

Early warning assessment related to the 2025 targets for municipal waste and packaging waste



Liechtenstein 

April 2024

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Acknowledgements

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1 Introduction

1.1 Background and purpose

This document is an early warning assessment for Liechtenstein. The document is based on the analysis of a number of factors affecting recycling performance (success and risk factors). The assessment aims at concluding whether Liechtenstein is at risk of missing the targets for municipal waste and packaging waste set in EU legislation, as incorporated into the Agreement on the European Economic Area (EEA Agreement), for 2025. In addition, it provides an early assessment of the prospects for meeting the 2035 target for landfilling of municipal waste.

1.2 Approach

The assessment follows a methodology developed by the European Environment Agency and ETC/CE throughout 2020 (ETC/WMGE, 2021) and which was slightly adapted to be applied to the European Economic Area EFTA states in 2023 (ETC CE, 2023). This methodology uses a set of quantitative and qualitative success and risk factors affecting recycling performance. The assessment is largely based on the information provided by Liechtenstein in the reply to a questionnaire of the European Environment Agency and ETC/CE questionnaire as well as on available information from Eurostat and other relevant sources.

More specifically, chapter 2.1 assesses the prospects for Liechtenstein to achieve the target to prepare for reuse and recycle at least 55 % of municipal solid waste (MSW) by 2025. Chapter 2.2 assesses the likelihood for Liechtenstein to achieve the overall packaging waste and specific packaging materials' recycling targets for 2025. Chapter 2.3 examines the prospects for Liechtenstein to landfill less than 10 % of the generated municipal solid waste by 2035. The official early warning report for the landfilling target is only due in 2032 and accordingly the assessment contained in Chapter 2.3 is only preliminary.

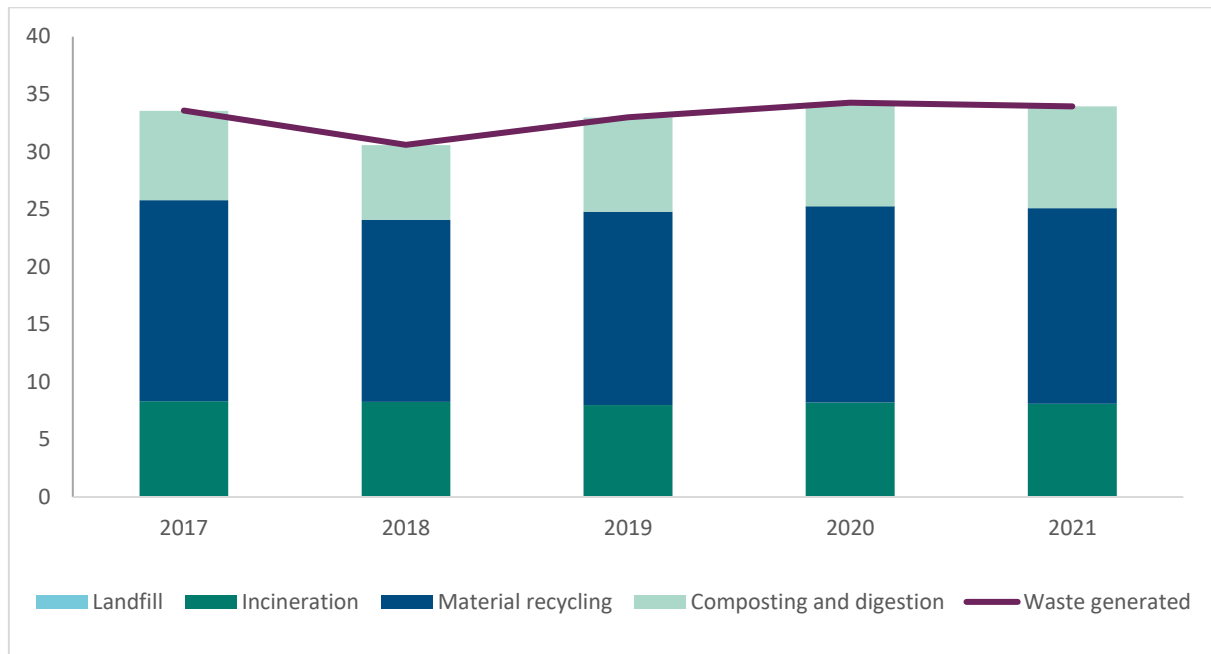
1.3 Member State profile – context parameters

Municipal waste generation and treatment

Liechtenstein's municipal waste generation has remained stable over the past five years, though showing a dip in 2018. In 2021 the country generated 33.9 thousand tonnes of municipal waste (Figure 1.1). This corresponds to 869 kg/cap, which is well above the (estimated) EU average of 530 kg/cap for the same year. The amounts reported include both waste from households and other sources.

The amount of municipal waste that is incinerated has remained quite stable over the past 5 years at around 8.2 thousand tonnes. Liechtenstein manages to divert three quarter of the municipal solid waste (MSW) generated to recycling. Both the amount as the share of waste diverted to recycling stays quite stable over the past 5 years. The country does not landfill MSW. There is a landfill ban in place for municipal and biodegradable waste since 1 January 2000.

Figure 1.1 Municipal waste generation and treatment in Liechtenstein between 2017 and 2021, in thousand tonnes



Source: Data provided by the Office of Environment to the European Environment Agency (Office of Environment of Liechtenstein, 2023)

Legal Framework

European Economic Area EFTA States including Liechtenstein are obliged to meet the targets for the recycling and preparation for reuse of municipal waste set out in the Waste Framework Directive (WFD), the packaging waste recycling targets of the Packaging and Packaging Waste Directive (PPWD) and the target on the landfilling of municipal waste defined in the Landfill of Waste Directive (LWD) within the same deadlines as the EU Member States. The Joint Committee Decisions (JCDs) incorporating these acts and amendments thereto into the European Economic Area Agreement (by virtue of which the acts are made applicable to Liechtenstein) do not provide for any derogations or adaptations to those targets.

Liechtenstein is in a customs union with Switzerland - due to this, Swiss legislation that is incorporated into the Customs Treaty is directly applicable in Liechtenstein. Liechtenstein is part of two internal markets that coexist in Liechtenstein: the Swiss/Liechtenstein internal market and the European Economic Area. The basic principles on waste are set out in the Liechtenstein Act on Environment. In addition, there are some Liechtenstein Ordinances regulating specific requirements of the European Economic Area. If Swiss legislation were not in line with EU legislation, complementary law would be defined in Liechtenstein to overcome this situation with regard to its participation in the European Economic Area internal market. (Office of Environment of Liechtenstein, 2023). However, next to it, the Swiss law applies to the Swiss/Liechtenstein internal market.

Liechtenstein has around 40,000 inhabitants and consists of 11 municipalities. The municipalities are, together with the Office of Environment, responsible for meeting the target, awareness raising, the collection and the disposal of municipal waste. They often work together for the collection and treatment of waste.

Targets are set on the national level in Liechtenstein. The Office of Environment supervises the implementation of the target. However, since households carry a big part of the responsibility for the amount of produced waste, the Government is aware of the fact that the scope of action of the Office of Environment is limited, given that Liechtenstein is fully integrated into the Swiss Waste System based on the Customs Treaty between Switzerland and Liechtenstein (Landesverwaltung Fürstentum Liechtenstein, 2023b).

According to Article 61 of the Act on the Protection of the Environment (USG) (Landesverwaltung Fürstentum Liechtenstein, 2008), the Office of Environment is responsible for the enforcement of the USG. According to Article 39 of the USG, the Liechtenstein Government is obliged to draw up waste planning in cooperation with the municipalities. In particular, the need for disposal facilities must be determined and their locations must be defined.

The Office of Environment is responsible for meeting the targets. It is under the supervision of the respective ministry of the Government and in that sense politically responsible. Statistics on waste are regularly published.

Additionally, the Swiss mechanisms have effect on Liechtenstein as well. According to Art. 8 of the Swiss Ordinance on beverage packages, the Swiss government can take certain measures if recycling quotas are not achieved such as to adopt measures that oblige producers, importers and merchants to enforce mandatory deposit on PET-bottles, obligation to take the packaging back against refund and at the same time to oblige recycling of the packaging on its own costs. The Swiss measures will then apply in Liechtenstein as well.

Waste management plan(s)

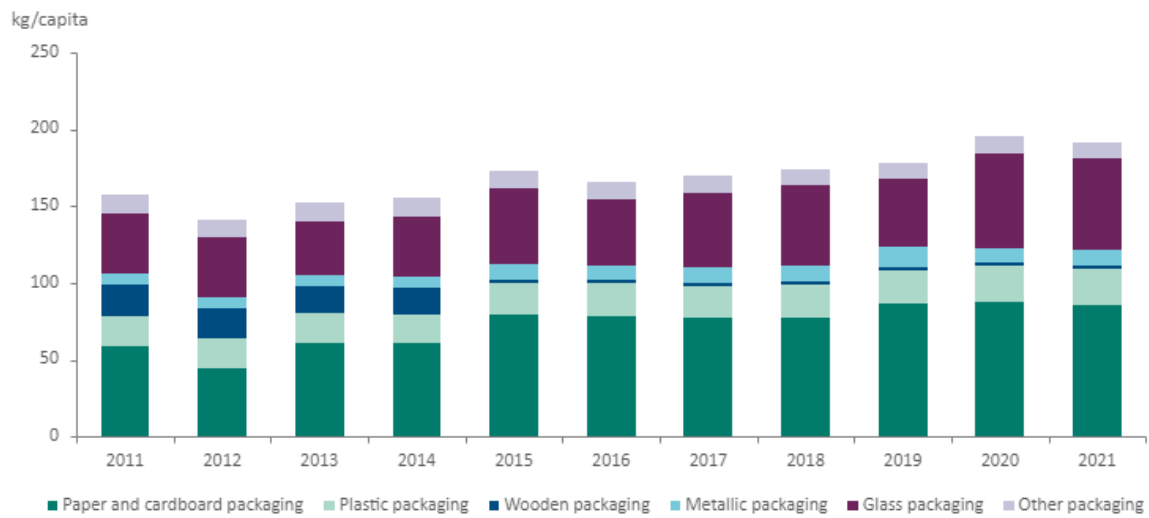
European Economic Area EFTA States have to issue one or several waste management plans, covering their entire geographical territory, in line with Art. 28 WFD. The “Waste Management Plan 2070” (Landesverwaltung Fürstentum Liechtenstein, 2020) was adopted by the Liechtenstein Government on 4 February 2020 by a Government Decision containing a Waste Prevention Programme with concrete measures and time limits. The plan is established based on Article 39 of the Act on the protection of the Environment (Landesverwaltung Fürstentum Liechtenstein, 2008). The government is obliged to draw up a waste plan in cooperation with the municipalities. In particular, the need for disposal facilities and their locations must be determined.

