventory report, forest carbon sinks absorbed nearly 8% (21.9 Mt CO₂e) of Taiwan's total GHG emissions in 2020,⁹⁸ representing more than four times the national emissions reduction since 2015. This number shows the contribution that forests offer for mitigation. While the government has pledged to offset an additional 1.1 Mt CO₂e through forests by 2050, woodland coverage is now 60.71% of terrestrial Taiwan.⁹⁹ It could be a genuine challenge to increase the forest carbon sink.

It is estimated that these blue carbon ecosystems, saltmarshes, mangroves and seagrass, are absorbing roughly one-third of the additional offsets from carbon sinks pledged by the government.

However, Taiwan is surrounded by 64,473km² of ocean.¹⁰⁰ The ocean carbon sink provided by healthy blue carbon ecosystems is an incredible opportunity for capturing carbon that has long been neglected by the Taiwanese government. The rich blue carbon potential of ecosystems around Taiwan such as saltmarshes, mangroves and seagrass¹⁰¹ is not included in the national GHG inventory. According to the latest assessment, even at its current status, Taiwan has about 187 hectares of saltmarshes, 681 hectares of mangroves and 5,456 hectares of seagrass.¹⁰² It is estimated that these blue carbon ecosystems are absorbing 345,859 Mg CO₂e a year,¹⁰³ roughly one-third of the additional offsets from carbon sinks pledged by the government. Actively protecting and restoring these ecosystems is a golden opportunity to make a serious contribution to climate action.

Table 6: Blue carbon ecosystem coverage and annual carbon sequestration potential

Ecosystems	Coverage (ha)	Estimated sequestration per year (Mg CO ₂ e)
Saltmarshes	187.19	5,830
Mangroves	681	64,156
Seagrass	5,456	275,873
Total	6,324.19	345,859

Source: 林幸助(2022) 台灣濱海藍碳知多少? 2022海洋保育面面觀-臺灣海域生態守護研討會

Blue carbon ecosystems also offer critical adaptation services. By safeguarding coastal communities and reducing the impact of flooding, the mangroves around Taiwan help to avoid an economic loss of US\$7.89 billion annually.¹⁰⁴ Taiwan benefits from the third-highest economic security provided by mangroves of any nation, behind only the USA and China.¹⁰⁵

However, the Taiwanese government has failed to protect 10% of its ocean ecosystems by 2020, as it pledged in its national sustainability goals.¹⁰⁶ The more ambitious goal of 30% coverage for MPAs by 2030 is not yet under discussion as the country has not passed the Ocean Conservation Act after years of discussion.¹⁰⁷ The government plans to provide a budget of NT\$84.7 billion in the upcoming eight years for forest carbon sinks.¹⁰⁸ However, this budget excludes ocean carbon sinks, and it is unknown whether this is one-off funding for forests. Despite urging from civil society to fund conservation through carbon pricing, the GHG funds enabled by the CCRA still exclude nature conservation (Article 32). This again shows that the government is not yet acting on the need for nature-based solutions to address climate change.

Conclusion and recommendations

The climate crisis is an unprecedented challenge. Our very existence and civilisation depend on us making the right decisions and taking the right actions in this generation. Two principles can ensure we head in the right direction along the road to rapid decarbonisation: transparency and civil inclusion. EJF believes moving our economy away from fossil fuels is urgent and essential. In the transition process, by providing transparent information and involving all stakeholders in policy discussions and implementations, we can secure a sustainable future. Providing information and access to the decision-making process for vulnerable groups and people whose livelihoods depend on nature is particularly important to ensure the sustainability of any chosen policy.

Taiwan, as a young, energetic and democratic country, has great potential to progress. If Taiwan can demonstrate how good climate governance should be carried out, it would establish a leading position in the global community of nations that are taking action on climate change.

