

Picture credits: Thermal Waste Treatment Plant in Plzeň, Czech Republic; picture top right: Assembly of a reciprocating grate Vario; picture bottom right: waste grab. All pictures with kind permission of Martin GmbH für Umwelt- und Energietechnik.

Waste to Energy 2020/2021

Technologies, plants, projects, players and backgrounds of the global thermal waste treatment business

Extract

13th edition, 2020

ecoproq GmbH

Waste to Energy 2020/2021

The standard reference for the worldwide WtE industry. On more than 1,000 pages, the 13th edition includes up-to-date information on:

- more than 2,500 waste treatment plants with more than 4,850 incineration units worldwide, including details on capacity, start of operation, technology, flue gas treatment, manufacturer and operator
- more than 1,300 WtE projects throughout the world
- treatment technologies and market shares of important operators and technology providers
- market factors, planning requirements and operating modes of thermal waste treatment
- investment and operational costs and revenues with exemplary calculations
- a detailed and comprehensible forecast of the global WtE market until 2029, by country, including new plants and capacities, shutdowns and investment volumes per year

In addition to the study, all customers will receive the following products for one year:

- **ecoproq WtE Monitor:** update on international current construction and modernisation projects - emailed every two weeks
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The study is available in English language, starting from 2,900.- EUR plus VAT. **Please see the end of this extract for [price and product information](#).**

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Vietnam

Last update: 10-2020

Inhabitants [million]	96,2	Number of waste incineration plants	1
Municipal solid waste [1,000 t]	22,020	Incineration capacity [1,000 Mg/a]	0,128
of which thermally treated [1,000 t]	n/a	Average age of incineration lines	2
Electricity from waste 2016 [GWh]	-	Share of total electricity production 2016 [%]	-
Heat from waste 2016 [TJ]	-	Share of total heat production 2016 [%]	-

Management summary

After the 2014 feed-in tariff reform, Vietnam faced a project boom with the first plant becoming operational in 2018. For the years to come, we expect an increasing number of commissionings, mainly initiated by Chinese project developers.

Background / market factors / legal framework

All figures on the amount of municipal waste and the waste management system in Vietnam are based on estimations and vary considerably depending on the source. A systematic data management system does not yet exist. According to a report from UN Environment, MSW amounted to 22 million tons in 2016. Contrary, the Waste Management and Environment Improvement Department and the Vietnam Environment Administration estimated the amount of MSW to amount to 44 million tons per year in 2015. We assume that the latter source does not only consider MSW, but also commercial and industrial waste. The MSW in Vietnam has a high moisture content of 60 to 70%.

While the exact amount of waste cannot be confirmed, it is certain that this amount has increased drastically in recent years. One major reason for this growth is recent years' growth of the national economy. Another one is the increasing urbanisation in the country. More than 50% of the waste is produced in urban areas.

The waste collection rate is limited in Vietnam. According to a report by UN Environment, in urban areas, up to 80 to 82% of the municipal solid waste is collected. If collected, landfilling remains the main form of waste treatment in Vietnam. Mostly industrial and household wastes are landfilled together. In the rain season particularly, when dumpsites are flooded, this can lead to serious pollution and health problems and thus is an urgent issue.

[...] More information is provided in the report

Plants

In 2018, the first modern WtE plant in Vietnam went online in the city of Can Tho, the fourth largest city in Vietnam. The project was developed by China Everbright.

According to information of the German public development cooperation agency GIZ, even before 30 small-scale incinerators for solid waste installed in rural areas of Vietnam were operational. Nevertheless, it

remains uncertain which waste streams are incinerated at the facilities. We do not have any information on plants that treat MSW thermally. Due to their low capacities, we assume these facilities to be solid biomass incinerators.

[...] More information is provided in the report

Market development

There is no doubt that Vietnam has a great potential for WtE solutions. 10 cities in the country have more than 300,000 inhabitants. Hanoi and Ho Chi Minh City have a total population of more than 13.5 million.

