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Taiwan's Polycentric Strategy Within the Environmental Regime Complex on Climate Change

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Summary
For decades, Taiwan has tried to become part of the global climate mitigation program within the United Nations Framework Convention on Climate Change (UNFCCC). While these endeavors have been ineffective, a transnational regime complex on climate change mitigation has still emerged over the years. In recent years Taiwan's sovereignty-centered approach has transformed toward this polycentric climate regime, which includes many different actors and methods in the private, public, and epistemic communities. Taiwan's adaptation and planning toward trends in international and transnational climate governance includes commitment to the Paris Agreement, plans for comprehensive unilateral measures, participation in transparency institutions, financial market mechanisms, and taking bilateral as well as multilateral approaches. Taiwan's polycentric strategy within the regime complex for climate change mitigation may make the country a leader in this field in East Asia. Considerable doubts remain about Taiwan's carbon-pricing policy, and its strategy to offload its emissions on developing countries in its region in exchange for them offering investment and business opportunities. Transnational governance mechanisms do not change Taiwan's international legal situation, but they do give the country opportunities and global connectivity that it could not exploit if the world system was to solely rely on international law — and therefore they throw Taiwan a lifeline.

Keywords: Transnational governance, regime complex, multi-stakeholder diplomacy, environmental governance, East Asia, political economy, climate change mitigation

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Introduction

Record temperatures, water shortages, low air quality and weather extremes have caused rising awareness of energy consumption, greenhouse gas emissions, and their consequences for climate change in Taiwan (the Republic of China) in recent years. In 2015 mean world temperatures were higher than at any point since they were first measured. Additionally Taiwan itself saw the highest mean temperatures since records began, in 1952 (National Statistics 2017). For this densely populated island of 23 million people, the most obvious environmental threats are typhoons, which have become stronger, more frequent, and seasonally stretched out. Almost 700 people lost their lives during Typhoon Morakot in 2009. Climate change has already also contributed to power outages, and may cause food security risks in future too.

Taiwan's global share of greenhouse gas (GHG) emissions has been declining in recent years, which it owes to economic growth elsewhere — particularly in mainland China — but not to its own reductions. Between 1990 and 2014, total GHG emissions almost doubled from 137 million tons to 283.49 million tons carbon dioxide equivalents. GHG emissions grew by 105.62 percent, and had an annual growth rate of 3.27 percent (EPA 2016). However, its global share of emissions dropped from almost 1 percent across years to 0.55 percent in 2014 (EPA 2016). Taiwan has an island-type independent energy system, while more than 98 percent of its energy is imported. Taiwan strongly depends on fossil fuel imports, and has a large footprint in several energy-intensive industries like the steel, petrochemical, flat panel, and semiconductor ones — resulting in the country having higher per capita emissions than Germany or Japan. Taiwan's need to adapt to the United Nations Framework Convention on Climate Change (UNFCCC), even though it is not a member of it, was recognized already years ago (Lin et al. 2007).

A decade ago, Taiwan's response to climate change was interpreted as being more "aggressive" than that of most other countries in the developing world (Lin 2007). However in 2015, as compared to 2014, some of the largest GHG emitters — China, followed by the United States, Russia, and Japan — all reduced their emissions. The People's Republic of China is a signatory to the Paris Agreement, and is significantly expanding its climate protection governance (Kuhn 2014) — which puts Taiwan on the spot to act unilaterally and in a self-driven manner. Also Russia and China signed the Paris Agreement in December 2015, wherefrom Taiwan is excluded.

Is Taiwan losing international connectivity in decarbonising its economy? Taipei has announced ambitious government programs to curb carbon emissions. In July 2015 President Ma Ying-jeou, from the Guomindang (KMT), signed the Greenhouse Gas Reduction Bill (GGRB) into law. Its goal is to cut emissions by 2050 to less than half the level of 2005. Democratic Progressive Party (DDP) President Tsai Ing-wen, in office since May 2016, plans to make Taiwan "nuclear free" meanwhile.

Since nuclear power generates almost one-fifth of Taiwan's total power supply, it must be replaced by renewable energy sources as well as energy savings.

Taipei has been continuously excluded from the UNFCCC since 1994 onward (Yang and Chien 2010). Taiwan wanted to become a member or an observer of the UNFCCC and the Kyoto Protocol, in line with its strategy of "meaningful participation" — as proposed by President Ma ever since 2008. At the 21st annual Conference of Parties (COP21) in December 2015 in Paris, 12 diplomatic allies sent letters on Taiwan's behalf to the UN Secretariat (in vain). Although a Taiwanese delegation participated in side events, led by the deputy minister of the Environmental Protection Administration (EPA), this was only possible because the EPA was registered as a nongovernmental organization. Hence, Taiwan's latest UNFCCC endeavors failed with reference to UN General Assembly Resolution 2758.

Maybe to Taiwan's advantage, the UNFCCC is far from being an exclusive and comprehensive organization for international climate change mitigation — even though Taiwan has focused its attention on it for many years now. Many bilateral, multilateral, local and regional, private and mixed initiatives have emerged, ones that build a regime complex on climate change (Keohane 2009). This regime complex has been interpreted as being more flexible and adaptive to the various challenges at hand than a comprehensive, hierarchic sovereignty-based regime under the UNFCCC umbrella is. Ostrom (2009) perceives a "polycentric approach" as being favorable, since it gives more room for experimentation in different regions and with a different constellation of actors that may improve mutual learning.

