EXECUTIVE SUMMARY: WASTE-TO-ENERGY PROJECT

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To: International Pollutants Elimination Network (IPEN)

January 2022

This research looks into the current state of waste-to-energy import, production, and usage in Thailand. The aim of the research is to outline the current trajectory of waste-to-energy policies and investments in order to determine their impact on Thailand's plastic waste imports, circular economy as well as socio-environmental conflicts.

For the purpose of this report, the term "waste-to-energy", hereinafter - W2E, refers broadly to various types of fuel that are derived from waste. W2E includes RDF (Refuse-Derived Fuel), SRF (Solid-Recovery Fuel), and other types of waste that are used as fuels as specified in Thai law.

Based on research findings, the Thai government is providing substantial support to W2E development, considering it a way towards national energetic self-sufficiency and development of renewable energy sources. The support for W2E increased significantly following Thailand's pledge to move towards carbon neutrality in 2050, during the UN Climate Change Conference of Parties in Glasgow in 2021 (COP26). In fact, W2E is seen as a two-pronged solution. On the one hand, a way to solve the energy problem, and on the other hand, a way to solve the waste management problem.

First, we will consider energy policies. Thailand appears to have policies supporting W2E since the 1980s, but significant developments occurred between the 2000s and the 2010s. A key turning point in the latter decade was the Alternative Energy Development Plan 2015 - 2036 (AEDP2015) and the national Power Development Plan 2015 – 2036 (PDP2015). After the release of these two energy plans, high FiT (Feed-in Tariff) for W2E facilities have been observed. This year, in the aftermath of COP26, the government produced a draft of the national Power Development Plan 2022 or PDP2022, which increased the goal for production of energy from municipal and industrial waste significantly: an increase from 400 MW in PDP2018 to 600 MW in PDP2022 for municipal and industrial waste; an increase from 44 MW in PDP2018 to 200 MW in PDP2022 for industrial waste.

The current FiT allowed in W2E facilities is so high that one W2E operator interviewed by the researcher said that it is higher than in some European countries, and is probably the highest FiT in ASEAN. According to him, if the state continues on this trajectory of substantial W2E support, within 5-10 years, we may see waste incinerators in almost every province in Thailand.

This trend has implications on waste imports. According to the W2E operator, it is unlikely there are any imports of waste to be used as energy in Thailand now (more likely that plastic waste is imported as materials for products). Imports do not make economic sense due to the high supply of waste already in the country. However, under current policies, it is possible to use imported materials as RDF in the future. The W2E operator introduced the scenario where the domestic recycling rate increases in Thailand, leading to the need for imported materials to feed W2E plants.

At present, it is almost impossible for the civil society sector to track W2E imports into Thailand. The clearest obstacle is the lack of a specific custom legal provisions for W2E. We collected data on the imports of materials under custom codes that may cover W2E, including HS3825, HS3606.90.10, HS6310.90, HS4707, and HS3915, using the Ministry of Commerce's database. The findings illustrate gaps in the information accessible to the public concerning what is actually imported. For instance, while Thailand has banned the import of municipal waste (HS3825.10), a key ingredient for W2E production, we still find significant imports of materials under HS3825.90, defined as "others". In fact, 98% (over 2 million kg) of imports under the broader code of HS3825 between January and October 2022 fall under this category of "others".

We also find clues of possible RDF imports. The custom code HS3606.90.10 includes solid or semi-solid fuel – about 1.5 million kg was imported from Malaysia between January and October 2022, according to the Ministry of Commerce's database.

We also found imports of about 148 million kg of HS3915 between January and October 2022, which includes waste, parings and scraps of plastic. The top exporters were more economically developed nations such as Japan, United States, and China. In July 2022, Thailand's national subcommittee on the management of plastic waste and electronic waste agreed to ban the imports of plastic scraps from 2025, and to impose strict quota of imports in 2023 and 2024. However, as of writing this report (January 4th, 2022), there were no updates on whether the plan has been sent to the Cabinet for consideration.

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Tracking and monitoring W2E inside the country are also challenging. This is because of the ambiguous and sometimes varied definitions of W2E. While the Pollution Control Department (PCD) set a specific definition and standard for "RDF", the Department of Industrial Works (DIW) set a specific definition and standard for "SRF". The PCD's definition/standard draws from the DIW's definition/standard, which itself is similar to the European Union and the United Kingdom's definition/standard. However, the two agencies' definitions/standards bear differences, for example, the PCD removed biomass content as a parameter.

Definitions and standardization of W2E facilities are equally loose. W2E producers may include factory type 105 – waste separation/ landfilling – or 106 – broadly defined as recycling facilities. There are no specific factory types for W2E producers, nor has the researcher found any specific standards for the construction and operation of such facilities that would be directly applicable to industrial factories.

An interesting finding comes from interviewing the W2E operator who said that many of the W2E producers are small-scale operators who fall below the 50-horse power requirement to be considered a factory by law. This means they do not fall under the regulations set by the Ministry of Industry (MoI) but under the regulation of local authorities, who often do not have the expertise to regulate production of W2E.