The feed-in tariff introduced in 2014 has resulted in certain dynamics on the Vietnamese market, with an especially strong competition in the large cities. As of October 2020, we have information on 4 further WtE projects under construction. In the past 3 years, information was published on 16 WtE projects all over the country, with a focus in the two metropolitan areas of Hanoi and Ho Chi Minh City.

[...] More information is provided in the report

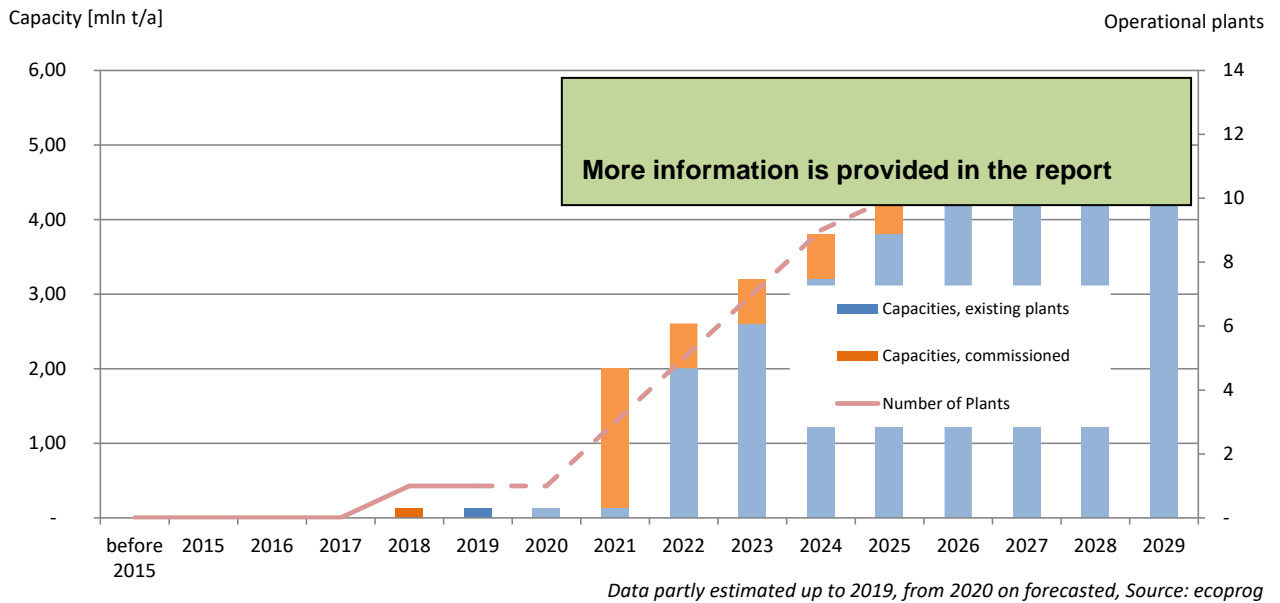
Figure 88: Project outlook Vietnam

#	Plant	Unit / plant*	Capacity (t/a)	Start	Status
1	Bac Ninh Province	plant	160,000	2020	under construction
2	Hanoi Soc Son 2	plant	1,280,000	2020	under construction
3	Ho Chi Minh City Vietstar	plant	1,280,000	2020	under construction
4	Ho Chi Minh City Tam Sinh Nghia Investment	plant	1,600,000	2021	under construction
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

[...] More information is provided in the report

*"Plant" refers to a completely new facility to be built while "unit" refers to a new unit to be installed at an existing plant.