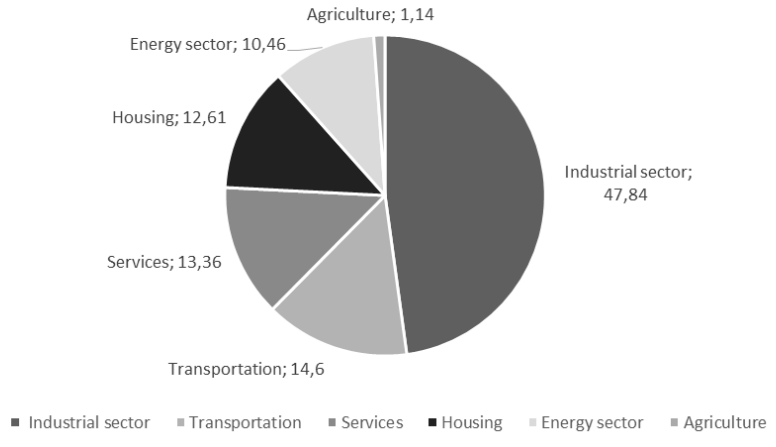
The literature on transnational governance claims that a governance gap exists not only between the Global North and the Global South, but also between the active West and the passive Asian developed jurisdictions — namely Japan, South Korea, and the Greater China Region (China, Hong Kong, Taiwan). A recent special edition of *ASIEN* on the input of East Asian powerhouses to global governance and the G20 supported this assumption, with exceptions in some areas (Schucher 2013). Taiwan is a special case also in comparison with Japan and South Korea, since it lacks diplomatic recognition. Hence Taiwan has a diversified, prospering internationally oriented economy and civil society, embedded in a thriving democracy. This paper therefore wants to explore the challenges and opportunities for Taiwanese actors in the emerging regime complex. Can Taiwanese actors make use of the international and transnational emerging regime complex, and what are the specific challenges for Taiwan's participation? The next section explores the relevance for Taiwan's inclusion in climate mitigation efforts and the country's opportunities in the years ahead.

From sovereign-centered orientation toward a polycentric approach in climate change governance?

Taiwan imported almost 98 percent of its primary energy in 2015 (Bureau of Energy 2015). Classified by form of energy, coal contributed hereto 29.33 percent, oil 48.18 percent, and gas 13.29 percent. Renewable energy usage is still at a very low level. Hydroelectric power made up 0.29 percent; geothermal, wind power, solar, and solar thermal power provided a mere 0.21 percent. Biomass and waste, meanwhile, had a 1.39 percent share herein and nuclear power 7.28 percent.

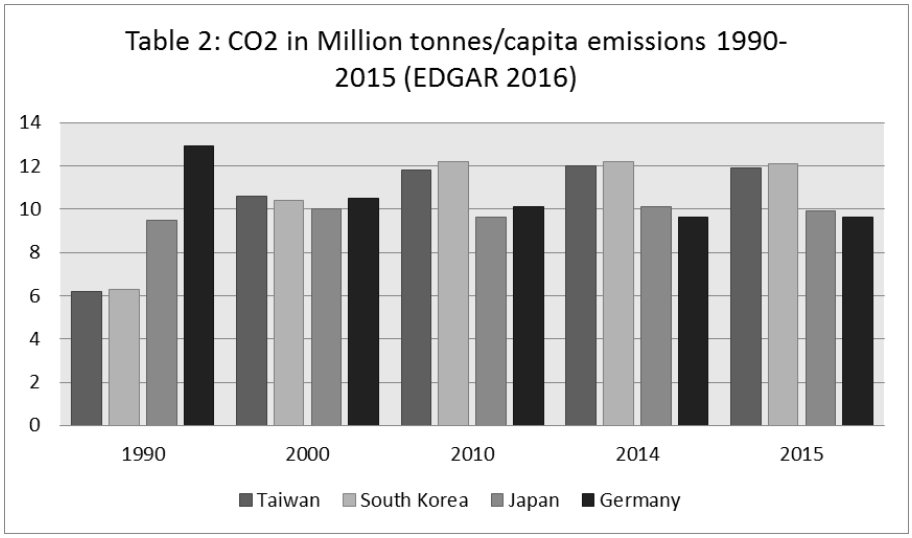
In accordance with the UNFCCC (and as if the country was a party to it), Taiwan's EPA prepared a "Greenhouse Gases Inventory 1990–2014" in 2016 (as in the years before). Taiwan's per capita GHG emissions were at 11.9 metric tons in 2015, which made it the 41st-biggest emitter in the world. CO_2 makes up about 95 percent of Taiwan's emissions (EPA 2016). The industrial sector plays an important role in Taiwan's economic development, which is particularly based on energy-intensive industries. This in turn results in the "coupling" (or codependence) of industrial growth and carbon emissions (Wang et al. 2016). In 2013 Taiwan's industrial sector contributed 33.46 percent of gross domestic product (GDP), while its total energy consumption had a share of 38.27 percent. Sectors such as the chemical materials, electrical and electronic machinery, and basic metal industries account for 30 percent of total energy consumption and 80 percent of total industrial consumption. Industrial carbon emissions accounted for almost 48 percent of the total in 2014 (see Table 1 below). Taiwan's semiconductor sector has a global market share of 25 percent, panels even 38 to 40 percent of that global market. The large share of energy-intensive industries explains to some extent the country's high per capita GHG emissions (like in South Korea).

Table 1: CO2 emissions divided by sectors (2014)



Of Taiwan's power sector, 38 percent comes from coal — which is by far the dirtiest energy source and biggest polluter. In 2014 Taiwan was the world's 14th-largest importer of coal. Electricity generation is responsible for more than 88 percent of Taiwan's GHG emissions. Since there are no governmental plans in place to establish tax incentives so as to reduce energy consumption, it is likely only to rise in the years ahead.

Taiwan's GHG emission reduction efforts continue to be woefully inadequate (Gao 2013). The European Union's Emissions Database for Global Atmospheric Research (EDGAR) collected data on the G20 countries that contribute 80 percent to the global GDP, and calculated from them 6.3 tons of CO_2 emissions per capita in 2015. In contrast Taiwan's own per capita CO_2 emissions stood at 11.9 tons (EDGAR 2016: 35–37), as mentioned. Regarding total emissions from fossil fuel usage and cement production, Taiwan stood in 21st place — slightly behind the more populous countries of France and Poland, but ahead of Spain, Malaysia, and Egypt. Interesting is also a comparison of Taiwan with its East Asian peers and with Germany. The latter's *Energiewende* is relevant for Taiwan, as it also wants to get away from nuclear energy. Taiwan's high emissions from the petrochemical, semiconductor, and plastic industries demonstrates the importance of corporate inclusion in transnational environmental governance.