EJF's recommendations to the Taiwan government are:

- Enable a 'whole of government' approach to address the climate crisis and place climate at the top of all policy agendas.
- Develop a clear plan and reviewing process to ensure all intermediate targets are met in all government agencies. The ideal target to protect people and planet is zero carbon by 2035, but even to meet its 2050 net-zero target Taiwan must improve the ambition of planned reductions in carbon emissions by 2030.
- Allocate sufficient resources and capacity to secure a Paris Agreement-compatible pathway.
- Publish a clear timeline for all government funds to divest from fossil fuels by 2025.
- Publish fossil fuel subsidy reform plans by 2023 to ensure a faster phase-out of subsidies harmful to the climate. The transition should consider fishers, low-income households, mountain and Indigenous townships and outlying islands to minimise impacts.
- Include regular human rights impact assessments of climate change in the Climate Change Response Act to ensure all policies meet mitigation and adaptation needs without posing additional threats to basic human rights.
- Include meaningful citizen participation mechanisms, especially for vulnerable groups, in the Climate Change Response Act to ensure all policies acquire free, prior and informed consent.
- Recognise and enhance the role of nature-based solutions for both mitigation and adaptation in the Climate Change Response Act. Dedicate substantial funds and resources to enable conservation and restoration.
- Publish a clear roadmap to include ocean carbon sinks in the National Greenhouse Gas Inventory by 2023 to better conserve and restore coastal blue carbon ecosystems.
- Commit to reserve 30% of biodiversity-rich national waters and support the immediate closure of 30% of biodiversity-rich high seas for conservation purposes by 2030. This should be done by engaging with Indigenous peoples and local communities and by applying precautionary principles. Sufficient resources and full transparency should be implemented to monitor the reserved area. These commitments and principles should also be enshrined in the Ocean Conservation Act under discussion.

Annexe

Methodology of table 4: The transparency and climate considerations of the five government funds

- Transparency ranking
 - High: disclose the entire portfolio and the methodology of investees selection
 - Medium: disclose the entire portfolio or investees with significance
 - Low: does not disclose most of its portfolio
- Climate-focused investment policy
 - Sufficient: include climate-related factors in its investee's selection process and specify if it excludes any investees due to these factors
 - Partial: include broader environmental factors in the investee selection process
- Climate risk assessment
 - Sufficient: assess climate-related physical and transitional risks across its entire portfolio on a regular basis
 - Partial: assess certain climate-related risks of industries with higher risks or investees with significance
- Divestment plan
 - Sufficient: set clear roadmap for divesting from all fossil fuels-related industries
 - Partial: set plans for divesting from or stop investing in coal, oil or gas-related industries



An elementary school in Namasia County (now Namasia District), Kaohsiung, was destroyed after Typhoon Morakot. Source: 柯金源¹⁰⁹

