

INFINITUM





IMPORTANT QUESTIONS TO ASK

- What's the problem?
 - Littering or/and resources
- What's the collection rate?
 - How to achieve highest possible collection rates?
- What's the yield in collection and recycling process?
 - How to achieve the highest environmental effect
- What's the cost per unit for the producer/consumer?
(extended producer responsibility cost)
 - How to achieve the lowest pr unite?



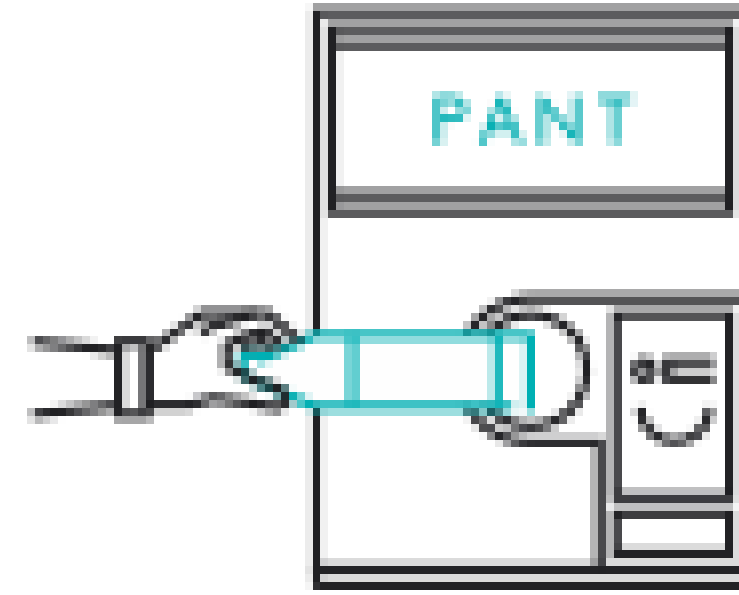


INFINITUM NORWEGIAN REGULATIONS AND MARKET

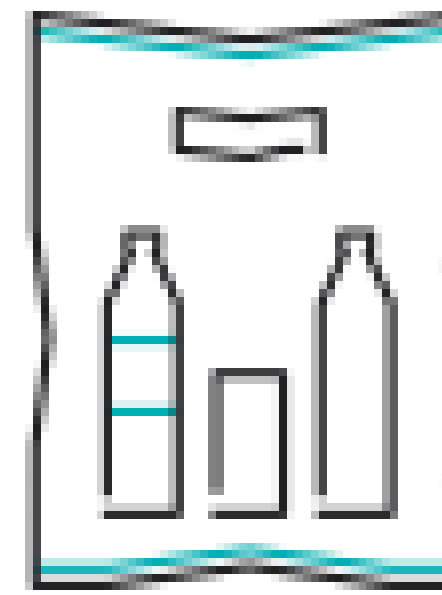
100% collection and high-grade recycling