The objective of the “Waste Management Plan 2070” is to determine the current situation for each waste fraction generated in Liechtenstein, analyse the short-, medium- and long-term needs, define the need for action and assess alternatives and present possible solutions. The waste planning was developed within the framework of a Strategic Environmental Assessment in a working group consisting of municipal representatives, the Liechtenstein Government, the Liechtenstein Society for Environmental Protection and the Office of Environment. This plan replaces the waste mission statement from 1990.

Packaging waste generation and treatment

In Liechtenstein, 7,525 tonnes (192 kg/cap) of packaging waste were generated in 2021, which is significantly higher than the (estimated) EU average of 177 kg/cap. The total packaging waste generation per capita has increased steadily by 22 percentage points since 2011, with an increase for all packaging except of wood (Figure 1.2).

Figure 1.2 Packaging waste generation in Liechtenstein between 2011 and 2021, in kg per capita



Source: Eurostat (2023)

Capture rates for recyclables

The capture rate is a good performance indicator of the effectiveness of the separate collection system. The capture rate is calculated by dividing the separately collected weight of a certain material for recycling by the weight of the material in total municipal waste. The amounts reported include municipal waste both from households and other entities. The capture rates are calculate based on data received from the Office of Environment of Liechtenstein (2023) on the composition of residual municipal waste, the total amount of residual waste and the amounts separately collected for recycling.

The separate collection capture rates are presented in Table 1.1Table .

Table 1.1 Capture rates for different municipal waste fractions in Liechtenstein

	Residual waste composition (%) (a)	Residual waste composition (tonnes) (b)	Separately collected amounts (tonnes) (a)	Materials in total MSW (tonnes)	Capture rates (%)
Reference year	2012		2021		
Mixed municipal waste, total		8,109 ¹			
Paper and cardboard	17.3%	1,403	5,098	6,501	78%
Metals	2.2%	178	8,819	8,997	98%
Glass	3.5%	284	1,888	2,171	87%
Plastic	11%	892	n/a	n/a	n/a
Bio-waste	32.3%	2,619	8,837	11,735	77%
Textiles	3.3%	268	n/a	n/a	n/a
Wood	n/a	n/a	n/a	n/a	n/a
WEEE	0.6%	487	643	1,129	57%
Composite packaging	5.7%	462	n/a	n/a	n/a

(b) **Note:** Share of material in residual waste multiplied with the amount of residual waste in 2021

(a) **Source:** As reported by the Office of Environment (2023) in the European Environment Agency-ETC/CE questionnaire

The results indicate high capture rates for paper and cardboard, metals, glass, biowaste and WEEE. For composite packaging, textiles and plastics the capture rate cannot be calculated. These fractions are collected separately resulting in a total amount of 536 tonnes, but no information is available for each of the fractions separately. For wood there is no information regarding its share in the residual waste. As wood is not collected separately in Liechtenstein the capture rate could not be calculated.

¹ For this calculation the amount of waste sent to incineration is assumed to be the amount of residual waste.

2 Success and risk factors likely to influence future performance

2.1 Target for preparing for reuse and recycling of municipal waste

This chapter aims at assessing the prospects of Liechtenstein to achieve the **55 % preparing for reuse and recycling target** for municipal waste in 2025. For a detailed description of the methodology followed, the development of success/risk factors and their impact on recycling, please consult the Methodology report (ETC/WMGE, 2021) and the 2023 addendum (ETC CE, 2023).

2.1.1 Current situation and past trends

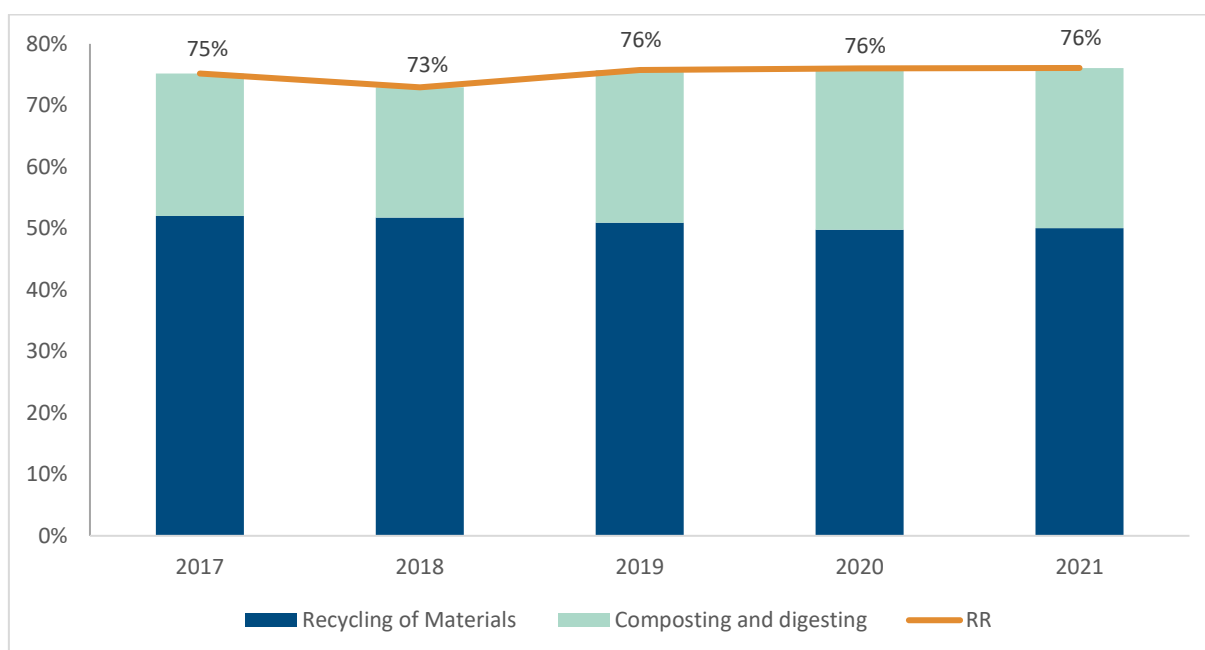
2.1.1.1 SRF MSWR-1.1: Distance to target

The overall recycling rate of Liechtenstein remained quite stable between 2017 and 2021 and stands at 76 % in 2021, which is the same as the two previous years (Figure 2.1). In this analysis the recycling rate is calculated by dividing the summed amounts of recycling of materials and of composting and digestion by the total generated amounts. The data source used is the questionnaire filled out by the Office of Environment of Liechtenstein (2023). The data source used here is assumed to be the best available proxy given that data in accordance with the rules on the calculation of the attainment of the targets defined in Article 11a are not available.

Liechtenstein has an adaption in relation to Commission Implementing Decision (EU) 2019/1004 (defining the reporting rules for the calculation of the recycling rate) set out in Art. 1(2) of JCD No 318/2021: “For the purpose of Article 3 and Annex I, Liechtenstein shall use an equivalent method to determine the weight of the municipal waste recycled”. However, the equivalent method has not yet been determined (Office of Environment of Liechtenstein, 2023).

Liechtenstein’s waste statistics indicate that the amount of recycled materials refers to all recyclables delivered to the civic amenity sites as well as direct deliveries of recyclables to waste management companies from households, companies and industry. Similarly, the data on composted waste refers to total compostable waste, not only compostable waste included in municipal waste. This could mean that the reported amounts of separately collected materials for recycling might include waste that is not municipal waste, leading to an overestimation of the recycling rate. The available waste statistics refer to collected recyclables, not to actually recycled amounts after sorting and processing. (Landesverwaltung Fürstentum Liechtenstein, 2023a)

Figure 2.1 Recycling rate in Liechtenstein between 2017 and 2021, in percentage



Source: Office of Environment of Liechtenstein (2023).

The actual distance to the target for the most recent data point is a key factor determining the likelihood of meeting/not meeting the target. The closer the country is to the target already, the more likely that the target will be met. For Liechtenstein, the recycling rate is 76 % in 2021, which is 21 percentage points above the 2025 target of 55 %.

However, the data used for this analysis are based on a different methodology than the calculation rules for the target. The data on recycling and composting/digestion refer to separately collected amounts, not to actually recycled amounts after sorting and processing. The actual impact of the application of the new calculation rules to the recycling rate has not been quantified yet in Liechtenstein. A few EU Member States have provided quantified estimates indicating how the application of the new reporting rules would influence the recycling rate (compared to the data reported to Eurostat under the Joint Eurostat/OECD questionnaire), resulting in reductions between 3.8 and 13 percentage points, and on average 5.5-6.7 percentage points. While the effect depends on how Liechtenstein currently reports the data, an effect of a reduction with 5 percentage points is therefore assumed for this assessment, bringing the recycling rate down to 71 %. This assumption does not result in a change of the assessment for this SRF.

Summary result

Target exceeded	Based on the currently available data, Liechtenstein’s recycling rate lies at 76%, so the 2025 target is already reached. Considering however the likely impact of the new calculation rules, we assume a reduction with 5 percentage points for this assessment, resulting in an estimated recycling rate of 71 %, still well above the target.
Robustness of the underlying information	The data on recycling refer to separately collected amounts, and not to actually recycled amounts, and might also include recyclables from industry that are not municipal waste. The Office of Environment indicated that the new calculation rules as defined in the Commission Implementing Decision (EU) 2019/1004 are not yet applied.

2.1.1.2 SRF MSWR-1.2: Past trend in municipal solid waste recycling rate

The recycling rate (RR) (past trend) over the last five years shows an increase by 1 percentage point (Figure 2.1). This indicates no additional efforts were made over the last years, or that any additional efforts did not result in more recycling.