Endnotes

- 1 IPCC (2018) Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, Cambridge University Press, Cambridge, UK and New York, NY, USA, 616 pp. <https://www.ipcc.ch/sr15/>
- 2 *ibid.*
- 3 Net zero tracker, accessed 05.07.2022, <https://zerotracker.net/>
- 4 IPCC (2022) P.R. Shukla et al., Summary for Policymakers. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK and New York, NY, USA. 53pp., https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf
- 5 IPCC, 28.02.2022, 'Climate change: a threat to human wellbeing and health of the planet. Taking action now can secure our future', Accessed 27.09.2022, <https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/>
- 6 Crippa, M. et al. (2021) Emissions Database for Global Atmospheric Research, version v6.o_FT_2020 (GHG time-series). European Commission, Joint Research Centre (JRC) [Dataset] PID: <http://data.europa.eu/89h/2fi34209-21d9-4b42-871c-58c3bdcfb549>
- 7 Climate Change Performance Index, 'Downloads', accessed 22.07.2022, <https://ccpi.org/downloads/>
- 8 Crippa, M. et al. op cit.
- 9 Office of the President, 22.04.2021, President Tsai attends forum on environmental sustainability, accessed 22.07.2022, <https://english.president.gov.tw/News/6122>
- 10 國家溫室氣體減量法規資訊網, 23.06.2022, 溫室氣體階段管制目標, accessed 22.07.2022, https://ghgrule.epa.gov.tw/greenhouse_control/greenhouse_control
- 11 International Renewable Energy Agency (2022) World Energy Transitions Outlook 2022: 1.5°C Pathway, International Renewable Energy Agency, Abu Dhabi, 352pp., https://irena.org/-/media/Files/IRENA/Agency/Publication/2022/Mar/IRENA_World_Energy_Transitions_Outlook_2022.pdf
- 12 Global Fossil Fuel Divestment Commitments Database, 'The database of fossil fuel divestment commitments made by institutions worldwide', accessed 05.07.2022, <https://divestmentdatabase.org/>
- 13 Aljazeera, 22.09.2021, "Game-changer": China to stop funding overseas coal projects', accessed 05.07.2022, <https://www.aljazeera.com/news/2021/9/22/xi-tells-un-china-will-not-build-coal-fired-power-plants-overseas>
- 14 G7 (2022) G7 Leaders' Communiqué, <https://www.g7germany.de/resource/blob/974430/2057828/77d5804dd1ab3047bf05f74c1139066/2022-06-28-abschlusserklaerung-eng-web-data.pdf?download=1>
- 15 Bloomberg, 22.09.2022, 'China Has Built 14 Overseas Coal Plants Since Vowing No New Ones', accessed 27.09.2022, www.bloomberg.com/news/articles/2022-09-22/china-has-built-14-overseas-coal-plants-since-vowing-no-new-ones
- 16 IMF (2019) David Coady; Ian W.H. Parry; Nghia-Piotr Le; Baoping Shang, Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates, <https://www.imf.org/-/media/Files/Publications/WP/2019/WPIEA2019089.ashx>
- 17 UNFCCC (2021) Glasgow Climate Pact, https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf
- 18 IPCC (2022) Portner, H.-O. et al., Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (in Press), IPCC, Geneva, Switzerland, <https://www.ipcc.ch/report/ar6/wg2/>
- 19 Walker, W.S. et al. (2020) The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas. Proceedings of the National Academy of Sciences of the United States of America, vol. 117.6, pp. 3015-3025.
- 20 Redvers, N. et al. (2022) The determinants of planetary health: an Indigenous consensus perspective. The Lancet Planetary Health, vol. 6, ISSUE 2, E156-E163
- 21 Griscom, W. et al. (2017) Natural climate solutions. Proc. Natl. Acad. Sci. USA, 114, pp. 11645-11650
- 22 Half Earth Project, 'Why half?', accessed 05.07.2022, <https://www.half-earthproject.org/discover-half-earth/#why-half>
- 23 United Nations Climate Change, 15.06.2022, 'Ocean and Climate Change Dialogue 2022', accessed 27.07.2022, <https://unfccc.int/event/ocean-and-climate-change-dialogue-2022>
- 24 UN News, 27.06.2022, 'Guterres outlines four recommendations to help us all 'Save Our Ocean'', accessed 27.07.2022, <https://news.un.org/en/story/2022/06/1121402>
- 25 Donato, D., et al. (2011) Mangroves among the most carbon-rich forests in the tropics. Nature Geoscience, vol. 4, pp. 293-297.