Figure 89: Development of plants and capacities in Vietnam



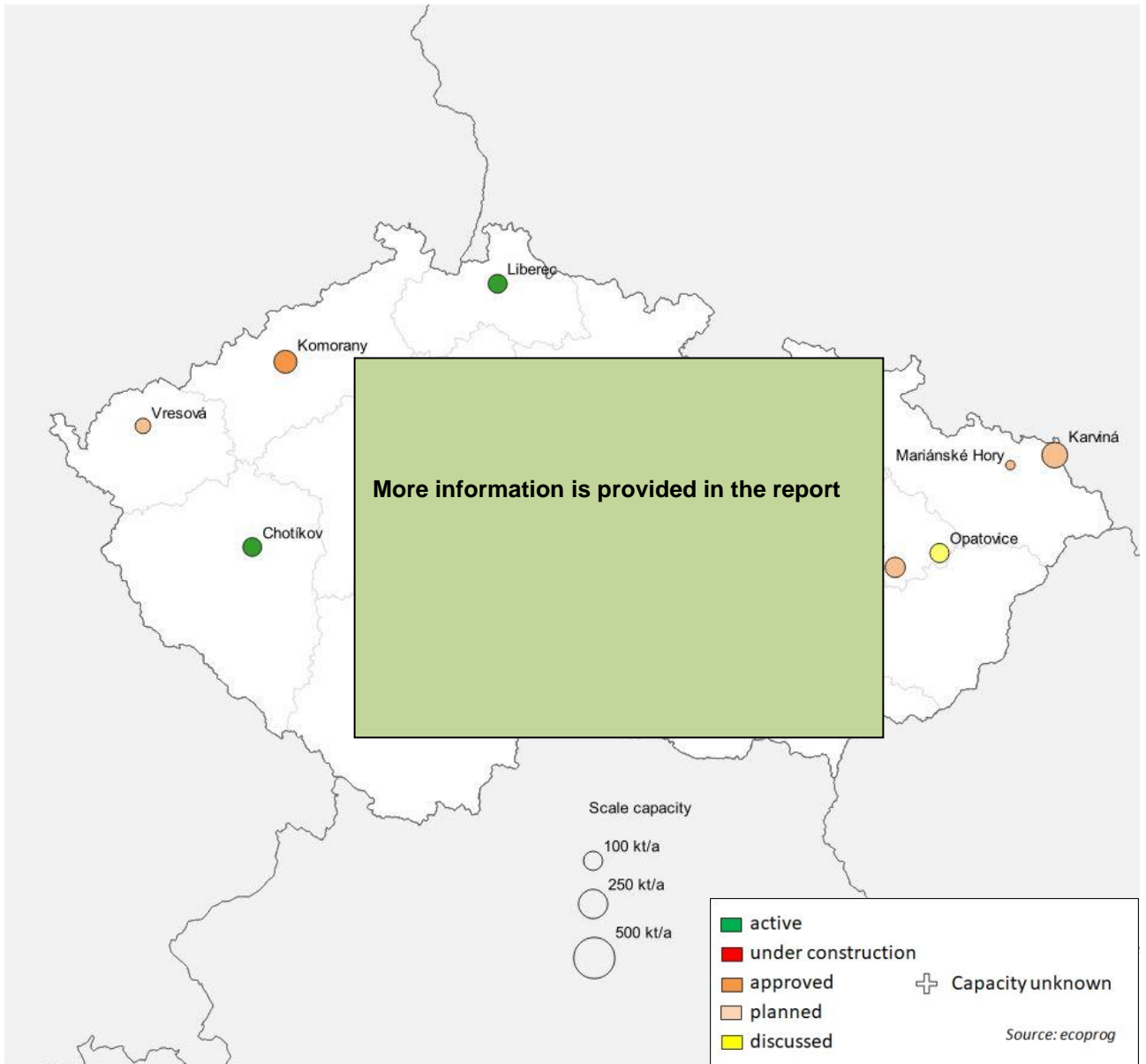
Competition

Vietnam has attracted interest among established WtE market players as well as larger local institutions and companies from other sectors such as the energy or construction branch, e.g. Tasco JSC, for many years now.

However, due to costs, marketability and political contacts, of course, Chinese project developers play a dominant role in Vietnam. Most WtE projects in Vietnam result from activities of these players, e.g. China Everbright (Can Tho, Hanoi, Huế) and China Tianying (Bỉm Sơn, Hanoi, Phú Ninh).

[...] More information is provided in the report

Figure 118: Locations of plants and projects in the Czech Republic



[...] More information is provided in the report

[...]