Summary result

RR > 55 %	The recycling rate has increased by 1 percentage point over the past five years, resulting in a recycling rate of 76%. The application of the new calculation rules would result in an estimated recycling rate of 71%.
Robustness of the underlying information	The data on recycling refer to separately collected amounts, and not to actually recycled amounts, and might include recyclables from industry that are not municipal waste. The Office of Environment indicated that the new calculation rules as defined in the Commission Implementing Decision (EU) 2019/1004 are not yet applied.

2.1.2 Legal instruments

2.1.2.1 SRF MSWR-2.1: Timely transposition of the revised Waste Framework Directive into national law

Timely transposition of the WFD, as amended by Directive (EU) 2018/851 (revised WFD), into national law within the foreseen period is key for a waste management system in line with EU requirements and the European Economic Area Agreement.

Following the incorporation of the revised WFD into the European Economic Area Agreement by JCD No 318/2021, which entered into force on 1 August 2021, Liechtenstein notified the EFTA Surveillance Authority (ESA) of its national implementing measures on 13 September 2022.

Liechtenstein indicated that the national implementing legislation entered into force on 1 August 2022, which is also the compliance date for the revised WFD under the European Economic Area Agreement.

Summary result

Transposition without delay	Liechtenstein implemented the revised WFD on time.
Robustness of the underlying information	Credible information received from ESA

2.1.2.2 SRF MSWR-2.2: Responsibilities for meeting the targets, and support and enforcement mechanisms, e.g. tools, fines etc.

Clearly defined responsibilities, enforcement and support mechanisms for meeting the targets across different entities and governance levels are important for achieving high recycling rates. The clearer the responsibilities for meeting the target and the accountability for failing the targets are, the higher the chance that the targets will be met.

In Liechtenstein the responsibilities for meeting the targets lie at the Office of Environment, the municipalities and the Swiss authorities. Municipalities are responsible for collection and disposal of municipal waste, awareness raising and for meeting the national targets. There are no targets or other requirement defined at sub-national level. The Office of Environment supervises the municipalities and are as such politically responsible for meeting the targets. Statistics on waste are published annually.

There is no information provided about any enforcement mechanisms.

Liechtenstein has several support tools and mechanisms in place to improve the efficiency and performance of the responsible entities. These mechanisms include technical support, sharing of good practices, providing training, co-operation of infrastructure planning and performance monitoring. This is done by meetings among the municipalities, meetings between the Office of Environment and the municipalities and meetings with Swiss stakeholders.

There is also a website in place, called 'Littering Toolbox' that collects examples of measures against littering that have already been implemented and makes them freely accessible to all interested parties. It primarily serves all those who want to actively combat littering or are planning a campaign. It includes a large number of measures against littering that have already been implemented, including an assessment of what they have achieved. Furthermore, the toolbox enables project managers to publicize the projects they have carried out against littering by submitting their project.

Summary result

Clearly defined responsibilities and good set of support tools but weak/no enforcement mechanisms for meeting the recycling targets	Responsibilities are defined and support mechanisms are in place. There are requirements defined at municipal level. However, the direct consequences for the municipalities if the targets are not met are unclear.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.3 Economic instruments

2.1.3.1 SRF MSW-3.1: Taxes and/or ban for landfilling residual- or biodegradable waste

Bans and taxes on landfilling of residual municipal waste can help to discourage strong reliance on residual waste treatment and thus support recycling.

There are no landfill taxes in place in Liechtenstein, and gate fees for landfilling depend on the volume or weight of the waste. These fees have substantially increased over time. However, municipal waste is not landfilled. Liechtenstein applies a landfill ban on municipal and biodegradable waste since 1 January 2000.

Summary result

Ban in place for landfilling	There is a ban for the landfilling of municipal waste and biodegradable waste in place.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.3.2 SRF MSWR-3.2: Taxes on municipal waste incineration

Taxes on incineration of mixed municipal waste can help to discourage strong reliance on waste incineration and thus support recycling.

Liechtenstein does not have incineration capacity. Waste for incineration is exported to Switzerland. There is no incineration tax in place.

Summary result

N/A	No incineration capacity in Liechtenstein. All waste for incineration is exported to Switzerland.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.3.3 SRF MSWR-3.3: Pay-as-you-throw (PAYT) system in place

PAYT systems are designed to incentivize citizens to make a bigger effort in separating their waste at source. However, a PAYT system should be designed with the appropriate level of source separation encouragement to ensure that citizens do not misplace waste in recycling bins in order to avoid residual waste charges. Overall, PAYT usually has a positive effect on source separation and thus recycling rates through direct involvement of citizens.

Liechtenstein indicates to have a PAYT system in place. The system in use is volume-based, combined with a basic fee to be paid by households. Citizens have to buy stickers for the collection of residual waste at a price of 2.5 CHF per 35 l sack. Bio-waste is collected door-to-door as well, and citizens have to buy stickers at a price of 5 CHF per 120 l bin, but other bin sizes are available as well. This means that the costs for residual waste are very visible for households. The Office of Environment estimates that the system covers 100% over the population.

Summary result

PAYT scheme implemented in some regions / municipalities (50-80% covered) and firm plans for rolling out to at least 80% of the population.	The whole population is covered by a PAYT system that is volume-based, combined with a basic annual fee per household.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.4 Separate collection system

2.1.4.1 SRF MSWR-4.1: Convenience and coverage of separate collection systems for the different MSW fractions

Separate collection systems are a key enabler for high recycling rates and for collecting recyclables at adequate quality. Generally, the more convenient and accessible these systems are for their users, the better results they deliver. The assessment methodology categorises different types of collection systems (door-to-door, bring points with a density of > 5 per km², bring points with a density of < 5 per km², civic amenity site) for assessing the degree of convenience, and differentiates between cities (densely populated), towns and suburbs (intermediate densely populated) and rural (thinly populated areas). It then calculates which share of the population is served by which type of system. The assessment is done on a material basis and taking into account the different materials according to their average share in municipal waste. This is described in more detail in the methodology (ETC/WMGE, 2021).

For Liechtenstein, there is no information available at Eurostat (2023a) regarding the spread of the population across cities, towns and suburbs and in rural areas, but the system is the same across the country.

Table 2.1 Table gives an overview of the collection system in Liechtenstein.

Table 2.1 Characterisation of the collection system in Liechtenstein

	Cities (densely populated areas)					Towns and suburbs (intermediate density areas)					Rural areas (thinly populated areas)			
	Door-to-door - separate	Door-to-door - co-mingled	(>5 per km ²) Bring point	(<5 per km ²) Bring point	Civic amenity site	Door-to-door - separate	Door-to-door - co-mingled	(>5 per km ²) Bring point	(<5 per km ²) Bring point	Civic amenity site	Door-to-door - separate	Door-to-door - co-mingled	Bring point	Civic amenity site
Mixed/residual waste						XX					XX			
Paper and Cardboard										XX				XX
Ferrous metals										XX				XX
Aluminium										XX				XX
Glass										XX				XX
Plastic								X		XX				XX
Bio-waste														XX
food						XX					XX			
garden						X				XX	X			XX
Textiles										XX				XX
Wood										XX				XX
WEEE								X		XX			X	XX
Composite packaging										X				X
Other (please specify):														

Note: xx: dominant system; x: other significant systems. If the systems vary between municipalities, the largest city can be used as proxy. Grey cells are considered as ‘high convenience’.

Source: Office of Environment of Liechtenstein (2023)

Table 2.1 above shows that only mixed municipal waste and food waste are collected through a door-to-door system in Liechtenstein, but small amounts of garden waste can be placed into the food waste bins while larger amounts have to be brought to the civic amenity sites. PET bottles are collected in shops but also in specific public bins. For all other fractions the country relies on the collection through civic amenity sites.

Summary result

Paper and cardboard	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites
Metals	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites
Plastics	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites
Glass	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites
Bio-waste	Food - A high share of the population is covered by high convenience collection services	The dominant system for the collection of food waste is through door-to-door collection
	Garden - A medium share of the population is covered by high convenience collection services	The dominant system for the collection of garden waste is through civic amenity sites. However small amounts of garden waste can be placed in food waste bins.
Wood	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites
Textiles	A low share of the population is covered by high convenience collection services	Only collected through civic amenity sites.
WEEE	Medium convenience collection services dominate	WEEE is collected through take-back systems at retailers and via civic amenity sites.
Robustness of the underlying information		Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.4.2 SRF MSWR-4.2: Firm plans to improve the convenience and coverage of separate collection for the different MSW fractions

There are no plans in Liechtenstein to change the current collection system. The Office of Environment assesses that the current collection systems works well and therefore has no plans to change it.

Summary result

Paper and cardboard	No firm plans to improve the convenience and coverage	
Metals	No firm plans to improve the convenience and coverage	
Plastics	No firm plans to improve the convenience and coverage	
Glass	No firm plans to improve the convenience and coverage	

Bio-waste	Food - N/A (for countries in which a very high share of the population is already covered by high convenience collection services)	
	Garden - No firm plans to improve the convenience and coverage	
Wood	No firm plans to improve the convenience and coverage	
Textiles	No firm plans to improve the convenience and coverage	
WEEE	N/A (for countries where high to medium convenience collection services dominate already)	
Robustness of the underlying information		Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.5 Extended producer responsibility (EPR) and similar schemes

2.1.5.1 SRF MSWR-5.1: Fee modulation in EPR schemes for packaging

Within EPR schemes, fee modulation (or eco-modulation) is a system with different fees for different types of packaging material and designs. While basic fee modulation, i.e. different fees for the main material groups, are common, advanced fee modulation can create stronger incentives for packaging producers to design for recycling and thus create favourable conditions for higher recycling rates. The level of advancement of the fee modulation is assessed against four criteria that have been selected as benchmarks for a well-designed eco-modulated fee system:

1. recyclability, for example differentiating between PET and PS, between different colours of PET, or between 100% cardboard boxes and laminated beverage cartons;
2. sortability and disruptors, for example a malus for labels/caps/sleeves made of other materials, which are not fitted for the recycling technologies of the main packaging;
3. recycled content; and
4. if there is a transparent compliance check by the PRO that producers report correctly.