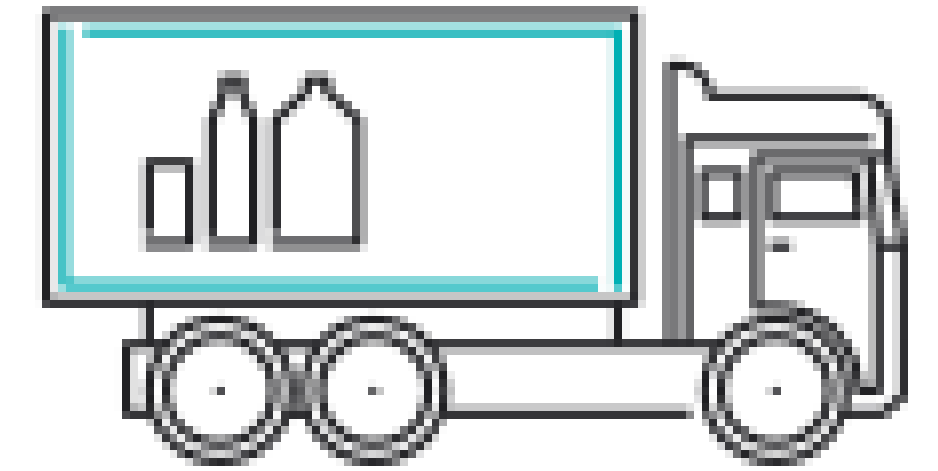
Happiness



Pant



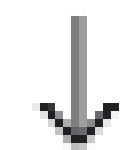
Preparation



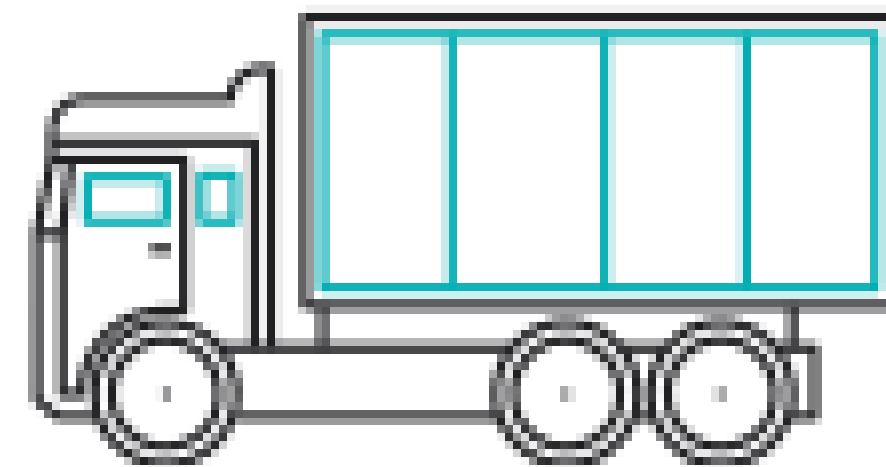
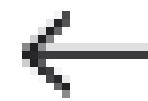
Pick up



INFINITUM



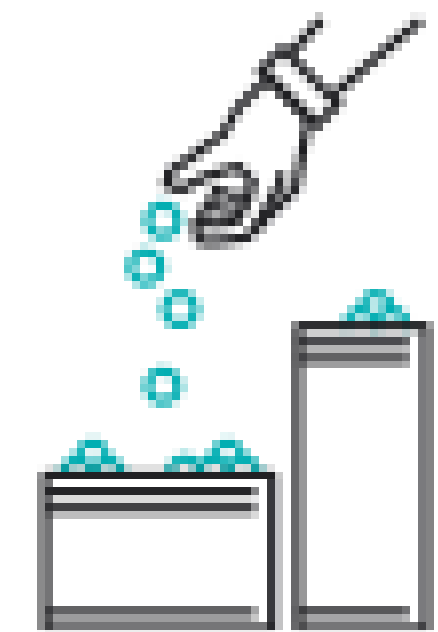
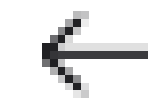
High grade recycling



Transport



Sorting and bailing



Transport



INFINITUM AS

Private owned value chain company owned 50/50 producer and retail
Operation started 3. of may 1999. - Third company for Deposit in Norway

1.2 billion cans and bottles in 2017.

- 22 400 tonnes of PET
- 80% of recycled content in all PET bottles possible in Norway today!
- 9 300 tonnes of aluminum
- Recovered by Hydro Holmestrand (Norway)