The researcher collected information on facilities that use W2E. These can fall under factory type 57 or 101, both of which can refer to cement kilns. The overlapping of 57 and 101 can cause confusion, since type 101 refers broadly to "Central Waste Treatment" – the researcher found information that suggests 101 could even encompass W2E producers as well as landfilling

operation. Finally, there is factory type 88, which is a broad category for power plants. Within category 88, there is no specific code for W2E power plants.

Based on the information presented in the last two paragraphs, it is currently impossible to produce an accurate mapping of W2E producers and users based on industrial agencies' public data, making it a blind spot for civil society monitoring.

The research also finds weak regulations by relevant agencies. As stated above, the PCD has a specific definition and criteria for RDF. They opted not to divide RDF into different types but to define RDF using a single set of standards for various parameters, including moisture, density, chloride content etc. This single set of standards would be equivalent to the 5th type of SRF in the DIW's definition, in other words, the lowest quality.

However, the PCD's definition itself has almost no vested regulatory power. In Thai law, the PCD is not a regulatory agency, but one that mainly disseminates information. Its definitions cannot be legally applied to RDF producers who are industrial factories. Recognizing this, the PCD's notification on RDF even specifically pointed out that its audience are local authorities, whose obligation or capacity to follow the PCD's standard are legally and practically dubious.

In effect, the agency with the legal power to regulate factories is the DIW. As previously mentioned, the DIW has set a standard for the categories of SRF, which is mostly similar to EU and UK standards. However, there is no law stating that this SRF standard is to be used for issuing permits for W2E producers, transporters or users. The researcher found a letter from the DIW to the Energy Regulatory Commission (ERC), an agency under the Ministry of Energy (MoE), who has the power to issue electricity production permits to power plants. The letter from DIW suggested that its SRF standard is to be used as a condition for permitting W2E power plants to operate. However, the researcher found no evidence that this suggestion has been transposed into law.

In practical terms this means that there is no universal standard legally applied for W2E in Thailand, unless it appears in specific Code of Practices (CoP) for individual power plants, or in the specific factory permits for individual W2E producers.

There are a few laws promulgated to set limits for the emission of pollutants from cement kilns that use waste and from municipal waste incinerators. The parameters included in these regulations are for instance, sulfur dioxide, nitrogen dioxide, some heavy metals, and dioxin, and a few others. In terms of emission regulation, Thai law suffers from the lack of a Pollutant Release and Transfer Register (PRTR) system, which would mandate factories to submit information on the nature and quantity of pollutants released into and transported through the environment to government agencies, so that the agencies can make them public. The lack of PRTR means a lack of a public and robust database on how much pollutants are emitted into the environment from W2E plants and cement kilns.

The weakness of governmental regulations increased after 2015 with the substantial support provided to W2E under AEDP2015 and PDP2015. Historically, this followed the 2014 Coup d'Etat by the military government of General Prayuth Chan O-cha, whose government (still in

power today as a semi-dictatorial civilian government) pushed hard for W2E development from its early days. In 2014, W2E was included into the national roadmap and various other plans that the military government introduced to reform the nation.

These manifested in specific laws which handicapped environmental regulations. In 2015, the Ministry of Environment amended its previous law to exempt power plants with a production capacity of less than 10 MW, as well as higher than 10 MW (previously, only those lower than 10 MW were exempted) that use municipal waste as fuel (according to PCD's definition, this can be called RDF power plants) from having to conduct an Environmental Impact Assessment (EIA). In effect, all RDF power plants are exempted from having to do EIA. That year, civil society organizations, including EARTH, sued to reverse the law, but in 2022 the administrative court dismissed the lawsuit.

In 2016, Gen. Prayuth Chan-o-cha announced a National Council for Peace and Order (NCPO) order no. 4/2559 (effectively a decree by the coup group) exempting power plants (factory type 88) mentioned in the AEDP2015 and PDP2015, 101 facilities (which include cement kilns), 105 waste facilities and 106 recycling facilities, and other facilities for managing municipal waste from having to follow the urban plans. In the years following these orders, there has been a growing trend of conflicts between communities and planned W2E/recycling facilities.

The research found that between 2016 and 2022, there were at least 21 communities that have begun to voice their opposition against W2E facilities. The issues raised included inappropriate location (close to farmlands, natural water sources etc.) as well as the approval process neglecting citizens' participation. The research also found that in some cases, there have been intimidation of locals. It seems that under weak regulations, W2E power plants are a source of social conflict and a serious environmental threat.

As a final word, we leave a quote from one W2E operator who expresses conflicting feelings towards the current state of W2E policies.

"There are positive and negative aspects. It is positive that many projects are easily born; meaning, waste has a place to come and go. But the negative is that this is not a sustainable policy. The term sustainable means you need to look at proper management of waste to not cause impacts into the future. In my view, this means studying waste management in all its aspects. By focusing on building incinerators, we are neglecting the process of recycling. It may create an incentive for people not to recycle… plastic and paper can be burned, the more you burn the more money you get, because higher calorific value means more electricity and more FiT. Ultimately, it feels as if we do not need to care about recycling anymore."