In Liechtenstein there is no EPR system in use. However, due to the full integration of Liechtenstein into the Customs Union with Switzerland, Liechtenstein cannot easily introduce EPR within its territory. All goods that comply to the Swiss technical rules can freely circulate within the Customs Union. Taxes within the Customs Union are considered critical since they hinder trade (Office of Environment of Liechtenstein, 2023).

Summary result

N/A	There is no EPR system in use in Liechtenstein.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.1.6 Treatment capacity for bio-waste

2.1.6.1 SRF MSWR-6.1: Capacity for the treatment of bio-waste

Bio-waste is the largest single waste fraction in municipal waste, and adequate treatment capacity needs to be (made) available.

The amount of residual municipal waste in Liechtenstein amounts to 8,109 tonnes of waste in 2021. The share of bio-waste in residual municipal waste is 32.3% (Office of Environment of Liechtenstein, 2023), which means that a total of 2,619 tonnes of bio-waste can be calculated to be present in the residual waste. Adding the 8,837 tonnes of bio-waste that is reported to be collected separately, this results in an overall amount of generated biowaste of 10,456 tonnes. These amounts do not include home-composted bio-waste. The information provided suggests that 77 % of the generated bio-waste was collected separately in 2021.

There are two composting plants operating in Liechtenstein with a capacity of 3,000 tonnes per year each, or 6,000 tonnes per year in total (Office of Environment of Liechtenstein, 2023). In addition, Liechtenstein sent 2,259 tonnes bio-waste for composting to a composting plant in Switzerland (Landesverwaltung Fürstentum Liechtenstein, 2023a) which treated around 20,000 tonnes of bio-waste in 2021 but has capacity to treat at least up to 22,000 tonnes per year (budgeted amount in 2020) (VfA, 2022). It is therefore likely that the Swiss composting plant could treat around 313 additional tonnes of bio-waste from Liechtenstein in case Liechtenstein increases the capture rate of bio-waste to 80 % of the generated bio-waste.

Summary result

Enough bio-waste treatment capacity for 80% of generated municipal bio-waste	Liechtenstein already captures about 77 % of its generated bio-waste, and treatment capacity for treating 80 % of the generated bio-waste seems to be available.
Robustness of the underlying information	Information on composting capacity is not available.

2.1.6.2 SRF MSWR-6.2: Legally binding national standards and Quality Management System for compost/digestate

To create a market for compost and digestate, compost should be of a good quality for use as a soil improver or fertilizer. Legally binding standards provide guarantees regarding the quality of the compost/digestate produced. A quality management system aims at addressing different elements of a production process to ensure a stable and high-quality output (product) which helps toward reaching a preset quality for the product.

Liechtenstein applies Swiss rules regarding quality standards. These can be seen as legally binding national standards because, as mentioned before, Swiss legislation applies directly to Liechtenstein. According to (EEA, 2020) there is no Quality Management System in use in Switzerland.

Summary result

Legally binding national standards for compost/digestate quality but no quality management system	Liechtenstein applies Swiss rules regarding quality standards for compost.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2 Targets for the recycling of packaging waste

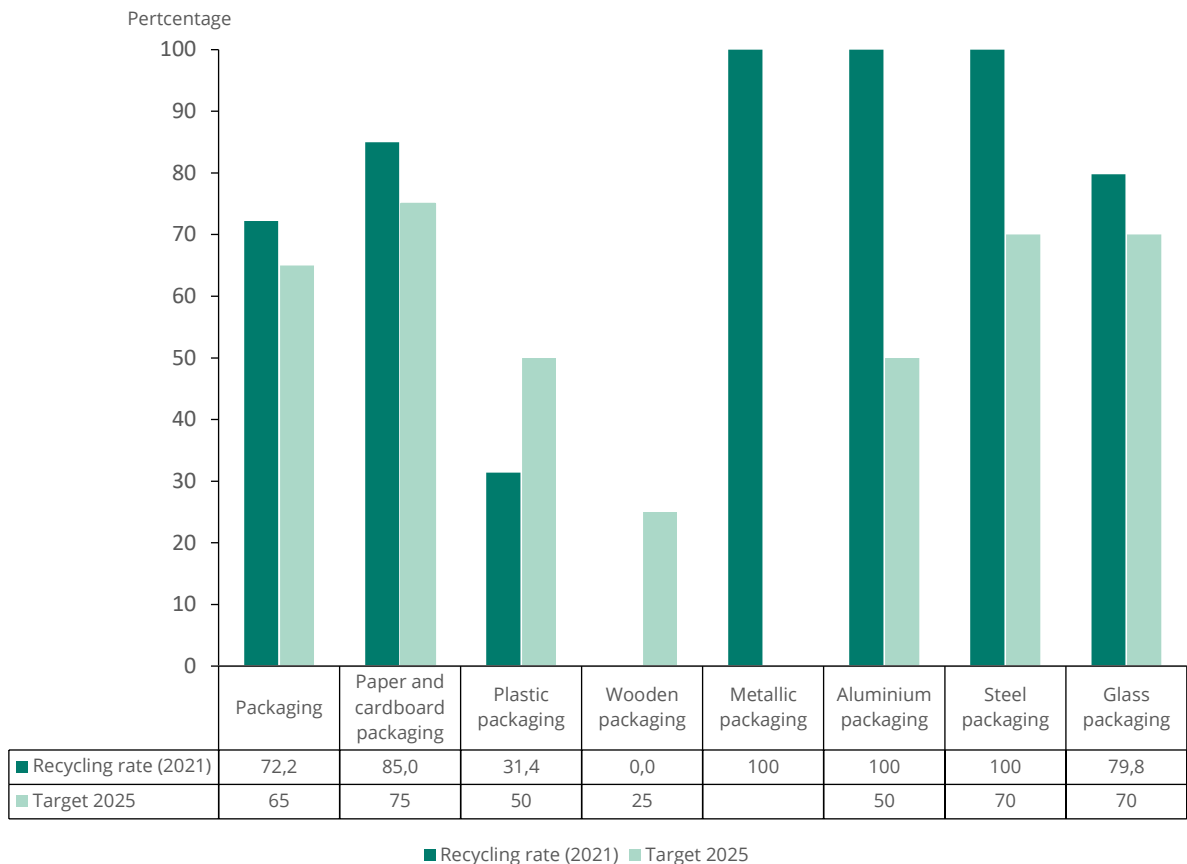
This chapter aims at assessing the prospects of Liechtenstein to achieve the **65 % recycling target for packaging waste** in 2025 as well as the **material specific packaging waste recycling targets** (50 % of plastic; 25 % of wood; 70 % of ferrous metals; 50 % of aluminium; 70 % of glass; 75 % of paper and cardboard). In order to conclude on this likelihood, the analysis takes stock of the status of several factors that are proven to influence the levels of recycling in a country. For a detailed description of the methodology followed, the development of success/risk factors and their impact on recycling, please consult the Methodology report (ETC/WMGE, 2021) and the 2023 addendum (ETC CE, 2023).

2.2.1 Current situation and past trends

2.2.1.1 SRF P-1.1 Distance to target

The actual distance to the target for the most recent data point is a key factor determining the likelihood of meeting or not meeting the target. This analysis is based on data published in the dataset “Recycling rates for packaging waste” [TEN00063], as reported by Liechtenstein to Eurostat. The latest available data refers to 2021. Packaging waste data for Liechtenstein for reference year 2021 are not yet reported according to the new reporting rules as defined in Commission Implementing Decision (EU) 2019/665 and incorporated into the European Economic Area Agreement by JCD No 173/2022 (EC, 2019) The performance of Liechtenstein for 2021 is illustrated in Figure 2.2.

Figure 2.2 Packaging waste recycling (separate collection) rates for Liechtenstein in 2021 in percentage



Source: Eurostat (2023c), EU (2018)

For Liechtenstein the recycling rate for packaging is 7.2 percentage points above the 2025 target of 65 %. Paper and cardboard, aluminium, ferrous packaging and glass packaging reach the target. For plastic packaging, the distance to target is 18.6 percentage point. Wooden packaging is not recycled in Liechtenstein, thus the distance to target is 25 percentage points.

However, there is no evidence that the reported recycling rates already follow the calculation rules as laid down in Commission Implementing Decision 2019/665 as incorporated into the European Economic Area Agreement by Joint Committee Decision No 173/2022. Given that Liechtenstein’s waste statistics for recycling is based on separately collected recyclables and not actually recycled amounts after sorting and processing, in this assessment it is assumed that rejects during sorting and processing have not been deducted from the reported recycled amounts.

As a matter of sensitivity analysis, to assess what the impact of these new calculation rules could be, sorting and recycling losses found in literature (EXPRA, 2014) are applied to the packaging recycling rates as reported for reference year 2021 for Liechtenstein:

- Paper and cardboard packaging: decrease by 12 %², from 85 % to 74.5 %
- Plastic packaging: decrease by 30 %³, from 31.4 % to 22.1 %
- Metal packaging: decrease by 17 %⁴, from 100 % to 83 % for both aluminium and ferrous metals packaging
- Glass packaging: decrease by 12 %⁵, from 79.8 % to 70.5 %
- Wooden packaging: As Liechtenstein does not recycle wooden packaging, this deduction is not relevant
- Total packaging: calculated based on the amounts of each packaging material generated and recycled in 2021, the recycling rate would drop from 72.1 % to 62.6 %.

Taking these sorting and recycling losses rates into account Liechtenstein does still reach the targets for aluminium, ferrous metals and glass packaging. For paper and cardboard taking into account the impact of the new calculation rules results in an estimated recycling rate just below the target. For plastic packaging, taking into account the impact of the new calculation rules means the distance to target will increase to 25.2 percentage points. This will however not change the result of this assessment.