Shortest possible path between main task for the packaging material



DEPOSIT FEE





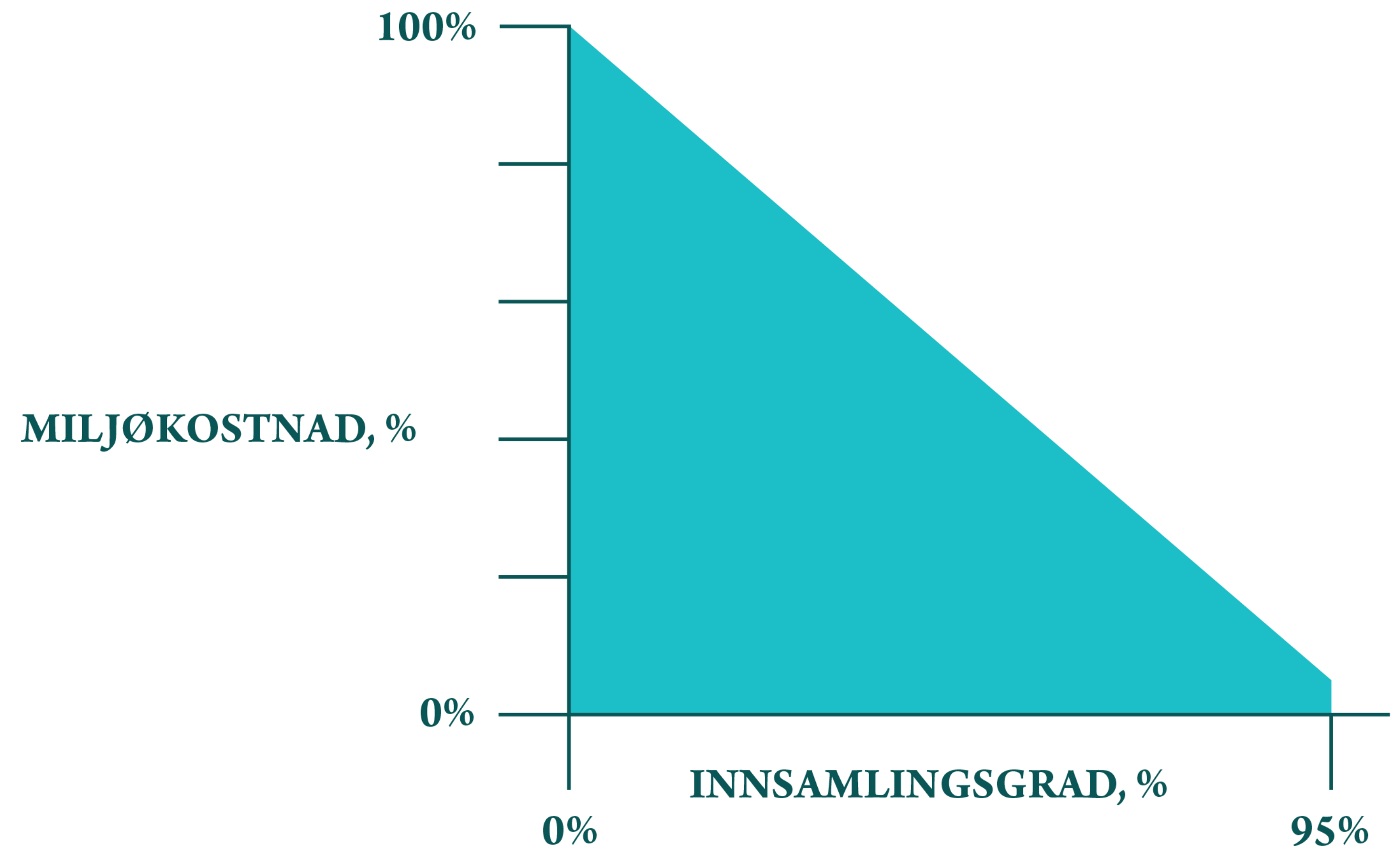
NO DEPOSIT, NO RETURN





ENVIRONMENTAL COST

- Anti litter fee!
- The environmental fee is reduced with increasing collection rate
 - Cans: kr. 5.79 - 0,58 EUR - 35 000,-/ton
 - Bottles: kr. 3.50 - 0,35 EUR - 10 000,-/ton