Flue gas cleaning: Wet Scrubbing / Selective Non Catalytic Reduction
Manufacturer furnace: W + E (Martin)
Manufacturer flue gas cleaning: Von Roll

Unit: 3

Start of operation: 1995
Capacity (t/h): 10.0
Incineration mode: horizontal grate
Flue gas cleaning: Wet Scrubbing / Selective Non Catalytic Reduction
Manufacturer furnace: Von Roll
Manufacturer flue gas cleaning: Von Roll

Unit: 4 (planned)

Start of operation: 2035
Capacity (t/h): 8.4
Remarks: This unit should replace the oldest unit.

Cheneviers Aire-la-Ville

SIG (Services Industriels de Genève) - Les Cheneviers
Route de Verbois 40
1288 Aire-la-Ville
Tel.: +41 22 727 41 11
Status: active
Capacity (t/a): 276,000
Real throughput (t/a): 242,253
Power production capacity (MW): 31.0
Heat production capacity (MW): 17.2

Remarks: The electricity output covers up to 15% of Geneva's demand. Steam is sold to Cadom SA for district heating. This plant will be replaced with a new facility (see entry Cheneviers Genève) at the same location.

Unit: 1

Start of operation: 1993
Capacity (t/h): 18.0
Incineration mode: horizontal grate
Flue gas cleaning: Wet Scrubbing / Selective Catalytic Reduction
Manufacturer furnace: Von Roll
Manufacturer flue gas cleaning: Lurgi, CTU

Unit: 2

Start of operation: 1993
Capacity (t/h): 18.0
Incineration mode: horizontal grate
Flue gas cleaning: Wet Scrubbing / Selective Catalytic Reduction
Manufacturer furnace: Von Roll
Manufacturer flue gas cleaning: Lurgi, CTU

Cheneviers Genève

SIG (Services Industriels de Genève) - Les Cheneviers
Status: planned
Capacity (t/a): 160,000

Remarks: Commissioning is planned for 2024. This new construction project will replace the existing WtE plant at the same location (Cheneviers Aire-la-Ville). The replacement works are taking place due to the age of the existing facility and reduced waste amounts in the region to be incinerated in Cheneviers. The latter is a result of longterm delivery agreements with surrounding municipalities with other WtE plants in the region.

Colombier

S.A.I.O.D./ Vadec SA
Usine de Cottendart
2013 Colombier
Tel.: +41 32 843 82 11
info@vadec.ch
Status: active
Capacity (t/a): 56,832
Real throughput (t/a): 59,459
Power production capacity (MW): 6.0
Heat production capacity (MW): 3.3

Remarks: According to mid 2020 information, the plant will be closed in 2027.

Unit: 1

Start of operation: 1988
Capacity (t/h): 3.7
Incineration mode: horizontal grate
Flue gas cleaning: Wet Scrubbing / Selective Non Catalytic Reduction
Manufacturer furnace: Noell
Manufacturer flue gas cleaning: Von Roll
Remarks: upgraded by Babcock in 1996

Unit: 2

Start of operation: 1991
Capacity (t/h): 3.7
Incineration mode: horizontal grate
Flue gas cleaning: Wet Scrubbing / Selective Non Catalytic Reduction
Manufacturer furnace: Noell
Manufacturer flue gas cleaning: Von Roll
Remarks: upgraded by Babcock in 1996

Dietikon

Limeco

[...]