Summary result

Total packaging	< 4 percentage points below the target	Liechtenstein reports a recycling rate of 72.1 %. However, if the new calculation rules are applied (taking into account losses in the sorting and recycling plants), the estimated recycling rate would drop to 62.6 %, 2.4 percentage points below the target.
Paper and cardboard packaging	< 4 percentage points below target	Liechtenstein reports a recycling rate of 85%. However, if the new calculation rules are applied (taking into account losses in the recycling plants), the estimated recycling rate would drop to 74.5 %, 0.5 percentage points below the target.
Ferrous metals packaging	Target exceeded	Liechtenstein reports a recycling rate of 100%. However, if the new calculation rules are applied (taking into account losses in the recycling plants), the estimated recycling rate would drop to 83 %, 13 percentage points above the target.
Aluminium packaging	Target exceeded	Liechtenstein reports a recycling rate of 100%. However, if the new calculation rules are applied (taking into account losses in the recycling plants), the estimated recycling rate would drop to 83 %, 33 percentage points above the target.
Glass packaging	Target exceeded	Liechtenstein reports a recycling rate 79.8%. However, if the new calculation rules are applied (taking into account losses in the recycling plants), the estimated recycling rate would drop to 70.5 %, 0.5 percentage points above the target.

² Relative deductions for sorting losses are stated at 2.6% (weighted average for commercial and household waste) and relative deductions for recycling losses are stated at 10%. Calculation for total (relative) deduction: $1-(1-0.026) \times (1-0.10)$ (EXPRA, 2014)

³ Relative deductions for sorting losses are stated at 11% (weighted average for commercial and household waste) and relative deductions for recycling losses are stated at 21% (weighted average for commercial and household waste). Calculation for total (relative) deduction: $1-(1-0.11) \times (1-0.21)$ (EXPRA, 2014)

⁴ Relative deductions for sorting losses are stated at 3.5% (weighted average for commercial and household waste) and relative deductions for recycling losses are stated at 14%. Calculation for total (relative) deduction: $1-(1-0.035) \times (1-0.14)$ (EXPRA, 2014)

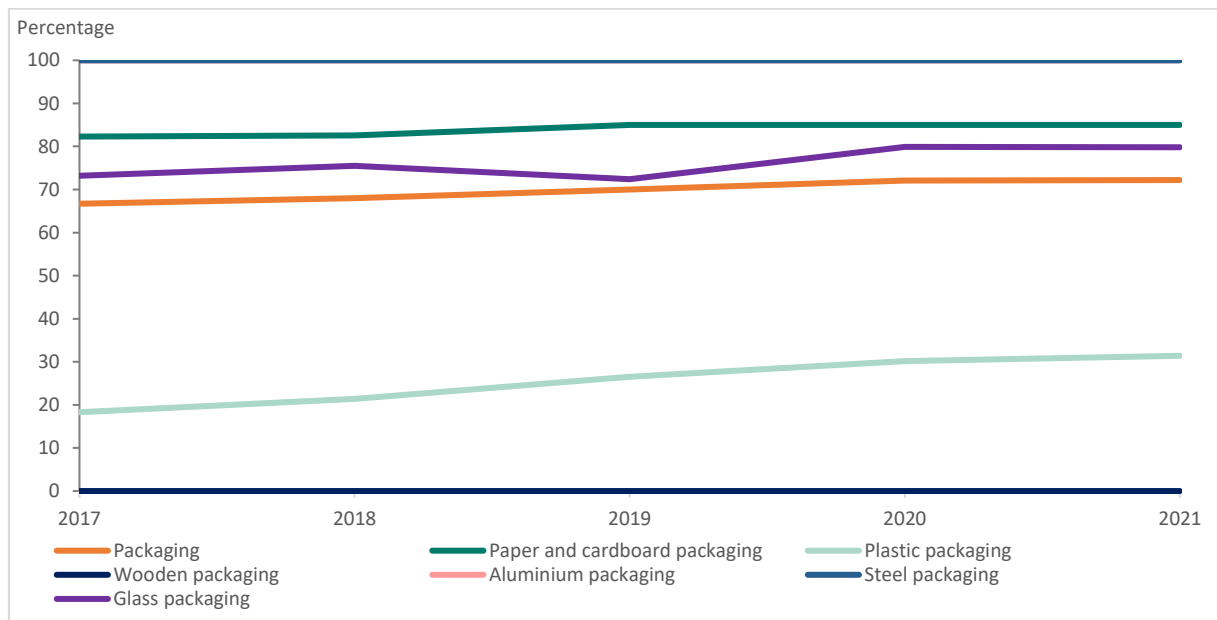
⁵ Relative deductions for sorting losses are stated at 11% (weighted average for commercial and household waste) and relative deductions for recycling losses are stated at 5%. Calculation for total (relative) deduction: $1-(1-0.11) \times (1-0.05)$ (EXPRA, 2014)

Plastics packaging	> 14 percentage points below target	Liechtenstein reports a recycling rate of 31.4 %. However, if the new calculation rules are applied (taking into account losses in the recycling plants), the estimated recycling rate would drop to 22.1 %, 27.9 percentage points below the target.
Wooden packaging	> 14 percentage points below target	Liechtenstein reports a recycling rate of 0 %, 25 percentage points below the 2025 target.
Robustness of the underlying information		Reported recycling data are actually the amounts of separately collected packaging materials, i.e. the data do not yet follow the calculation rules as laid down in Commission Implementing Decision 2019/665 as incorporated into the European Economic Area Agreement by Joint Committee Decision No 173/2022. Therefore, the potential effect of the application of the new calculation rules has been estimated based on literature. A recycling rate of continuously 100% (for ferrous metals and aluminium packaging) over several years is most likely overestimated.

2.2.1.2 SRF P-1.2: Past trend in Packaging Waste Recycling

The development of the historical trend in the recycling rate indicates previous efforts towards packaging waste recycling. In this analysis the recycling rate reported in the Eurostat dataset “Recycling rates for packaging waste” [TEN00063] (latest data year: 2021) is used. The recycling trends for packaging waste by material in Liechtenstein are illustrated in Figure 2.3.

Figure 2.3 Trend in packaging waste recycling (separate collection) rates in Liechtenstein between 2017 and 2021, in percentage



Source: Eurostat (2023c)

In Liechtenstein, there was a slight increase in the total packaging recycling rate in the past five years, from 66.7 % in 2017 to 72.2 % in 2021. Except for aluminium and steel packaging, for which the recycling rates are reported to be 100% since 2017, and wood for which the recycling rate has stayed at 0% since 2017, the recycling rates show an increase for all fractions. The increase is the most significant for plastic packaging, for which the recycling rate was 18.3 % in 2017 and 31.4 % in 2021.

For glass packaging the recycling rate rose from 73.2 % in 2017 to 79.8% in 2021. For paper and cardboard, the recycling rate increased from 82.3 % in 2017 to 85% in 2021.

Summary result

Total packaging	RR > 61% and increase in last 5 years > 5 percentage points	The recycling rate increased by 5.5 percentage points over the past five years and is estimated at 62.6 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Paper and cardboard packaging	RR > 75 %	The recycling rate increased by 2.7 percentage points over the past five years and is estimated at 74.5 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Ferrous metals packaging	RR > 70 %	The recycling rate is reported to be stable over the past five years and is estimated at 83 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Aluminium packaging	RR > 50 %	The recycling rate is reported to be stable over the past five years and is estimated at 83 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Glass packaging	RR > 70 %	The recycling rate increased by 6.6 percentage points over the past five years and is estimated at 70.5 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Plastics packaging	RR < 41 % and increase in last 5 years > 10 percentage points	The recycling rate increased by 13.1 percentage points and is estimated at 22.1 % if the new calculation rules would be applied (taking into account losses in the sorting and recycling plants).
Wooden packaging	RR < 16% and increase in last 5 years < 10 percentage points	The recycling rate for wooden packaging has stayed at 0% over the past five years.
Robustness of the underlying information	The trends over time seem to be robust as there are no breaks in time series indicated. Reported recycling data are actually the amounts of separately collected packaging materials, i.e. the data do not yet follow the calculation rules as laid down in Commission Implementing Decision 2019/665 as incorporated into the European Economic Area Agreement by Joint Committee Decision No 173/2022. Therefore, the potential effect of the application of the new calculation rules has been estimated based on literature. A recycling rate of continuously 100% (for ferrous metals and aluminium packaging) over several years is most likely overestimated.	

2.2.2 Legal instruments

According to the Ordinance on packaging and packaging of waste, it is the Office of Environment who is responsible for the targets and supervises the targets (see Art. 8 Abs. 6).

For the enforcement of the USG, the Government cooperates with the respective economic operators pursuant to Article 78 USG. The Government’s strategy is to encourage the economic operators to take voluntary measures rather than to issue implementing provisions.

There are also other entities that are responsible for meeting the packing waste recycling targets, such as the Swiss federal Ministry (UVEK) and Industry (Producers, merchants, importers), according to the Swiss Ordinance on beverage packaging.

Additionally, the Swiss mechanisms have effect on Liechtenstein as well: according to Art. 8 of the Swiss Ordinance on beverage packages, the national ministry can take certain measures if recycling quotas are not achieved such as to adopt measures that oblige producers, importers and merchants to enforce mandatory deposit on PET-bottles, obligations to take the packaging back against a refund and to recycle the packaging on their own costs.

2.2.2.1 SRF P-2.1: Timely transposition of the revised Packaging and Packaging Waste Directive into national law

Timely transposition of the PPWD as amended by Directive 2018/852 (revised PPWD), into national law within the foreseen period is key for a waste management system in line with EU requirements and the European Economic Area Agreement.

Following the incorporation of the revised PPWD into the European Economic Area Agreement by JCD No 296/2021, which entered into force on 30 October 2021, Liechtenstein notified ESA of its national implementing measures on 4 November 2021. Liechtenstein indicated that the national implementing legislation entered into force on 30 October 2021, which is also the compliance date for the revised PPWD under the European Economic Area Agreement.

Summary result

Transposition without delay	Liechtenstein implemented the revised PPWD on time.
Robustness of the underlying information	Credible information received from ESA

2.2.2.2 SRF P-2.2: Responsibilities for meeting the targets, and enforcement mechanisms, e.g. fines etc.

In Liechtenstein, the office of Environment is responsible for supervision and meeting of the targets according to the Ordinance on packaging and packaging waste (see Art. 8 Abs. 6) (Landesverwaltung Fürstentum Liechtenstein, 1997).

For the enforcement of the targets, the Government cooperates with the respective economic operators pursuant to Article 78 USG (Landesverwaltung Fürstentum Liechtenstein, 2008). The Government is encouraging them to take voluntary measures rather than issuing implementing provisions.