Traditionally, international environmental governance has been the domain of diplomats representing the interests of sovereign states. However it has become increasingly obvious in recent years that traditional instruments of international law are unable to address the problems arising out of an ever more interconnected world (Streck 2011: 377). The international debate on environmental governance has thus accordingly moved from a focus on governments to a focus on a variety of partners

instead. Governance can be understood as "the processes and institutions, formal and informal, whereby rules are created, compliance is elicited, and goods are provided in pursuit of collective goals" (Hale and Held 2011: 12). It is a complex process in which the state, the market, and civil society all interact both domestically and globally. Ostrom (2009) has argued that single policies at the global level are unlikely to be sufficient to activate collective action in a comprehensive and transparent matter, and has thus proposed taking a polycentric approach. Such a methodology would include local, regional, and national stakeholders.

In a polycentric approach, Ostrom sees the advantage of economic experimenting efforts at multiple institutional levels and in different regions and ecosystems — so as to assess likely costs and benefits. A polycentric approach would also increase communication and interaction at the formal and informal and the bilateral and multilateral levels (Cole 2015). Keohane and Victor (2010) also argue that the absence of a single comprehensive and integrated regime on climate change would allow more flexibility and options for adaptation. A wide array of narrowly founded regulatory regimes would form a regime complex wherein each part is more or less closely interlinked with one another. For the case of climate change, structural and interest diversity is inherent and tends to generate the formation of regime complexes rather than of a single comprehensive, integrated regime.

This may open up options for transnational participation by Taiwanese actors. Taipei's policies comprise national, community, corporate, and societal actors, and aims at securing international support from a variety of sources — such as from diplomatic allies and Western democracies. Actors representing Taiwan can, among others, potentially be governmental, nongovernmental, scientific, professional, or business ones. The expression "participation," instead of the more restrictive one "membership," may allow for discussions of alternative avenues of access when China impedes formal ones (Hsiung 2006). Betsill and Corell (2008) perceive the participation of NGOs as an efficient equivalent of delegation by the state. In the field of environmental governance, corporations have to be included in this perspective. Transnational governance mechanisms may enable the inclusion of a variety of Taiwanese actors, when they eschew the issue of sovereignty and explore alternatives (Hsiung 2006, Hsiao and Hsiao 2011). Taiwan's Ministry of Foreign Affairs (MOFA) set up an NGO Affairs Committee already back in October 2000. Currently, around 2,000 Taiwanese NGOs have an international perspective — while some even have consultative NGO status within the UN.

Lo (2009) has written that functional pressure enhances the role of subgovernmental state agencies in Greater China in dealing with the externalities of globalization. Functional pressure may enforce Taiwanese activity, then. If, for instance, the US electronics brand Apple decides to only use GHG-neutral companies, this would be a natural trade barrier for Taiwanese suppliers and would arguably weigh in stronger than nonparticipation in the UNFCCC — even if this would be an informal measure

only. Taipei has proposed several policies to mitigate GHG emissions, in order to prevent possible trade sanctions from its industrialized trading partners. Su writes: "By complying with UN and United Nations Framework Convention on Climate Change (UNFCCC) policies and measures, and following GHG emission reduction rates according to the Kyoto Protocol, Taiwan could be protected from low-carbon regulations imposed by its trading partners in the European Union or in the United States" (2011: 64). Business leaders from the aforementioned energy-intensive sectors worry that they might face carbon tariffs or trade restrictions.

Therefore, it can be expected that Taiwan in future will put much effort into its participation in the transnational environmental complex. This may even change Taiwan's efforts regarding international organizations in such cases, where political costs are much higher (due to confrontation with China) than practical economic benefits are.

The research question focuses on how Taiwan will transform its sovereignty-centered orientation in climate mitigation and UNFCCC membership toward a polycentric approach. Within this approach, the UNFCCC is one of several existing frameworks and governance institutions.

Table 3: Taiwan's polycentric strategy in the environmental regime complex on climate change

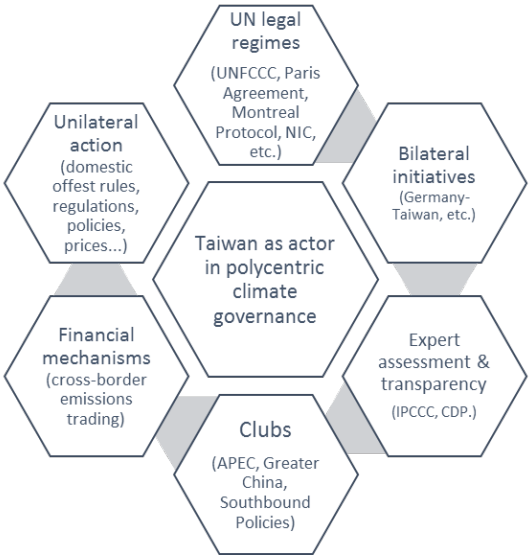


Table 3 leans on the original idea from Michonski and Levi (2010), with adaptation from Keohane and Victor (2010). In addition, it tries to depict Ostrom's perspective on polycentrism in climate change mitigation. Some adaptations had to be made: first, I include a national perspective to the former models, namely that of Taiwan.

Second, I had to exclude several of the original elements of Keohane's model, such as development banks.

UN legal regimes and Taiwan's UNFCCC policies and commitment

> It is high time Taiwan's participation in the international arena not be dictated by the Beijing government, so we can choose our own destiny (Joseph Hua, Mainland Affairs Council, quoted in Darby 2014: 1).

In December 2015 the Paris Agreement of COP21 of the UNFCCC was negotiated between 195 countries (UN 2015). The results were widely acclaimed as being an international breakthrough. As of October 2016, the agreement has been signed by 191 members and received 81 ratifications. Article 2 of the Paris Agreement decreed "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels." (Paris Agreement 2015, Art.2[a]). Central to the Paris Agreement is also Article 3, which prescribes "nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts." Although not a party itself, Taipei could envisage its own nationally determined contributions (NDCs) to adapt to the Paris Agreement. When the EU ratified the agreement in October 2016, the critical figures for that (55 countries and 55 percent of global emissions) had been reached. The Paris Agreement entered into force on November 4, 2016. Since it is not a signatory to it, Taiwan — at least legally — is not obliged to report its own NDCs and implementation feedback to the UNFCCC.