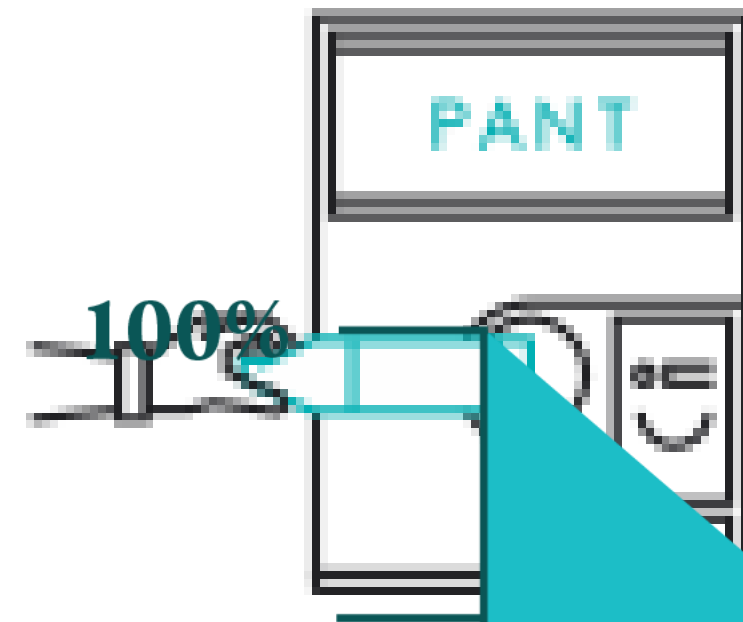


ENVIRONMENTAL COST

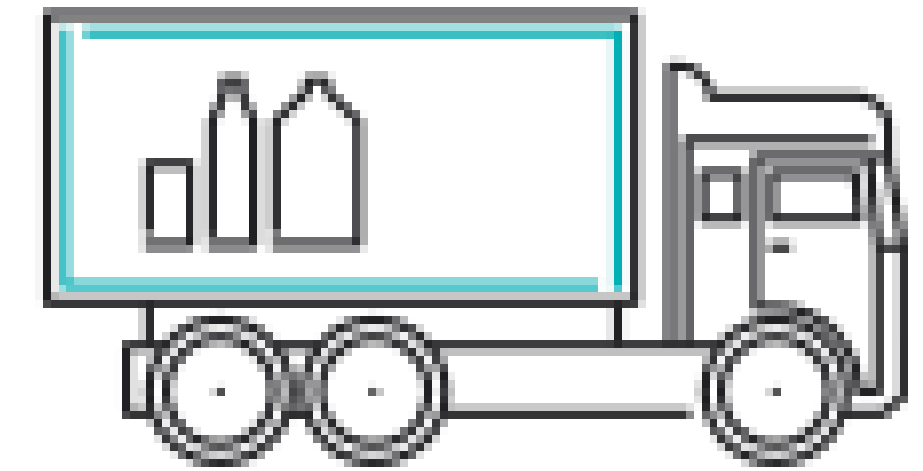
Material	Environmental tax in 2018 [NOK/unit]	Environmental tax 2018 [euro/unit]
Glass	5,79	0,56
Metals	5,79	0,56
Plastics	3,50	0,33
Cartons and cardboard	1,43	0,11



Happiness



Preparation



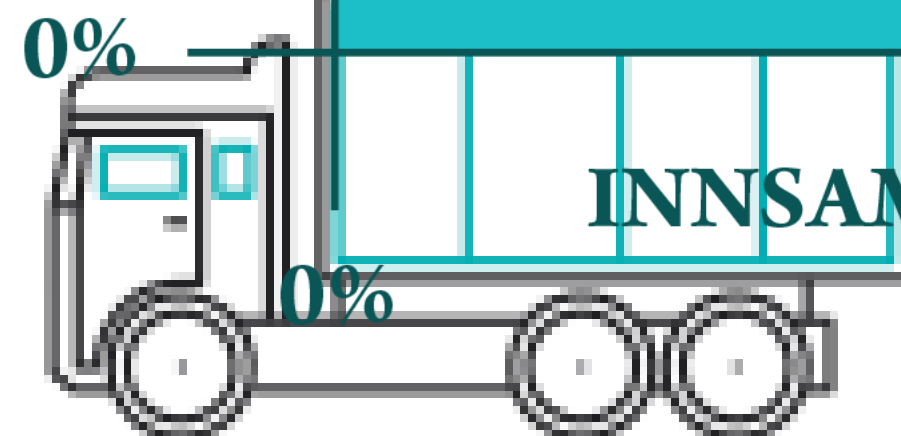
Pick up



100% PRO RESPONSIBILITY



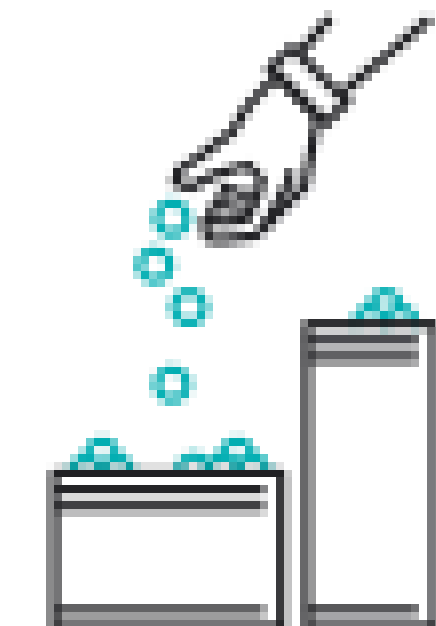
High grade recycling



Transport



Sorting and bailing



Transport

INNSAMLINGSGRAD, %



COLLECTION OF BEVERAGE CONTAINERS IN NORWAY



Curbside, one way glass and metal



Reusable Packaging
(breweries and beverage association)



Plastic packaging, packaging cardboard
and beverage cartons



Deposit systemet





"RIGID"
APPROVAL
SECURE
HIGH-GRADE
RECYCLING

DESIGN FOR RECYCLING
SINCE 1999!