Both the Swiss Federal Department of the Environment, Transport, Energy and Communications (DETEC) and industry (producers, merchants, importers) have responsibilities with respect to the targets influencing the recycling rate according to the Swiss Ordinance on beverage packaging, and the ordinance states that DETEC may require additional measures if the target is not met (Art. 8) (Schweizerische Eidgenossenschaft, 2000).

There are regular statistics published, creating political responsibility. There is no information provided regarding support mechanisms.

Summary result

Clearly defined responsibilities and enforcement mechanisms but no/weak support tools for meeting the recycling targets	The responsibilities are defined, and enforcement mechanisms are in place, but there are no support mechanisms.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.3 Economic instruments

2.2.3.1 SRF P-3.1: Taxes and/or ban for landfilling residual- or biodegradable waste

Bans and taxes on landfilling of residual waste can help to discourage landfilling and thus support recycling, also of packaging waste.

As described in Section 2.1.3 in more detail, Liechtenstein has a ban for the landfilling of municipal and biodegradable waste in place. There is no landfill tax in Liechtenstein.

Summary result

Ban in place for landfilling	There is a ban for the landfilling of municipal waste and biodegradable waste in place.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.3.2 SRF P-3.2: Taxes on municipal waste incineration

Taxes on incineration of residual waste can help to discourage strong reliance on residual waste treatment and thus support recycling. As described in Section 2.1.3 in more detail, Liechtenstein has no incineration capacity and thus no incineration tax in place. Waste to be incinerated is exported to Switzerland.

Summary result

N/A	Liechtenstein has no incineration capacity
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.3.3 SRF P-3.3: Packaging taxes

Packaging taxes can support the aim to reduce packaging waste generation and/or to influence the choice of packaging materials and encourage recyclability and eco-design. According to the information available, Liechtenstein does not have a packaging tax in place. There are no plans to put in place a packaging tax. However, producers placing glass and PET drink bottles on the market, have to pay an 'early disposal fee'. The organisation that recycles the waste receives this fee to cover for the costs for recycling this type of waste.

Summary result

Limited packaging tax.	Liechtenstein has a packaging tax in place but only for glass and PET drink bottles.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.3.4 SRF P-3.4: Pay-as-you-throw (PAYT) system in place

As a large share of packaging waste is generated in households, incentivising households to separate packaging waste at source, e.g. by applying PAYT systems, is relevant for meeting the recycling targets for packaging waste.

As explained in Section 2.1.3, Liechtenstein indicates to have a PAYT system in place. The system in use is volume based, combined with a basic fee to be paid. The Office of Environment estimates that the system covers 100 % over the population.

Summary result

PAYT scheme fully rolled out (to at least 80% of the population)	The whole population is covered by a PAYT system that is volume based combined with a basic fee.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.3.5 SRF P-3.5: Deposit-return systems

Deposit Return Systems (DRS) generate high capture rates for packaging covered by the system and thus contribute to increased recycling rates.

The Swiss ordinance on beverage packaging is applicable in Liechtenstein. Reusable drink bottles have to be marked as reusable and there is a mandatory deposit scheme in place: producers, importers and merchants have to collect a deposit on them and are obliged to take the bottles back against a refund. There is also a deposit scheme on plastic bottles that are not reusable.

If targets are not achieved, the Swiss federal ministry will enforce stricter rules (Art. 8 of the Ordinance on beverage packaging) (Schweizerische Eidgenossenschaft, 2000).

Summary result

Aluminium drink cans	No DRS for Aluminium drink cans	There is no DRS in use for aluminium cans and there are no plans to introduce a DRS system.
Plastic bottles	Mandatory DRS for nearly all drink bottles	There is a mandatory DRS system for plastic bottles in Liechtenstein.
Plastic crates	Mandatory DRS for nearly all plastic crates	There is a mandatory DRS system for plastic crates in Liechtenstein.
Glass bottles	Mandatory DRS for nearly all drink bottles	There is a mandatory DRS system for glass bottles in Liechtenstein.
Wooden packaging	No DRS for wooden packaging	There is no DRS in use for wooden packaging, and there are no plans to introduce a DRS system.

Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE
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2.2.4 Separate collection system

2.2.4.1 SRF P-4.1: Convenience and coverage of separate collection for different packaging waste fractions

As a large part of packaging waste comes from households, separate collection systems for households and similar sources are a key condition for achieving high recycling rates of packaging waste and for collecting recyclables at adequate quality. Generally, the more convenient and accessible these systems are for their users, the better results they can deliver. The material specific assessment considers packaging waste from both household and non-household sources. The methodology assumes that these sources are of similar size, but if the country provides information on the shares of household/non-household waste generation, this can be used to modify the weighting factors. For assessing the convenience and coverage of separate collection systems for households, the same methodology is used here as described in section 2.1.4.

The separate collection systems in Liechtenstein are described in detail under SRF MSWR-4.1 in section 2.1.4.

The collection systems in use do not distinguish between packaging and non-packaging waste. Separate collection is mandatory for non-household waste.

Summary result

Paper and cardboard packaging	1. Packaging waste from households A low share of the population is covered by high convenience collection services	
	2. Packaging waste from non-household sources Separation at source is mandatory for non-household plastics packaging waste	
Ferrous metals packaging	1. Packaging waste from households A low share of the population is covered by high convenience collection services	
	2. Packaging waste from non-household sources Separation at source is mandatory for non-household plastics packaging waste	
Aluminium packaging	Packaging waste from households A low share of the population is covered by high convenience collection services	
Glass packaging	1. Packaging waste from households A low share of the population is covered by high convenience collection services	
	2. Packaging waste from non-household sources Separation at source is mandatory for non-household plastics packaging waste	

Plastics packaging	1. Packaging waste from households A low share of the population is covered by high convenience collection services	
	2. Packaging waste from non-household sources Separation at source is mandatory for non-household plastics packaging waste	
Wooden packaging	Packaging waste from non-household sources Separation at source is mandatory for non-household wooden packaging waste	
Robustness of the underlying information		Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

Note: The main source for aluminium packaging waste is drink cans from households, therefore the assessment does not consider aluminium non-household waste.

2.2.4.2 SRF P-4.2: Firm plans to improve the convenience and coverage of separate collection for the different packaging waste fractions

Concrete plans are needed to improve the convenience and coverage of separate collection. This SRF is only relevant for countries and materials that do not score 'green' in SRF P-4.1.

There are no firm plans to introduce or change the separate collection system in Liechtenstein.

The assessment is done on a material basis, summing up the scores of the different materials according to their average share in packaging waste⁶. Again, the material specific assessment considers packaging waste from both household and non-household sources.

Summary result

Paper and cardboard packaging	1. Packaging waste from households No plans to improve the separate collection system, with clear responsible entities and defined targets and timeline	
	2. Packaging waste from non-household sources N/A (for countries already having mandatory separation at source)	
Ferrous metals packaging	1. Packaging waste from households No plans to improve the separate collection system, with clear responsible entities and defined targets and timeline	
	2. Packaging waste from non-household sources N/A (for countries already having mandatory separation at source)	

⁶ Based on data from Eurostat on the share of packaging materials in total packaging generated in 2018.

Aluminium packaging	Packaging waste from households No plans to improve the separate collection system, with clear responsible entities and defined targets and timeline	
Glass packaging	1. Packaging waste from households No plans to improve the separate collection system, with clear responsible entities and defined targets and timeline	
	2. Packaging waste from non-household sources N/A (for countries already having mandatory separation at source)	
Plastics packaging	1. Packaging waste from households No plans to improve the separate collection system, with clear responsible entities and defined targets and timeline	
	2. Packaging waste from non-household sources N/A (for countries already having mandatory separation at source)	
Wooden packaging	Packaging waste from non-household sources N/A (for countries already having mandatory separation at source)	

2.2.5 Extended producer responsibility (EPR) and similar schemes

2.2.5.1 SRF P-5.1: Coverage of EPR schemes

In Liechtenstein there is no EPR system in place. However, due to the full integration of Liechtenstein into the Customs Union with Switzerland, Swiss legislation that is incorporated into the Customs Treaty directly is directly applicable in Liechtenstein. Therefore, Liechtenstein cannot easily introduce EPR within its territory.

All goods that comply to the Swiss technical rules can freely circulate within the Customs Union. Taxes within the Customs Union are considered critical since they hinder trade. In case Switzerland introduces an EPR scheme, this would automatically apply in Liechtenstein as well (Office of Environment of Liechtenstein, 2023).

Summary result

N/A	There is no EPR system in place in Liechtenstein.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.5.2 SRF P-5.2: Fee modulation in EPR schemes for packaging

As explained in Section 2.1.5, fee modulation (or eco-modulation) is a system with different fees for different types of packaging material and designs. The assessment is the same as described in Section 2.1.5

In Liechtenstein there is no EPR system in place, and hence no fee modulation. As explained above, Liechtenstein cannot easily introduce EPR within its territory due to the customs union with Switzerland.

Summary result

N/A	There is no EPR system in place in Liechtenstein, and hence also no fee modulation.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

2.2.5.3 SRF P-5.3 Material specific EPR assessment

The material specific assessment is based on a combination of the coverage of the material specific EPR schemes and the use of fee modulation for the specific packaging material. The assessment takes the different situations for different types of materials into account: Plastics packaging is the packaging material that is the most difficult to recycle out of the packaging materials targeted by the Packaging and Packaging Waste Directive. Fee modulation therefore plays a larger role for plastic packaging than for the other materials and is therefore rated differently from paper/cardboard, ferrous metals, aluminium and glass. The methodology foresees a green score for plastics packaging only if all four fee modulation assessment criteria mentioned above are met. On the other hand, wooden packaging is mainly generated by commercial and industrial sources and fee modulation is less relevant, therefore the methodology only relies on EPR schemes for wooden packaging from commercial and industrial sources.

In Liechtenstein there is no EPR system in place, hence no material specific fee modulation can be implemented.

As explained above, Liechtenstein cannot easily introduce EPR within its territory due to the customs union with Switzerland.