Although not a member of the Intergovernmental Panel on Climate Change (IPCC), Taiwan still uses its guidelines to estimate and reduce its GHG emissions (Fukushima et al. 2008) — and may also voluntarily participate in intended NDCs. Taiwan has also proposed several policies to mitigate GHG emissions, including the preparation of the Greenhouse Gas Reduction Act and the Statute for Renewable Energy Management already in the pre-Paris Agreement era (Su 2011). Taipei will not be eligible, however, for the technical support and consulting that exists to help countries with mitigation, adaptation, finance, technology transfer, and capacity building that is envisaged by the Paris Agreement.

In its application for observer status, Taipei excluded language that would provoke China. The EPA published a sort of application letter to the UNFCCC promoting Taiwan's cause by emphasizing the many natural vulnerabilities of the island nation, concluding "our needs to access international support and assistance have never been greater" (EPA 2009a: 2). The EPA and then-Premier Mao Chi-kuo portrayed Taiwan over the years as a "responsible member of the global village" and as a "global citizen" that proactively tackles climate change and ensures "ecological sustainability." A major attempt to support Taiwan's UNFCCC inclusion was also

made by MOFA, which published an essay of 12 pages length in October 2014. In this it demanded international support to tackle the challenges for which meaningful participation is indispensable, since Taiwan had a very vulnerable ecosystem. MOFA also outlined Taiwan's multiple achievements, goals, and actions, as well as outreach to the global community.

Would the argument of environmental vulnerability provide enough impact, though? Since China emits 25 percent of the world's GHG emissions, that country is too important to be provoked (Winkler 2012). The US government has consequently shown limited support for Taiwan's participation so far, while in the EU only the European Parliament has explicitly endorsed the Taiwanese campaign to date.

In the earlier quoted EPA application for meaningful participation in the UNFCCC of 2009, Taipei indicated that it had enacted 417 environmental laws since the 1980s and integrated the principles of all of the UN's environmental conventions and protocols for compliance (EPA 2009a). Immediately after the Copenhagen Accord (2009), Taiwan proposed its Nationality Appropriate Mitigation Actions (NAMAs) and began its implementation of a comprehensive policy framework, referred to as the 2010 Master Plan on Energy Conversation and Emission Reduction (Gao 2013). Taipei followed many of the UNFCCC's principles and mechanisms, such as cost-effective emission trading, offsets, sector-based reductions, and impact adaption. Measures adopted before then include the early GHG reduction strategies and action plans, end-use sector energy efficiency improvements, and a nationwide campaign for energy conservation and decarbonisation. These have had only limited impact so far however, as the emissions data shows that Taipei has been preparing to join the post-2012 multilateral climate regime by building its capacity to regulate GHGs (by setting reduction targets).

Regarding its international commitments and "in spite of the fact that political circumstances have prevented Taiwan from officially participating in UN environmental conventions and protocols," Taiwan has chosen to "comprehensively adopt and implement" (EPA 2009a: 4) the principles of the conventions and protocols such as the UNFCCC, the Vienna Convention, and the Montreal Convention. Taiwan's voluntary participation in the Montreal Protocol on ozone-depleting substances enabled the country to mitigate the emissions and phase out the use of the responsible materials — like hydrofluorocarbons — found in refrigerators and air conditioners (Tsai 2006). Taiwan has also adopted and implemented other key conventions on environmental protection. Regarding the UNFCCC, Taiwan was among the first non-Annex governments to establish a Sustainable Energy Policy Guideline and has promulgated voluntary GHG reduction goals too.

Taiwan seems to be well prepared for the new system of climate change mitigation policies, which not only leaves room for the inclusion of private and community actors, as seen above, but also for national ownership and control. This is because the accord requires its members to submit, among other items, a detailed National

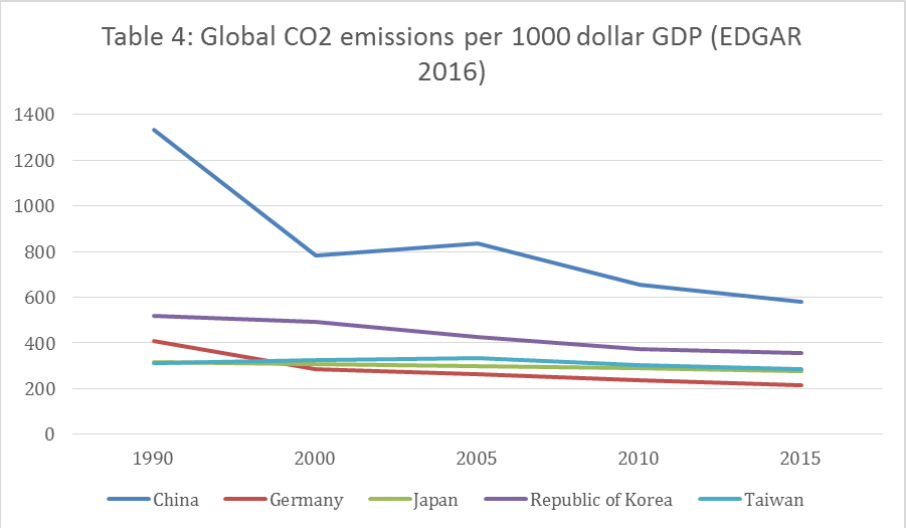
Inventory Report on their GHG emissions, both overall and by industry sector, as well as an emissions reduction plan called Intended Nationally Determined Contributions (INDCs).

Unilateral action, energy prices, and financial mechanisms

> It is not our purpose to limit our industry. Our purpose is to protect our environment, the voice of society, and most important, our international competitiveness. If our industry cannot see the future vision, how can they survive?
>
> Executive director Chien Hui-chen of the EPA's GHG Reduction Management Office (quoted in Ferry 2016: 4).