- 26 Fourqurean, J.W., et al. (2012) Seagrass ecosystems as a globally significant carbon stock. Nature Geoscience, vol. 5, pp. 505-512.
- 27 Emma L. Jackson, Siân E. Rees, Catherine Wilding, Martin J. Attrill (2015) Use of a seagrass residency index to apportion commercial fishery landing values and recreation fisheries expenditure to seagrass habitat service. Conservation Biology, vol. 29(3), p.899-909
- 28 Greenpeace (2019) O'Leary, B.C., Allen, H.L., Yates, K.L., Page, R.W., Tudhope, A.W., McClean, C. et al., 30x30: A blueprint for ocean protection—How we can protect 30% of our oceans by 2030, London, UK, 49 pp. https://www.greenpeaceoceanblueprint.org/pdfDocs/Greenpeace_30x30_Blueprint_Report_web.pdf
- 29 EPA (2022) National Greenhouse Gas Inventory Report 2022 Report Summary, https://unfccc.saveoursky.org.tw/nir/2022nir/uploads/00_abstract_en.pdf
- 30 Central Weather Bureau, 臺灣長期氣候變化, accessed 25.07.2022, https://www.cwb.gov.tw/V8/C/K/Encyclopedia/climate/climate7_list.html#climate7-01
- 31 TCCIP (2022) IPCC氣候變遷第六次評估報告「衝擊、調適與脆弱度」之科學重點摘錄與臺灣氣候變遷衝擊析更新報告, https://tccip.ncdr.nat.gov.tw/publish_o1_technical_report_one_download.aspx?tr_id=20220301113042
- 32 氣候變遷災害風險調適平台, 臺灣歷史極端氣候災害事件, accessed 25.07.2022, <https://dra.ncdr.nat.gov.tw/Frontend/Disaster/ClimateDetail/BALoo00004>
- 33 行政院莫拉克颱風災後重建推動委員會, 15.04.2014, 統計概覽, accessed 12.08.2022, <https://morakotdatabase.nstm.gov.tw/88flood.www.gov.tw/work.html>
- 34 氣候變遷災害風險調適平台, 臺灣歷史極端氣候災害事件 op cit.
- 35 National Science and Technology Center for Disaster Reduction (2021) Liu, et al., 2021年乾旱事件農作物損失調查紀實, <https://www.ncdr.nat.gov.tw/UploadFile/Newsletter/efc8cdba0d5b41398ea57629040337d6.pdf>
- 36 *Ibid.*
- 37 Council of Agriculture, 'Agricultural Statistics Query', accessed 11.07.2022, <https://agrstat.coa.gov.tw/sdweb/public/official/OfficialInformation.aspx>
- 38 Flickr, 柯金源2009.08-莫拉克颱風之後-高雄甲仙鄉小林村18, accessed 05.10.2022, <https://www.flickr.com/photos/kechinyuan/7465382670/in/album-7215763038395268/> (CC BY-NC 2.0)
- 39 TCCIP (2021) IPCC氣候變遷第六次評估報告之科學重點摘錄與臺灣氣候變遷衝擊析更新報告, https://tccip.ncdr.nat.gov.tw/publish_o1_technical_report_one_download.aspx?tr_id=20211124131716
- 40 Laws & Regulations Database of The Republic of China (Taiwan), 01.07.2015, 'Greenhouse Gas Reduction and Management Act', accessed 05.07.2022, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=00020098>
- 41 Environmental Information Center, 10.03.2020, 減碳路難艱 環保署坦承減量2%將跳票 溫管法修法延後, accessed 27.07.2022, <https://e-info.org.tw/node/223450>
- 42 EY, 21.04.2022, 邁向2050年淨零排放 政院通過「溫室氣體減量及管理法」修正草案, 名稱並修正為「氣候變遷因應法」, accessed 05.07.2022, <https://www.ey.gov.tw/Page/9277F759E41CCD91/93478f1b-503e-4129-9e73-70478a1eef68> (CC BY-NC 2.0)
- 43 Laws & Regulations Database of The Republic of China (Taiwan), 19.01.2022, 'The Organic Act of the National Development Council', accessed 16.08.2022, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0010106>
- 44 National Development Council (2014) 國家氣候變遷調適行動計畫102-106年, <https://adapt.epa.gov.tw/DispPageBox/files/757.pdf>
- 45 National Development Council, 30.03.2022, 'Taiwan's Pathway to Net-Zero Emissions in 2050', accessed 16.08.2022, https://www.ndc.gov.tw/en/Content_List.aspx?n=B927DoEDB57A7A3A&upn=A2B386E427ED5689
- 46 Environmental Information Center, 03.03.2022, 台灣專注「淨零」少談「調適」 學者籲成立氣候變遷專責研究機構, accessed 16.08.2022, <https://e-info.org.tw/node/233497>
- 47 National Development Council, 30.03.2022, 'Taiwan's Pathway to Net-Zero Emissions in 2050' op cit.
- 48 Environmental Information Center, 23.06.2022, 【組改2.0】環資部或環境部, 環境保護走到前端了嗎?, accessed 13.09.2022, <https://e-info.org.tw/node/234310>
- 49 The Control Yuan, 03.10.2019, 108財調062, accessed 13.09.2022, <https://www.cy.gov.tw/CyBsBoxContent.aspx?n=133&s=6778>
- 50 EPA (2022) National Greenhouse Gas Inventory Report 2022 Report Summary op cit.
- 51 能源統計專區, 發電量, accessed 25.07.2022, <https://www.esist.org.tw/Database/List?PageId=3>
- 52 EPA (2022) National Greenhouse Gas Inventory Report 2022 Report Summary op cit.
- 53 Bureau of Energy (2022) 110年度全國電力資源供需報告, https://www.moeaboe.gov.tw/ECW/populace/content/wHandMenuFile.ashx?file_id=10995