Summary result

SRF P-5.3.1 EPR scheme for Paper and cardboard packaging waste	N/A	There is no EPR system in place in Liechtenstein
SRF P-5.3.2 EPR scheme for Ferrous metals packaging waste	N/A	There is no EPR system in place in Liechtenstein
SRF P-5.3.3 EPR scheme for Aluminium packaging waste	N/A	There is no EPR system in place in Liechtenstein
SRF P-5.3.4 EPR scheme for Glass packaging waste	N/A	There is no EPR system in place in Liechtenstein
SRF P-5.3.5 EPR scheme for Plastic packaging waste	N/A	There is no EPR system in place in Liechtenstein

SRF P-5.3.6 EPR scheme for Wooden packaging waste	N/A	There is no EPR system in place in Liechtenstein
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE.	

2.3 Target on landfill of municipal waste

2.3.1 Current situation and past trends

2.3.1.1 SRF LF-1.1: Distance to target

The LWD(1999/31/EC), as amended by Directive (EU) 2018/850 (revised LWD), sets a target in Art. 5(5) to reduce, by 2035, the amount of municipal waste landfilled to 10 % or less of the total amount of municipal waste generated (by weight). The revised LWD was incorporated into the European Economic Area Agreement by JCD No 84/2022, which entered into force on 19 March 2022. The target therefore applies to the European Economic Area EFTA States accordingly.

The overall landfilling rate of Liechtenstein was 0 % in 2021 (calculated based on information provided by Liechtenstein in response to the questionnaire by the European Environment Agency and ETC/CE (Office of Environment of Liechtenstein, 2023).

Summary result

Target exceeded	The target is exceeded, Liechtenstein does not landfill municipal solid waste.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire by the European Environment Agency and ETC/CE.

2.3.1.2 SRF LF-1.2: Past trend in municipal solid waste landfill rate

Over the past five years, the overall landfilling rate of Liechtenstein has been stable at 0%

Summary result

Landfill rate in 2021 < 10 %	Liechtenstein did not landfill municipal solid waste over the past five years.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire by the European Environment Agency and ETC/CE.

2.3.1.3 SRF LF-1.3: Diversion of biodegradable municipal waste from landfill

According to Art. 5(2)(c) of the LWD, the States had to ensure that by 2016, biodegradable municipal waste going to landfills is reduced to 35 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available. This target applies to the EFTA states accordingly.⁷

Liechtenstein does not landfill biodegradable municipal waste.

⁷ Directive 1999/31/EC was incorporated into the European Economic Area Agreement by JCD No 56/2001, which entered into force on 1 April 2002.

Summary result

Target for reducing the amount of biodegradable municipal waste (BMW) landfilled to 35% of BMW generated in 1995 has been achieved in 2016 or in the year specified in the derogation where applicable	Liechtenstein does not landfill biodegradable municipal waste and performs therefore well within the target.
Robustness of the underlying information	Credible information received from the Office of Environment in response to the questionnaire of the European Environment Agency and ETC/CE

3 Conclusion

This risk assessment indicates whether Liechtenstein is at risk of not meeting the targets. The ‘total risk’ categorization is the result of the sum of the individual scores of each SRF as described in the previous chapter, where the assessment of each SRF results in a score of **2 points (green), 1 point (amber) or 0 points (red)**, depending on the assessment of the SRF. As some SRFs are considered to have a higher impact on meeting the target, the score of the SRF is multiplied by the defined weight of the SRF. As some SRFs might not be applicable to Liechtenstein, only the SRFs relevant to Liechtenstein are taken into account to define the maximum score. Liechtenstein is considered to be ‘not at risk’ if its score is more than 50 % of this maximum score, and ‘at risk’ if its score is less than 50 % of this maximum score.

3.1 Prospects for meeting the recycling target for municipal solid waste

81 % of maximum points	Based on the provided information and the analysis done, it is concluded that Liechtenstein is not at risk for not meeting the MSW recycling target in 2025 .
Current situation and past trends:	The recycling rate was 76 % in 2021. Considering the impact of the new calculation rules we assume a reduction with 5 percentage points, bringing the recycling rate down to 71%. This is still well above the target of 55 %. The recycling rate has increased by 1 percentage point since 2017. Data include recycled recyclables from industry, therefore the recycling rate is likely to be overestimated.
Legal instruments:	The WFD has been implemented on time. Responsibilities are defined and support mechanisms are in place. There are requirements defined at municipal level. However, the direct consequences for the municipalities if the targets are not met are unclear.
Economic instruments:	There is a ban for the landfilling of municipal waste and biodegradable waste in place. There is no incineration capacity in Liechtenstein. The whole population is covered by a PAYT system that is volume-based combined with a basic fee.
Separate collection systems:	Only residual and food waste are collected door-to-door, and to some extent garden waste, while PET bottles are collected at bring points and in shops. All other fractions are collected through civic amenity sites only. There are no plans to change the current collection system.
Extended producer responsibility:	There is no EPR system in use in Liechtenstein. As Liechtenstein cannot easily introduce EPR within its territory due to the customs union with Switzerland, this SRF is excluded from this assessment.

Bio-waste treatment capacity and quality management:	Liechtenstein already captures about 77 % of its generated bio-waste, and treatment capacity for treating 80 % of the generated bio-waste seems to be available. A legally binding national standard is in place, however there is no quality management system for compost/digestate.
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3.2 Prospects for meeting the recycling targets for packaging waste

91 % of maximum points	Based on the provided information and the analysis done, it is concluded that Liechtenstein is not at risk for not meeting the 65 % recycling target for packaging waste in 2025	
81 % of maximum points	Paper and cardboard	Not at Risk
81 % of maximum points	Ferrous metals packaging	Not at Risk
67 % of maximum points	Aluminium packaging	Not at Risk
83 % of maximum points	Glass packaging	Not at Risk
48 % of maximum points	Plastics packaging	At Risk
43 % of maximum points	Wooden packaging	At Risk
Current situation and past trends:	Liechtenstein the reported recycling rates in 2021 for total packaging is 72.1%. However, if the new calculation rules are applied, the recycling rate is expected to drop to 62.6%, 2.4 percentage points below the target. The reported recycling rates for paper and cardboard, metals (ferrous and aluminium) and glass packaging already exceed the 2025 targets, also if the new calculation rules are applied. For plastic packaging the distance to target is 27.9 percentage points if the new calculation rules are applied. Wooden packaging is not collected for recycling, and therefore the distance to target is 25.0 percentage points. The total packaging recycling rate increased by 5.5 percentage points over the past five years	
Legal instruments:	Liechtenstein implemented the packaging and packaging waste directive on time. The responsibilities are defined and enforcement mechanisms are in place, but there are only weak support mechanisms. The consequences for not meeting the targets are limited.	
Economic instruments:	There is a ban for the landfilling of municipal waste and biodegradable waste in place. There is no incineration capacity in Liechtenstein. Liechtenstein does have a packaging tax in place but only for glass and PET drink bottles.	

	<p>The whole population is covered by a PAYT system that is volume based and includes a basic fee.</p> <p>There is a DRS system in place for glass bottles, plastic bottles and crates.</p>
Separate collection systems:	<p>Only residual and food waste are door to door collected from households. All other fractions are collected through civic amenity sites.</p> <p>For packaging waste from non-household sources, there is mandatory separate collection for all fractions.</p> <p>There are no plans to change the system in use.</p>
Extended producer responsibility:	<p>Liechtenstein does not use an EPR system. As Liechtenstein cannot easily introduce EPR within its territory, this SRF is excluded from the assessment.</p>

3.3 Prospects of meeting the landfill of municipal waste target

100 % of maximum points	<p>Based on the provided information and the analysis done, it is concluded that Liechtenstein is not at risk for not meeting the 2035 target to reduce the amount of municipal waste landfilled to 10 % or less of the total amount of municipal waste generated.</p>
Current situation and past trends:	<p>Liechtenstein does not landfill municipal waste, nor has landfilled the past five years.</p>
Diversion of biodegradable municipal waste from landfill	<p>Liechtenstein does not landfill biodegradable municipal waste and performs therefore well within the target.</p>

List of abbreviations

Abbreviation	Name
CE	Circular economy
DRS	Deposit Return System
EC	European Commission
EEA	EEA can stand for 'European Environment Agency' or 'European Economic Area'. In order to avoid confusion, the abbreviation is not used here.
EEE	Electrical and electronic equipment
EFTA	European Free Trade Association
EPR	Extended producer responsibility
ESA	EFTA Surveillance Authority
ETC/CE	European Topic Centre / Circular Economy and Resource Use
ETC/WMGE	European Topic Centre / Waste and Materials in a Green Economy
ETS	Emissions Trading System
MS	Member state
MSW	Municipal solid waste
PAYT	Pay-as-you-throw
PET	Polyethylene terephthalate
pp	Percentage point
PPWD	Packaging and Packaging Waste Directive
PRO	Producer Responsibility Organisation
PS	Polystyrene
RR	Recycling rate
SRF	Success and risk factor
WEEE	Waste Electric and Electronic Equipment
WFD	Waste Framework Directive

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Annex 1 Detailed scoring of success and risk factors

Assessment sheet - Recycling target for municipal waste

MS Liechtenstein

Date April-24

SRF		Assessment result	Weight	Score
Current situation and past trends				
MSWR-1.1	Distance to target	Distance to target < 4 percentage points, or target exceeded	5	10
MSWR-1.2	Past trends in municipal solid waste recycling rate	RR > 51% and increase in last 5 years > 5 percentage points, or RR > 46% and increase in last 5 years > 10 percentage points or RR > 55%	1	2
Legal instruments				
MSWR-2.1	Timely transposition of the revised WFD into national law	Transposition without delay	1	2
MSWR-2.2	Clearly defined responsibilities for meeting the targets and support and enforcement mechanisms	Clearly defined responsibilities and good set of support tools but weak/no enforcement mechanisms for meeting the recycling targets OR Unclear responsibilities but clearly defined enforcement mechanisms and a good set of support tools for meeting the recycling targets OR Clearly defined responsibilities and enforcement mechanisms but no/weak support tools for meeting the recycling targets	1	1
Economic instruments				
MSWR-3.1	Taxes and/or ban for landfilling residual or biodegradable waste	Ban, or landfill tax > 30 EUR/t* with escalator, or landfill tax > 45 EUR/t	1	2
MSWR-3.2	Taxes on municipal waste incineration	N/A (for countries without capacities for incineration)	0	0