Forced by the international situation, the Legislative Yuan passed the GGRB in July 2015. Therein, Taiwan commits itself to reduce GHG emissions by 50 percent from 2005 levels by 2050. Taiwan's emissions peaked in 2007 at a net level of 277 million tons per annum. Most economists would agree that price incentives could be an efficient tool to create savings on energy. Since the energy sector in Taiwan is (still) monopolized, the government has huge influence not only with taxes but also with direct prices as ways to influence market behavior.

The growth of Taiwan's GHG emissions during the last three decades reflects more or less the growth of Taiwan's economy of slightly below 3 percent per year between 1990 and 2015 (see Graph 5 below). To improve on this performance, the former administration under President Ma Ying-jeou set out to decouple emissions from economic growth by reducing the energy intensity of GDP. Reduced energy intensity may allow for growth in GDP despite a drop in emissions. For the year 2015, Taiwan's energy intensity according to data from EDGAR (2016) declined by around 20 percent as compared to 2005, which was in line with the plan of the Bureau of Energy of the Ministry of Economic Affairs (2016b). Emissions rose below 1 percent per annum, while the economy grew by over 2 percent per annum. Only very recently, therefore, has Taiwan's performance become slightly more sustainable or "greener." Taiwan's price policy, however, remains the clearest indicator of its broad neglect of the "polluter pays" principle.



Governmental actions on energy prices are particularly revealing. Despite Taiwan already having some of the world's lowest energy prices, there was another recent energy price reduction of almost 10 percent concluded in April 2016. The energy prices in Taiwan are set by the Electricity Tariff Examination Council of the Ministry of Economic Affairs (MOEA). The average price was reduced from NTD 2.8181 per kilowatt hour to NTD 2.5488/kWh. Households using 330 kWh per month could save approximately NTD 72 (that is, less than two euros). Small businesses using 500 kWh per month could save approximately NTD 138 (that is four euros). Almost half of small businesses consume less than this amount, which makes the savings even more marginal (MOEA 2016). Considering that, at the same time, Taipei faces power shortages in the summer due to the high demand for air conditioning systems and the dangerous air quality, with Taipei being fully aware of this in advance, it is astonishing that there is no deeper reflection about whether cheap prices could be a reason for the ubiquitous energy waste of Taiwan's industries and population.

However a major energy plan of the new government is that it wants to initiate the breakup of the Taiwan Power Company's monopoly, in order to enhance the development of green power. Renewable energy companies would then be allowed to sell directly to the national grid, without having to use Taipower. Currently, Taiwan has a renewable share from resources such as hydroelectric, solar, and wind power of 3 percent, but wants to raise this to 20 percent by 2025. If successful, this could indeed replace nuclear energy and contribute to less GHG emissions from coal and oil — assuming that energy consumption does not rise further. Solar and wind energy are considered to be the first-tier resources to be utilized. If Taiwan achieves

its goal of having solar power produce 20 gigawatts by 2025, this will easily replace the 5 GW produced by the three nuclear power plants currently in operation.

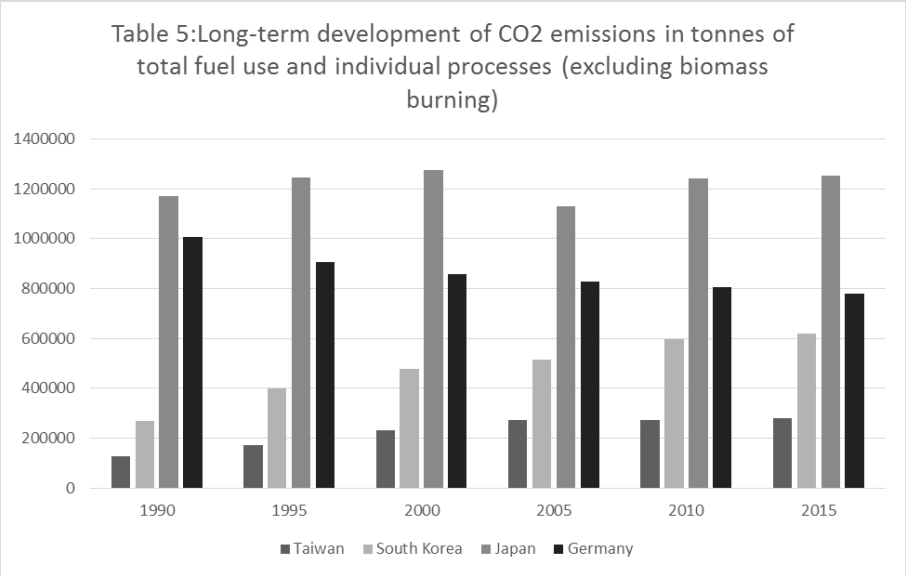
Offshore wind power is expected to produce another 3 GW by 2025. The potential of offshore wind power is regarded as one of the most attractive renewable energies, and is estimated to be at least 6–10 GW in the Taiwan Strait. To promote solar and wind power, Taipei approved the Million Solar Rooftop PV and Thousand Wind Turbines projects. The government announced the implementation of the Offshore Demonstration Incentive Program in mid 2012. The government provides subsidies for 50 percent of the installation expenditure for the four offshore demonstration turbines that are currently under construction. The Offshore Wind Power Demonstration Incentive Program, promulgated in 2012, will initiate the fast development of that type of power and will be completed soon, while the development of the demonstration wind farms will be completed by 2020. Subsidies for renewable energy will bring Taiwan at least slightly closer to the sustainability paradigm.

Taiwan has technological potential with respect to the integration of energy resources, geothermal energy, carbon-capture and storage, and plans to participate in international carbon-offset markets, which could further diminish its emissions. The DDP assumes optimistically that there will also be energy consumption savings of 20 percent between now and 2050, to be generated by technological advances such as greener machineries on the workplace floor or strategic pricing and smart meters to monitor electricity usage. Modern “green” coal plants and a yet greater use of liquefied natural gas (LNG) is also part of the plan. These hopes instead represent a neoclassic market-oriented one, and not a paradigm truly based on sustainability. Instead, market mechanisms should be utilized to allocate appropriate costs and incentives for GHG reductions so as to genuinely transform Taiwan into a low-carbon society (Lin et al. 2017). Taipei has also passed the Energy Administration Act and Renewable Energy Development Act, as well as put in place various policies, projects, and programs that will henceforth be implemented in accordance with these laws.