PET BOTTLES

NO

CAP

Thermoset PS
PVC
Metal

**LINER MATERIAL
AND ADDITIONAL
SEALING**

PVC
Metal
Silicone

BOTTLE

Other than A-PET

BARRIER

Coating
Scavengers
Additives

LABEL & GLUE

PVC
PET
OPS
Self-adhesives
(under conditions)
Hot-Melt
Heavy metal inks

YES

CAP

HDPE
PP

**LINER MATERIAL
AND ADDITIONAL
SEALING**

PE
EVA

BOTTLE

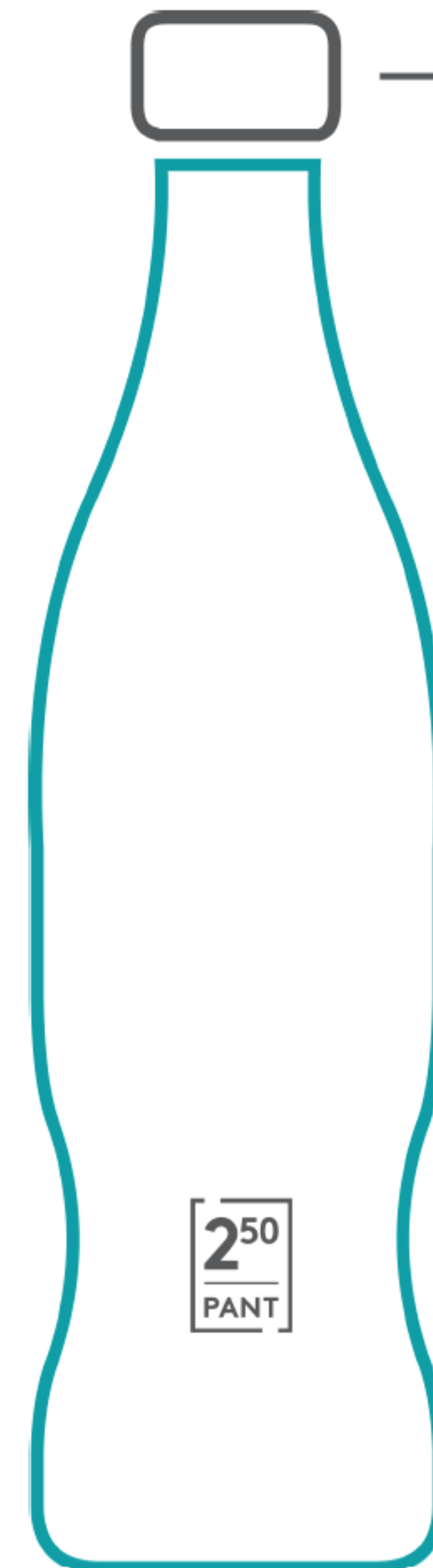
A-PET

BARRIER

Glaskin
Bestpet

LABEL & GLUE

Paper
OPP
Density lower than 1
Water solvent glue
(60°C)
Recyclable HotMelt





HOW TO JOIN NORWAY'S REFUNDABLE DEPOSIT SYSTEM FOR BEVERAGE PACKAGING

A Guide from Infinitum AS



The Deposit Symbol is the Key

Norway has a highly effective nationwide deposit and recycling system for non-refillable beverage packaging. Infinitum administers the system.

Non-refillable beverage packaging offered for sale in Norway carries both a basic levy and an environmental levy.* The size of the environmental levy falls as the rate of packaging returns increases. And once the return rate reaches 95 per cent, it ceases to be applied at all.

Products included in the deposit system display Infinitum's distinctive symbol. This symbol assures the consumers that the deposit will be refunded when the empty packaging is returned. Infinitum's easy-to-read symbol also guides store staff who handle returns manually.