- 54 Environmental Information Center, 10.05.2022, 連兩年用電破紀錄 能源局統計：2021年工業用電史上新高, accessed 28.05.2022, <https://e-info.org.tw/node/233959>
- 55 Environmental Information Center, 18.11.2020, 國家永續發展委員會近兩年沒開會 立委提刪預算 環署：明天就開, accessed 27.07.2022, <https://e-info.org.tw/node/228088>
- 56 UDN, 21.10.2021, 促減碳腳步加快 環團籲匡列「氣候前瞻基礎建設」預算, accessed 17.08.2022, <https://udn.com/news/story/7266/5832979>
- 57 CNA, 25.08.2022, 112年預算規模史上最大 少子女化、國防經費攀新高, accessed 30.08.2022, <https://www.cna.com.tw/news/aipl/202208250109.aspx>
- 58 McKinsey Sustainability, 25.01.2022, 'The economic transformation: What would change in the net-zero transition', accessed 17.08.2022, <https://www.mckinsey.com/business-functions/sustainability/our-insights/the-economic-transformation-what-would-change-in-the-net-zero-transition>
- 59 Directorate-General of Budget, Accounting and Statistics, 最新統計指標, accessed 17.08.2022, <https://www.dgbas.gov.tw/point.asp?index=1>
- 60 FSC, 'Promoting Green Finance', accessed 27.09.2022, <https://www.fsc.gov.tw/en/home.jsp?id=419&parentpath=0,4>
- 61 National Development Fund (2022) National Development Fund 2021 Annual Report, <https://ws.ndc.gov.tw/001/administrator/33/relfile/7098/35855/f13beee4-48d7-43c3-895b-372392cb46ab.pdf>
- 62 Chunghwa Post Co., Ltd., 'Financial Report', accessed 05.07.2022, https://www.post.gov.tw/post/internet/U_english2/index.jsp?ID=350105
- 63 Pension Fund Association, 中華民國退休基金協會各基金最新規模, accessed 05.07.2022, <https://www.pension.org.tw/index.php/2018-10-03-15-11-09/2019-02-12-23-58-47>
- 64 Chunghwa Post Co., Ltd., 國內全權委託投資績效, accessed 05.07.2022, <https://www.post.gov.tw/post/internet/Message/index.jsp?ID=15020513>
- 65 National Development Fund, 'Focus', accessed 29.08.2022, <https://www.df.gov.tw/eng/cp.aspx?n=CEAD90D9910DB679&s=21679B2AD41C52B9>
- 66 National Development Fund (2022) National Development Fund 2021 Annual Report op cit.
- 67 National Development Fund (2016), 「機構投資人 盡職治理守則」 遵循聲明, https://cgc.twse.com.tw/static/20160725/000000005f5d2aa201561f9eb4530000_國發基金機構投資人盡職治理守則遵循聲明1050720.pdf
- 68 National Development Fund (2022), 行政院國家發展基金 111年第二季季報, <https://ws.ndc.gov.tw/001/administrator/32/relfile/7031/36032/0fe0fof0f-9a1f-44a5-981a-580882c7acca.pdf>
- 69 Bureau of Labor Funds, 勞工退休基金 基金運用情形 每半年公布事項, accessed 17.08.2022, <https://www.blf.gov.tw/8812/8945/8948/8955/8958/>
- 70 Bureau of Labor Funds, 勞工保險基金 基金運用情形 每半年公布事項, accessed 17.08.2022, <https://www.blf.gov.tw/8812/8945/8961/8964/8967/>
- 71 Law Source Retrieving System of Labor Laws and Regulations, 20.04.2022, 'the Utilization Directions for the Labor Funds', accessed 17.08.2022, <https://laws.mol.gov.tw/Eng/FLAWDATo202.aspx?id=FL074192>