Taipei, for lack of any viable alternative, has vowed to virtually go it alone regarding climate mitigation. The government has unilaterally prepared to join the post-2012 multilateral climate regime by building up its capacity to regulate GHGs and by setting reduction targets. The EPA emphasizes this unilateral approach: “Using domestic laws to implement international environmental treaties has always been our concrete way to support global environmental protection and meet our responsibility to protect the Earth’s environment” (EPA 2009a: 12). In 2010 almost 270 companies responsible for more than 50 percent of Taiwan’s GHG emissions agreed to supply emissions data to the government so as to help it launch a carbon-offset scheme (Reuters 2010). The cap-and-trade regime is included in the GGRB. Interim voluntary measures will reduce emissions by 50 percent from “business-as-

usual" practices (calculating rising energy demand and inactivity in climate change policies) until 2030. Corporations that emit more than 25,000 tons have to report their emissions and have them verified by a third party. In the beginning, this will be for specified industries only — ones that are energy intensive.

International offsets are essential, since the emission reduction potentials in Taiwan are relatively low and reduction costs are relatively high, the use of international credits will be essential in meeting Taiwan's reduction target (Chien et al. 2016). Cap-and-trade basically includes seller, buyer, and an independent monitor. Domestically the buyer would be industries, while sellers could be forest owners. Internationally, Taiwan hopes to sell green technology to Southeast Asian nations in exchange for GHG rights. Domestically there are so far ten projects registered. TEPA (the renamed Taiwan Environmental Protection Administration) wants to reach out for the purpose of capacity-building activities with organizations such as the German Emissions Trade Authority. In 2017 the Taiwanese government decided on National Climate Action Guidelines. Among the ten formulated principles, of central importance are compliance with the Paris Agreement, transparency and cost effectiveness, a cap-and-trade regime with carbon pricing toward green finance, environmental impact assessments and mitigation, nuclear-free energy, as well as adaptation and implementation strategies (International Action Partnership 2017).



Expert assessments, transparency, and the role of private actors

Experts can only assess the performances of governments when the latter present credible supporting material — that is, when they show transparency. NGOs are also

important actors herein, since they act as watchdogs over governments, network with scientists, and possess important expertise. Regarding multi-stakeholder diplomacy, Taiwan has hosted several UNFCCC NGO fora in Taipei, organized by the MOFA and TEPA, as recently as in 2014 and in September 2016. Representatives from Taiwan's diplomatic allies, NGOs that are also present at UNFCCC meetings like the Climate Action Network as well as ones from Germany and Norway, scientists from various countries, and city mayors from Taiwan's metropolitan areas all give an account of Taipei's diversified climate diplomacy — which comprises all horizontal and vertical levels of transnational governance.

Regarding businesses' participation in global climate change mitigation, the most relevant nongovernmental transnational transparency mechanism is the Carbon Disclosure Project (CDP). This is a consortium of over 300 institutional investors who had over 87 trillion USD in assets in 2013, including some of the world's largest financiers and banks. CDP is an international, not-for-profit organization, providing the only global system for companies and cities to measure, disclose, manage, and share vital environmental information. CDP asks some 5,000 of the world's largest companies each year to disclose their greenhouse gas emissions, with such companies participating on a voluntary basis (Kim and Lyon 2011). Since 2012 corporations have also been asked to make a statement on their water and forestry treatment, and cities and communities have been included. Most Asian companies that were asked in 2006 were in Japan (150), with another 40 companies located in other Asian countries — including a handful from Taiwan.

CDP publishes data from 500 leading companies each year. In 2012 six large Taiwanese corporations were then participating (Chunghua Telecom, Formosa Petrochemical, Formosa Plastics Corporation, Honhai Precision Industry, Nan Ya Plastics, and Taiwan Semiconductor Manufacturing — all operating in energy-intensive sectors). After the aforementioned extension of the measurement to include water and forest management, the two plastics corporations did not appear on the list any more. In 2015 the United Microelectronics Corporation from Hsinchu (UMC) was rated "A" as the only Taiwanese company with very transparent disclosure procedures and was top-rated in the Climate Disclosure Leadership Index (CDLI) component by CDP. This correlates with an earlier observation. Hu et al. (2011) argue that the quality of "sustainability reports" is not yet very meaningful. Taiwan is not an advanced nation yet when it comes to the disclosure of such reports, while the awareness and practices concerning them currently remain at a low level there.

Cities have also been included in the London-based CDP recently. Large metropolitan areas in Taiwan are now participating, which provides another path of action for Taipei in the transnational environment. The new Taipei City was selected as one of the ten-best metropolises for its climate reporting, action plans, strategies, and reduction of its carbon footprint. Taipei has become an Asian leader, as the first

Asian city to achieve full compliance with the climate reporting of the CDP. The deputy mayor of Taipei participated at a side event of the UNFCCC's COP21 in Paris in December 2015, where he exchanged views on related policymaking with the mayors of Bonn, Bristol, and Seoul at the Cities and Regions Pavilion of the Transformative Action Program.

Alongside the CDP, the Global Reporting Initiative (GRI) is another private one that connects trends worldwide with Taiwan and may contribute to a closure of the country's assumed governance gap. The GRI is a set of guidelines for producing voluntary sustainability reports worldwide (Brown 2011). GRI has so far failed to deliver on the promises of harmonization and standardization, while the participation of corporations has remained rather low globally. Likewise, only a very small number of Taiwanese corporations have taken GRI standards as their own and become subject to them. In light of these limitations, the Taiwan Corporate Sustainability Reporting Award was launched by the Taiwan Institute for Sustainable Energy (TAISE). In 2010, 25 corporations participated in this award (16 in 2008). Among the 2012 participating entrants, 80 percent were able to comply with the AA1000 and GRI G3 requirements for third-party audits (in 2010 only 56 percent were able to do so). More than 95 percent of the entrants were able to conduct a substantive analysis of core issues (in 2010 that number was only 72 percent) (TAISE 2012).