[...]		Omiya Naka, Japan	431	Oyama, Japan	437
Oftringen, Switzerland	925	On Nut Bangkok, Thailand	596	Oyo 2, Nigeria	78
Oga city, Japan	424	Onitsha, Nigeria	77	Ôyodo, Japan	437
Ogaki, Japan	424	Onjuku, Isumi District, Japan	431	Ozora, Abashiri District, Japan	438
Ogan Komering Ulu, Indonesia	289	Ono City, Japan	431	Ozu City, Japan	438
Ogasawara Village, Japan	424	Ono City 2, Japan	431	Padova, Italy	805
Ogawa, Hiki District, Japan	424	Onomichi, Japan	432	Paillé-la-Garenne, France	722
Ogawara Town, Shibata, Japan	424	Onomichi 2, Japan	432	Paju 1, South Korea	564
Ogcheon-gun, South Korea	564	Onondaga County, USA	1014	Paju 2, South Korea	564
Oguchi, Niwa District, Japan	425	Oostende, Belgium	648	Paju 3, South Korea	564
Ohnan, Japan	425	Oostende RDF, Belgium	648	Paju-si 1, South Korea	564
Ôi, Japan	425	Opatovice, Czech Republic	663	Paju-si 2, South Korea	564
Oi, Ashigarakami District, Japan	425	Orrington RDF, USA	1014	Palakkad, India	278
Oi, Ashigarakami District 2, Japan	425	Osaka, Japan	432	Palembang, Indonesia	289
Oishida Town, Mogami district, Japan	426	Osaka 1, Japan	432	Palma de Mallorca, Spain	897
Oiso Town, Naka District, Japan	426	Osaka 10, Japan	432	Panama City, USA	1014
Oita, Japan	426	Osaka 2, Japan	433	Panjin Shuangzitai, China	186
Oita 2, Japan	426	Osaka 3, Japan	433	Panshi, China	187
Oita 3, Japan	426	Osaka 5, Japan	433	Panzhuhua, China	187
Oizumi, Ora District, Japan	427	Osaka 6, Japan	433	Parc Adfer, United Kingdom	969
Ojika, Japan	427	Osaka 7, Japan	434	Paris, Ivry-sur-Seine 1, France	722
Ojiya, Japan	427	Osaka 8, Japan	434	Paris, Ivry-sur-Seine 2, France	722
Okahumpka, USA	1013	Osaka 9, Japan	434	Parma 2, Italy	806
Okawa, Japan	427	Osaka City Taisyō, Japan	434	Parona, Italy	806
Okaya, Japan	427	Osaka Minato, Japan	434	Passy, France	722
Okayama, Japan	428	Osaka Minato 2, Japan	434	Patna, India	278
Okayama City - Minami, Japan	428	Osaki City, Japan	435	Peekskill, USA	1015
Okayama City - Minami 2, Japan	428	Osaki City 2, Japan	435	Penacook, USA	1015
Okazaki City Aichi, Japan	428	Oshima Town, Japan	435	Perham, USA	1015
Okazaki City Clean Center Central, Japan	428	Oshu City, Japan	435	Peringamala, India	278
Okegawa, Japan	428	Oslo Haraldrud, Norway	843	Perlen, Switzerland	926
Okinoerabu, Wadamari, Oshima District, Japan	429	Oslo Klemetsrud, Norway	844	Perungudi, India	279
Okinoshima, Japan	429	Ostrów Wielkopolski, Poland	856	Peterborough 2, United Kingdom	969
Okuizumo, Japan	429	Osumikimokou, Japan	435	Peterborough 3, United Kingdom	969
Ôkushi, Japan	429	Oświęcim, Poland	856	Phikuwa, India	279
Okushiri, Japan	429	Ota, Nigeria	77	Phnom Penh, Cambodia	611
Okutama Town, Nishitama District, Japan	429	Ôta, Japan	436	Phu Tho, Viet Nam	607
Olching, Germany	765	Otaru, Japan	436	Phuket 1, Thailand	596
Oleśnica, Poland	856	Otokuni, Japan	436	Phuket 2, Thailand	597
Olsztyn RDF, Poland	856	Otsu City, Japan	436	Phursungi, India	279
Omachi, Japan	430	Otsu City 2, Japan	436	Piacenza, Italy	806
Omihachiman, Japan	430	Otsuki, Japan	437	Pietrasanta RDF, Italy	807
Omine, Japan	430	Ouarville, France	721	Pila, Poland	856
Omitama, Japan	430	Ouljin-gun, South Korea	564	Pingba County, China	187
Omitama 2, Japan	430	Oulu, Finland	691	[...]	
		Owariasahi, Japan	437		
		Owase, Japan	437		

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