- 72 Bureau of Labor Funds (2022) Bureau of Labor Funds 2020-2021 Sustainability Report, <https://www.blf.gov.tw/media/37957/2020-2021-sustainability-report.pdf>
- 73 Public Service Pension Fund Management Board, 每半年公布事項, accessed 17.08.2022, <https://www.fund.gov.tw/News.aspx?n=660&sms=11736>
- 74 Public Service Pension Fund Management Board(2022), 公務人員退休撫卹基金投資政策說明書, <https://ws.fund.gov.tw/Download.ashx?u=LzA-wMS9VcGxvYWQvOC9yZWxmaWxLzExNzUzLzE4ODEyLzgz4OGJlNzExL-WM3Y2ItNGY2ZC1hYjBlTk1wNjOWMoMDQ3Yi5wZGY%3D&n=50-qV6LOH5pS%2F562W6KqQ5piO5pu4MTEExMDIyNS5wZGY%3D&icon=.pdf>
- 75 IMF (2021) Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies, <https://www.imf.org/-/media/Files/Publications/WP/2021/English/wp2021236-print-pdf.ashx>
- 76 IMF, 'Fossil Fuel Subsidies', accessed 17.08.2022, <https://www.imf.org/en/Topics/climate-change/energy-subsidies>
- 77 Oceana (2021) Daniel J. Skerrett and U. Rashid Sumaila, Assessing the spatial burden of harmful fisheries subsidies, https://oceana.org/wp-content/uploads/sites/18/OceanaDWF_FinalReport.pdf
- 78 ibid.
- 79 WTO (2022) AGREEMENT ON FISHERIES SUBSIDIES, <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/W22.pdf&Open=True>
- 80 EY (2022) National Human Rights Action Plan, <https://www.humanrights.moj.gov.tw/media/20211666/國家人權行動計畫-行政院核定版.pdf>
- 81 EY (2022) The Ever-Widening Net: Mapping The Scale, Nature And Corporate Structures Of Illegal, Unreported And Unregulated Fishing By The Chinese Distant-Water Fleet, <https://ejfoundation.org/reports/the-ever-widening-net-mapping-the-scale-nature-and-corporate-structures-of-illegal-unreported-and-unregulated-fishing-by-the-chinese-distant-water-fleet>
- 82 Environmental Information Center, 28.06.2022, 7/1起產業用電大戶電價調漲15% 住宅每月千度以下凍漲, accessed 30.08.2022, <https://e-info.org.tw/node/234425>
- 83 UDN, 31.05.2022, 6月天然氣價全面凍漲 民生、工業用戶凍滿一年, accessed 30.08.2022, <https://udn.com/news/story/7238/6354096>
- 84 PTS, 18.07.2022, 油電雙漲 中油、台電合計虧損仍近3000億, accessed 30.08.2022, <https://news.pts.org.tw/article/590840>
- 85 Economic Daily, 26.07.2022, 獨家/史上第一！編赤字預算、增資 經濟部「雙管齊下」救台電, accessed 30.08.2022, <https://money.udn.com/money/story/7307/6490168>
- 86 Office of the President, 'The Presidential Office Human Rights Consultative Committee |Origin of the committee', accessed 18.05.2022, <https://english.president.gov.tw/Page/225>
- 87 109年10月29日國家人權行動計畫(初稿)公聽會民間團體對國家人權行動計畫(初稿)意見彙整表, <https://www.humanrights.moj.gov.tw/media/20211743/011091029國家人權行動計畫-初稿-公聽會-民間團體對國家人權行動計畫-初稿-意見彙整表-公告版1.pdf?mediaDL=true>
- 88 EY (2022) National Human Rights Action Plan op cit.
- 89 EY (2021) 乾旱危機 - 台灣仍未正視氣候緊急, <https://vimeo.com/590996272/e48ddac9d2>