Since April 2011 TAISE has been formally aligned with the GRI through a memorandum of understanding mechanism. TAISE will serve as a strategic partner to GRI, and the participating firms in the Taiwan CSR Award will enjoy additional exposure through having an international platform to promote the CSR principles — thus concomitantly enhancing their enterprise's global visibility. The participation of Taiwanese corporations has seen a tremendous surge in the last few years. Prior to 2016 more than 330 reports (of fewer corporations, since some had been delivering reports for some years already) had been sent to GRI and could be downloaded from its database. These reports were all sent from TAISE, which coordinates the corporate Taiwanese sector with the global initiative. TAISE found strong appreciation and support from GRI for its endeavors in 2013. TAISE is actively working to bring together representatives from science, academia, and the private sector to discuss the Paris Agreement and how Taiwan can best adapt to it — holding workshops and organizing events to this end.

The German Potsdam Institute for Climate Impact Research (PIK) Director Hans Joachim Schellnhuber opined at a conference in Taiwan in the summer of 2015 that it could become the first "sustainability tiger" of Asia, and complimented the country for its energy policies (Focus Taiwan 2016).

Bilateral initiatives and regional clubs

European institutions in Taiwan, like the EU and national representations, have put a spotlight on the country (Shih 2013). The European Economic and Trade Office (EETO) regularly talks with the TEPA in Taiwan, NGOs, think tanks, and academic institutions in the field of climate change in order to clearly communicate the EU's positions and to promote domestic action in these areas through organizing events, seminars, and visits. The EU continuously reminds Taiwan that it represents 1 percent of global emissions, which is three times higher than the global national average (Su 2013). While European institutions in Taiwan recognize the problems with its lack of participation in the UNFCCC, they also affirm that the country is still responsible for mitigating its GHG emissions. Although not supporting Taipei's observer status, the EETO and all 16 EU member offices in Taiwan jointly called on the country to join in with the global efforts through concrete actions aimed at reducing GHGs, before the Paris Climate Conference COP21. The EETO urged the government to establish a stringent and legally binding GHG reduction target in view of the conference in Paris, in 2015.

Taiwan hosted already several other events with high representatives from international organizations. Examples include the (already) 11th Taiwan–UK Renewable Energy Conference, which was jointly hosted by the MOEA and the British Office Taipei at the NTUH International Convention Center on May 30, 2016 — on expediting Taiwan's development of offshore wind energy. The opening remarks of this high-ranking conference were delivered by Mr. Chih-Kung Lee, Minister of Economic Affairs, followed by presentations by the world's leading financial and energy institutions — including the Asian Development Bank (ADB), the Organisation for Economic Co-Operation and Development (OECD), and the World Energy Council (WEC) (MOEA, Bureau of Energy 2016). Another event of international and regional character was the US–Taiwan Global Cooperation and Training Framework Conference on Energy Efficiency in Asia, which was co-hosted by the MOEA's Bureau of Energy, the American Institute in Taiwan (AIT), and the MOFA in June 2016. In October of the same year the German Trade Office hosted The First German–Taiwanese Offshore Wind Summit, an event which brought together experts, politicians, and entrepreneurs to share experience and knowledge from the German federal city-state or Bremen, a leader in wind power in Europe, with Taiwanese actors. Germany and Taiwan signed a common declaration for cooperation in Taiwan's *Energiewende* in December of 2016. Germany wants to share expertise and experience in administration and technology in order to promote clean energy. This cooperation is to be built on private and public cooperation (Taiwan heute 2016).

Taiwan also made, as noted earlier, INDCs — as reiterated in the Paris Agreement — for reducing carbon emissions. As indicated in its INDCs, Taiwan's target is to achieve a 50 percent reduction compared to the business-as-usual scenario by 2030

— which is equivalent to lowering GHG emissions to 20 percent below the 2005 levels. These declarations, if announced within the Asian-Pacific Economic Cooperation (APEC) forum or to European institutions, have the potential to become customary international law and thus to close the governance gaps between the East and the West.

Taipei tends to compare its performance frequently with Japan and South Korea. Former President Ma has announced Taiwan wants to become a leader in promoting CO_2 capture and storage (CCS) technologies, and has on many occasions reiterated strong support for ambitious reduction targets that would be higher than those of its East Asian peers. In this field, Taipei has enhanced its cooperation with its partners in the Asia-Pacific region. Taipei has established a strategic CCS technology alliance that brings together stakeholders from different areas, including academia and the research sector. In 2014 Taiwan held the International Conference on Carbon Capture and Storage, which was attended by, among others, experts from the International Energy Agency, the Global Carbon Capture and Storage Institute (GCCSI), and the Japan Carbon Capture and Sequestration (JCCS) (Global CCS Institute 2011).

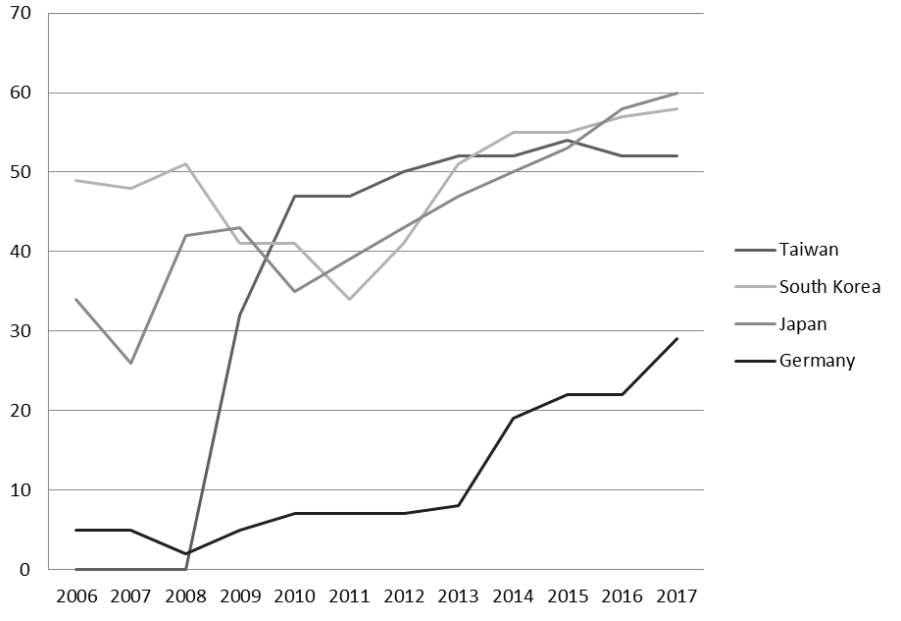
However, other clubs like the Asian Environmental Compliance and Enforcement Network (AECEN) exclude Taipei. The AECEN was established in 2005 by environmental agency leaders from 13 Asian countries to promote improved compliance with environmental legal requirements in Asia (AEEN [n. d.]). TEPA does not participate herein, which makes Taiwan the only Asian country aside from North Korea to not be represented. This network partners with all major global UN-affiliated organizations concerned with environmental issues and also with US governmental departments. In contrast Taipei participates in the more important and visibly institutionalized APEC forum, which recently took up environmental and climate issues. At the 2015 APEC Energy Ministerial Meeting in Cebu, Philippines, Taipei proposed the APEC Green Energy Finance Initiative (Taiwan Today 2016). Taiwan may also self-proclaim a common GHG emissions mitigation goal within APEC. In August 2016 Taiwan hosted the Conference on Asia-Pacific Economic Cooperation Green Energy Finance, which promotes the financial sustainability of renewable energy in order to establish a low-carbon economy throughout the APEC region (Taipei Times 2016).