MSWR-3.3	Pay-as-you-throw (PAYT) system	PAYT scheme fully rolled out (to at least 80% of the population) OR Implemented in some regions / municipalities (50-80% covered) and firm plans for rolling out to at least 80% of the population	1	2
Separate collection systems				
MSWR-4.1	Convenience and coverage of separate collection systems for the different household waste fractions			
	Paper and cardboard	A low share of the population is covered by high convenience collection services	0,46	0
	Metals	A low share of the population is covered by high convenience collection services	0,08	0
	Plastics	A low share of the population is covered by high convenience collection services	0,28	0
	Glass	A low share of the population is covered by high convenience collection services	0,18	0
	Bio-waste	A high share of the population is covered by high convenience collection services	0,84	1,68
	Wood	A low share of the population is covered by high convenience collection services	0,06	0
	Textiles	A low share of the population is covered by high convenience collection services	0,06	0
	WEEE	Medium convenience collection services dominate	0,04	0,04
MSWR-4.2	Firm plans to improve the convenience and coverage of separate collection systems for the different household waste fractions			
	Paper and cardboard	No firm plans to improve the convenience and coverage	0,23	0

	Metals	No firm plans to improve the convenience and coverage	0,04	0
	Plastics	No firm plans to improve the convenience and coverage	0,14	0
	Glass	No firm plans to improve the convenience and coverage	0,09	0
	Bio-waste	N/A (for countries in which a very high share of the population is already covered by high convenience collection services)	0,42	0
	Wood	No firm plans to improve the convenience and coverage	0,03	0

	Textiles	No firm plans to improve the convenience and coverage	0,03	0
	WEEE	N/A (for countries where high to medium convenience collection services dominate already)	0,02	0
Extended producer responsibility (EPR) and similar schemes				
MSWR-5.1	Fee modulation in EPR schemes for packaging		0	0
Bio-waste treatment capacity and quality management				
MSWR-6.1	Capacity for the treatment of bio-waste	Enough bio-waste treatment capacity for 80% of generated municipal bio-waste	1	2
MSWR-6.2	Legally binding national standards and Quality Management System for compost/digestate	Legally binding national standards for compost/digestate quality but no quality management system	1	1
			Total score	23,72
			Maximum score	29,12

81%

Assessment sheet - Recycling target for packaging waste

MS Liechtenstein

Date

April-24

SRF		Assessment result	Weight	Score
Current situation and past trends				
P-1.1	Distance to target - Overall packaging	< 4 percentage points below target, or target exceeded	5	10
	Distance to target - Paper and cardboard packaging	< 4 percentage points below target, or target exceeded	5	10
	Distance to target - Ferrous metals packaging	< 4 percentage points below target, or target exceeded	5	10
	Distance to target - Aluminium packaging	< 4 percentage points below target, or target exceeded	5	10
	Distance to target - Glass packaging	< 4 percentage points below target, or target exceeded	5	10
	Distance to target - Plastics packaging	> 14 percentage points below target, or no data reported	5	0
	Distance to target - Wooden packaging	> 14 percentage points below target, or no data reported	5	0
P-1.2	Past trends in packaging waste recycling rate	RR > 61% and increase in last 5 years > 5 percentage points, or RR > 56% and increase in last 5 years > 10 %, or RR > 65%	1	2
	Past trends in paper and cardboard packaging recycling	RR > 71% and increase in last 5 years > 5 percentage points, or RR > 66% and increase in last 5 years > 10 %, or RR > 75%	1	2
	Past trends in ferrous metals packaging recycling	RR > 66% and increase in last 5 years > 5 percentage points, or RR > 61% and increase in last 5 years > 10 %, or RR > 70%	1	2
	Past trends in aluminium packaging recycling	RR > 46% and increase in last 5 years > 5 percentage points, or RR > 41% and increase in last 5 years > 10 %, or RR > 50%	1	2

	Past trends in glass packaging recycling	RR > 66% and increase in last 5 years > 5 percentage points, or RR > 61% and increase in last 5 years > 10 %, or RR > 70%	1	2
	Past trends in plastic packaging recycling	RR > 46% and increase in last 5 years < 5 percentage points, or RR > 41%, and increase in last 5 years < 10 percentage points, or RR < 41% and increase in last 5 years > 10 percentage points	1	1
	Past trends in wooden packaging recycling	RR < 16% and increase in last 5 years < 10 percentage points	1	0
Legal instruments				
P-2.1	Timely transposition of the revised Packaging and Packaging Waste Directive into national law	Transposition without delay	1	2
P-2.2	Clearly defined responsibilities for meeting the targets and support and enforcement mechanisms	Clearly defined responsibilities and good set of support tools but weak/no enforcement mechanisms for meeting the recycling targets OR Unclear responsibilities but clearly defined enforcement mechanisms and a good set of support tools for meeting the recycling targets OR Clearly defined responsibilities and enforcement mechanisms but no/weak support tools for meeting the recycling targets	1	1
Economic instruments				
P-3.1	Taxes and/or ban for landfilling residual or biodegradable waste	Ban, or landfill tax > 30 EUR/t* with escalator	1	2
P-3.2	Taxes on municipal waste incineration	N/A (for countries without capacities for incineration)	0	0
P-3.3	Packaging taxes	Limited packaging tax	1	1

P-3.4	Pay-as-you-throw (PAYT) system	PAYT scheme fully rolled out (to at least 80% of the population) OR Implemented in some regions / municipalities (50-80% covered) and firm plans for rolling out to at least 80% of the population	1	2
P-3.5	Deposit-return systems for aluminium drink cans	No or voluntary DRS for some drink cans	1	0
	Deposit-return systems for glass drink bottles	Mandatory DRS for nearly all drink bottles	1	2
	Deposit-return systems plastic drink bottles	Mandatory DRS for nearly all drink bottles	1	2
	Deposit-return systems for plastic crates	Mandatory DRS for nearly all plastic crates	1	2
	Deposit-return systems for wooden packaging	No or voluntary DRS for some wooden packaging	1	0
Separate collection systems				
P-4.1	Convenience and coverage of separate collection systems for the different packaging waste fractions			
	Paper and cardboard packaging (household)	A low share of the population is covered by high convenience collection services	1	0
	Paper and cardboard packaging (non-household)	Separation at source is mandatory for non-household paper and cardboard packaging waste	1	2
	Ferrous metals packaging (household)	A low share of the population is covered by high convenience collection services	1	0
	Ferrous metals packaging (non-household)	Separation at source is mandatory for non-household ferrous metals packaging waste	1	2
	Aluminium packaging	A low share of the population is covered by high convenience collection services	2	0
	Glass packaging (household)	A low share of the population is covered by high convenience collection services	1	0
	Glass packaging (non-household)	Separation at source is mandatory for non-household glass packaging waste	1	2
	Plastics packaging (household)	A low share of the population is covered by high convenience collection services	1	0
	Plastics packaging (non-household)	Separation at source is mandatory for non-household plastic packaging waste	1	2
	Wooden packaging	Separation at source is mandatory for non-household wooden packaging waste	2	4
P-4.2	Firm plans to improve the convenience and coverage of separate collection systems for the different packaging waste fractions			

	Paper and cardboard (household)	No firm plans to improve the convenience and coverage	0,5	0
	Paper and cardboard (non-household)	N/A (for countries already having mandatory sorting at source)	0,5	0
	Ferrous metals packaging (household)	No firm plans to improve the convenience and coverage	0,5	0
	Ferrous metals packaging (non-household)	N/A (for countries already having mandatory sorting at source)	0,5	0
	Aluminium packaging	No firm plans to improve the convenience and coverage	1	0
	Glass packaging (household)	No firm plans to improve the convenience and coverage	0,5	0

	Glass packaging (non-household)	N/A (for countries already having mandatory sorting at source)	0,5	0
	Plastics packaging (household)	No firm plans to improve the convenience and coverage	0,5	0
	Plastics packaging (non-household)	N/A (for countries already having mandatory sorting at source)	0,5	0
	Wooden packaging	N/A (for countries already having mandatory sorting at source)	1	0
Extended producer responsibility (EPR) and similar schemes				
P-5.1	Coverage of EPR schemes		0	0
P-5.2	Fee modulation in EPR schemes for packaging		0	0
P-5.3	Material specific EPR assessment - Paper and cardboard packaging waste		0	0
	Material specific EPR assessment - Ferrous metals packaging waste		0	0
	Material specific EPR assessment - Aluminium packaging waste		0	0

	Material specific EPR assessment - Glass packaging waste		0	0
	Material specific EPR assessment - Plastics packaging waste		0	0
	Material specific EPR assessment - Wooden packaging waste		0	0
Total packaging recycling target				
				20,00
				Maximum score
				22,00

91%

Paper and cardboard recycling target

				Total score	22,00
				Maximum score	27,00

81%

Ferrous metals packaging recycling target

				Total score	22,00
				Maximum score	27,00

81%

Aluminium packaging recycling target

				Total score	20,00
				Maximum score	30,00

67%

Glass packaging recycling target

				Total score	24,00
				Maximum score	29,00

83%

Plastics packaging recycling target

				Total score	15,00
				Maximum score	31,00

48%

Wooden packaging recycling target

				Total score	12,00
				Maximum score	28,00

43%

Assessment sheet - Target for landfilling of municipal waste

MS Liechtenstein

Date April-24

SRF		Assessment result	Weight	Score
Current situation and past trends				
LF-1.1	Distance to target	Distance to target < 10 percentage points, or target exceeded	5	10
LF-1.2	Past trends in municipal solid waste landfill rat	Landfill rate in 2020 < 20% and decrease in last 5 years > 5 percentage points, or Landfill rate in 2020 < 25% and decrease in last 5 years > 10 percentage points or Landfill rate in 2020 < or = 10%	1	2
LF-1.3	Diversion of biodegradable municipal waste from landfill	Target for reducing the amount of biodegradable municipal waste (BMW) landfilled to 35% of BMW generated in 1995 has been achieved in 2016 or in the year specified in the derogation where applicable	1	2
Total score			14,00	
Maximum score			14,00	

100%