- 90 上下游, 15.10.2020, 史無前例！稻作抽穗才停灌，農民怒吼：毀稻苗會遭天打雷劈，政府補償像「施恩」, accessed 18.08.2022, <https://www.newsmarket.com.tw/blog/140483/>
- 91 風傳媒, 15.6.2021, 朱淑娟專欄：氣候改變，停灌春耕可能變常態, accessed 29.08.2022, <https://www.storm.mg/article/3749617>
- 92 蘋果新聞網, 02.11.2009, 颱風毀珊瑚礁 復原需百年, accessed 18.08.2022, <https://www.appledaily.com.tw/headline/20091102/TBNFX47Q7IPCTC4HX3MDJWBCSI/>
- 93 EY (2022) The sea is a good friend of mine: Taiwanese Amis fishers and the climate crisis, <https://vimeo.com/710454992/obb897d6a4>
- 94 EY (2021) No Shelter From The Storm - The urgent need to recognise and protect climate refugees, <https://ejfoundation.org/reports/no-shelter-from-the-storm-the-urgent-need-to-recognise-and-protect-climate-refugees>
- 95 EY (2022) In Search of Justice - How the climate crisis is driving inequality and eroding human rights, <https://ejfoundation.org/reports/in-search-of-justice>
- 96 Flickr, 柯金源2009.08-莫拉克颱風之後-台東海岸19, accessed 05.10.2022, <https://www.flickr.com/photos/kechinyuan/7464874842/in/album-72157627901625849/> (CC BY-NC 2.0)
- 97 National Development Council, 30.03.2022, 'Taiwan's Pathway to Net-Zero Emissions in 2050' op cit.
- 98 EPA (2022) National Greenhouse Gas Inventory Report 2022 Report Summary op cit.
- 99 島嶼上的森林現況, 森林資源調查歷程, accessed 19.08.2022, <https://if.forest.gov.tw/IF/ResourceArchive/ArchiveHome/ArchiveIndex>
- 100 Ocean Conservation Administration, 'Introduction to Taiwan's marine protected areas', accessed 30.08.2022, <https://www.oca.gov.tw/en/home.jsp?id=100&parentpath=0,5,99>
- 101 EY (2021) OUR BLUE BEATING HEART: BLUE CARBON SOLUTIONS IN THE FIGHT AGAINST THE CLIMATE CRISIS, <https://ejfoundation.org/reports/our-beating-blue-heart-blue-carbon-solutions-in-the-fight-against-the-climate-crisis-2>
- 102 林幸助 (2022) 台灣濱海藍碳知多少？2022海洋保育面面觀-臺灣海域生態守護研討會, <https://www.facebook.com/ocaoactaiwan/videos/375430061426648>
- 103 ibid.
- 104 Menéndez, P., Losada, I.J., Torres-Ortega, S. et al. (2020) The Global Flood Protection Benefits of Mangroves. Sci Rep 10, 4404
- 105 ibid.
- 106 National Council for Sustainability Development, 臺灣永續發展目標, accessed 31.08.2022, <https://ncsd.ndc.gov.tw/Fore/aboutsdg>
- 107 Environmental Information Center, 19.04.2022, 《海保法》草案卡關兩年 環團籲納入藍碳生態系、建立基礎資料庫, accessed 15.09.2022, <https://e-info.org.tw/node/233873>
- 108 National Development Council, 30.03.2022, 'Taiwan's Pathway to Net-Zero Emissions in 2050' op cit.
- 109 Flickr, 柯金源2009.08-莫拉克颱風之後-高雄那瑪夏鄉17, accessed 05.10.2022, <https://www.flickr.com/photos/kechinyuan/7465426936/in/album-72157630338395268/> (CC BY-NC 2.0)



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