Effectiveness: A preliminary assessment

It is much too early to give a summary of Taipei's climate mitigation policies. Yet the German NGO Germanwatch publishes an account and international rankings — first released in 2005, these are published every year at the annual COP meeting — that can be used as a first point of reference here, since it also enjoys international recognition — not least by the UNFCCC. How does Taiwan perform in comparison to Japan and South Korea regarding actual GHG emissions? Germanwatch's

publication is a list ranking some 58 countries that produce more than 90 percent of global CO_2 emissions. Eighty percent of the evaluation is based on indicators of emissions (30 percent for emissions, and 30 percent for recent developments with respect to a country's emissions), efficiency (5 percent for the level of efficiency, and 5 percent for recent developments in terms of efficiency) and renewable energy (8 percent for recent developments, and 2 percent share of total primary energy supply). The remaining 20 percent of the Climate Change Performance Index (CCPI) evaluation is based on national and international climate policy assessments made by about 300 experts in total from across the respective countries.

Table 6: Germanwatch: The Climate Change Performance Index (2006-2017)



For three East Asian countries, close together on spots 53, 54, and 55 with worsening performances in international comparisons, Germanwatch has blunt conclusions. Taiwan, South Korea, and Japan were categorized as having failed to take ambitious action on climate policy (Burck et al. 2014). Taiwan was first assessed in 2009, and after 2010 it has continuously belonged to the group of worst-polluting countries. Germany and Japan have both fallen in the rankings in recent years (Germany from a much higher position though), which may have to do with the stronger emphasis on using fossil fuels for energy in recent years — since the two countries want to reduce or end completely their use of nuclear energy. The

latest Germanwatch report (Burck et al. 2016) remarks that Japan's score worsened in nearly every category of the index because of its promotion of coal-fired plans and the lack of an effective and binding GHG emissions trading scheme. Also, South Korea was categorized as a "very poor" performer — since its CO_2 emissions are steadily rising, while the share of renewable energy is less than 1 percent. There has been a strong positive trend since very recently however. Across the five categories, all three of these East Asian economic powerhouses perform "very poor[ly]" (Burck et al. 2016). For 2016 the Germanwatch rankings put Taiwan in 52nd place, while Singapore (55), South Korea (57), and Japan (58) all performed worse.

Taiwan's transnational governance and regime complex in climate change policies

Taiwan's international climate change mitigation strategy follows multiple approaches, and is truly multidimensional, differentiated, fragmented, and contradictory. It is also simultaneously ambitious, optimistic, and pragmatic however. The country applies a truly polycentric strategy, using the emerging environmental regime complex on climate change — which is not based exclusively on the UNFCCC, and therefore not on interstate approaches any longer.

Taipei applies a multidimensional strategy that includes NGOs, corporations, diplomatic allies, and initiatives at the both regional and national level. At the regional level in Asia, and particularly in East Asia, Taipei strives for leadership in climate mitigation policies as an APEC member. It fills a void in doing this, since other powerhouses are not environmental leaders — something that could contribute to raising Taipei's international visibility and image. The East–West cleavage, instead, sheds light on Taipei's still weak and contradictory performance regarding especially energy price development — which has thus far been pragmatic, if not opportunistic. Taiwan wants to benefit from German experiences; however Germany has almost the world's highest energy prices, while Taiwan's are very low. The promulgated sustainability paradigm is still far from realization, with only 3 percent renewable energy usage. However the country's recent activity, with many new laws and regulations implemented, deserves recognition and appreciation. Taipei implicitly assumes that technological advances and international tax regimes to support green technology will help Taiwan's green energy technology to surge in importance. Taiwan became the second-largest producer of solar cells in a market that Germany initially created (Le monde diplomatique 2015). At the same time and in contrast, Taipei apparently wants to act as a free rider by keeping tax incentives and energy prices in Taiwan very low. Self-developed renewable energy technologies may help Taiwan to succeed in Southeast Asian markets in exchange for carbon offsets, meanwhile.

Taiwan possesses some of the sectors with the highest energy intensity in the world. They are particularly exposed and contribute to the high per capita emissions. Governmental programs for environmental monitoring — and Taiwan has one of the best systems in the world for this due to the country's "splendid isolation" — have contributed to Taipei's high ranking with respect to environmental reporting and transparency.

Taiwan may bind itself internationally by participating in the cap-and-trade system of emissions. A major challenge is the replacement of nuclear power with renewable energy. Whether the potential of renewable energy can reach 20 percent already by 2025 is questionable at this point. Critical are imposing higher energy prices, in order to incentivize Taiwanese citizens to save energy, as well as the government investing in energy-saving technologies. This, in the meantime, could really help make Taiwan an environmental leader of East Asia.

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