*The Norwegian recycling system is a statutory scheme that imposes a basic levy and an environmental levy on beverage packaging regardless of its point of origin. Infinitum is a non-profit organization owned by Norwegian bottlers and retailers. Beverages with the following contents are exempt from environmental levy: Raw pressed juice, juice concentrates, juice, fruit nectars, fruit syrup, beverages made from vegetables, powdered products, and fruit and berry squashes and concentrates. A more detailed definition of products exempt from the environmental levy can be obtained from the Norwegian Customs and Excise. Milk, milk products, cocoa and chocolate beverages and powders are also exempt from the basic levy.

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www.infinitum.no

INFINITUM
PANT ALT. DET HAR EN VERDI.

1 Joining Infinitum

The first time a beverage producer or importer registers a product for sale in Norway, the company must join Infinitum by signing and returning Infinitum's standard agreement. To sign the agreement you need a Norwegian organisation number. When you join Infinitum, a one-time registration fee of NOK 10.000 must be paid.



2 Product Registration

When a company registers a new product, Infinitum must receive the registration form, including bar code number, six weeks before the product is launched in the Norwegian market. Registering a new product costs NOK 1.000 (The six week lead-time is needed to update bar code readers in all reverse vending machines, and for Norwegian Customs and Excise processing.)



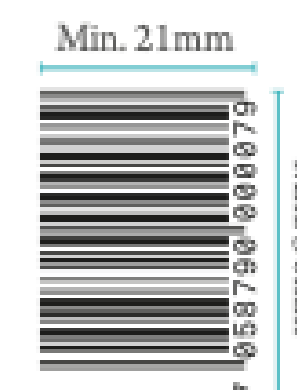
3 PET Bottle Testing

The Technical specifications form for PET bottles must be completed and submitted to Infinitum before a product is launched in the Norwegian market. Four bottles must be submitted to Infinitum for shape acceptability testing six weeks before market launch.



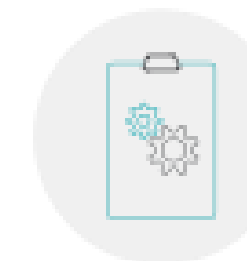
4 Approval of Deposit Symbol and Bar code

The deposit symbol and bar code as they appear on the packaging must be submitted for approval either electronically or on paper. Approvals are sent by regular mail or email.



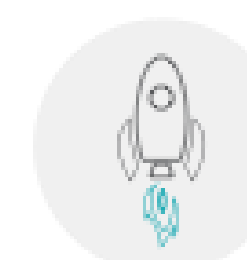
5 Technical Testing

15 cans/bottles of each EAN-code must be submitted to Infinitum for final technical testing before the product launches. Final technical tests take about a week to complete; the results are emailed to you.



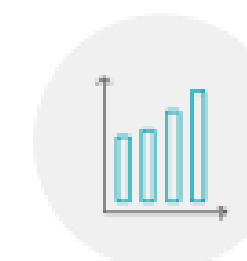
6 Launch

Your product may be launched in the Norwegian market once its design is approved, technical testing is successfully completed, and the six-week approval period has ended.



7 Reporting

You must submit a sales report to Infinitum every month. Your monthly deposit and administration fee invoice from Infinitum is based on this report.



Importer's and producers liability:

If beverage packaging fails to satisfy applicable requirements, products that have already been shipped to market may not be approved; they may thus not qualify for a fee reduction. Problems with applicable requirements may include poor bar code readability by reverse vending machines (improper color usage, insufficient contrast etc.) For PET there may also be problems arising from bottle shape. Producers and importers bear the risk associated with any packaging shortcomings.



EPR KOSTNAD PRODUSENT/IMPORTØR

01.10.2018	Aluminium	Stål	PET	HDPE
Basis EPR	-NOK 0,03	NOK 0,21	NOK 0,15	NOK 0,15
Standardkode	NOK 0,03	NOK 0,03	NOK 0,03	NOK 0,03
Lyseblå			NOK 0,08	NOK 0,08
Farget eller sleeve > 75 %			NOK 0,15	NOK 0,15
Sleeve eller etikett boks	NOK 0,03	NOK 0,03		



HANDLING FEE

01.02.2016	can aluminium	Bottles PET	Bottles HDPE
RVM with compaction	NOK 0,20	NOK 0,25	NOK 0,25
RVM without compression and manual receiving	NOK 0,05	NOK 0,10	NOK 0,10



KEY FIGURES 2017

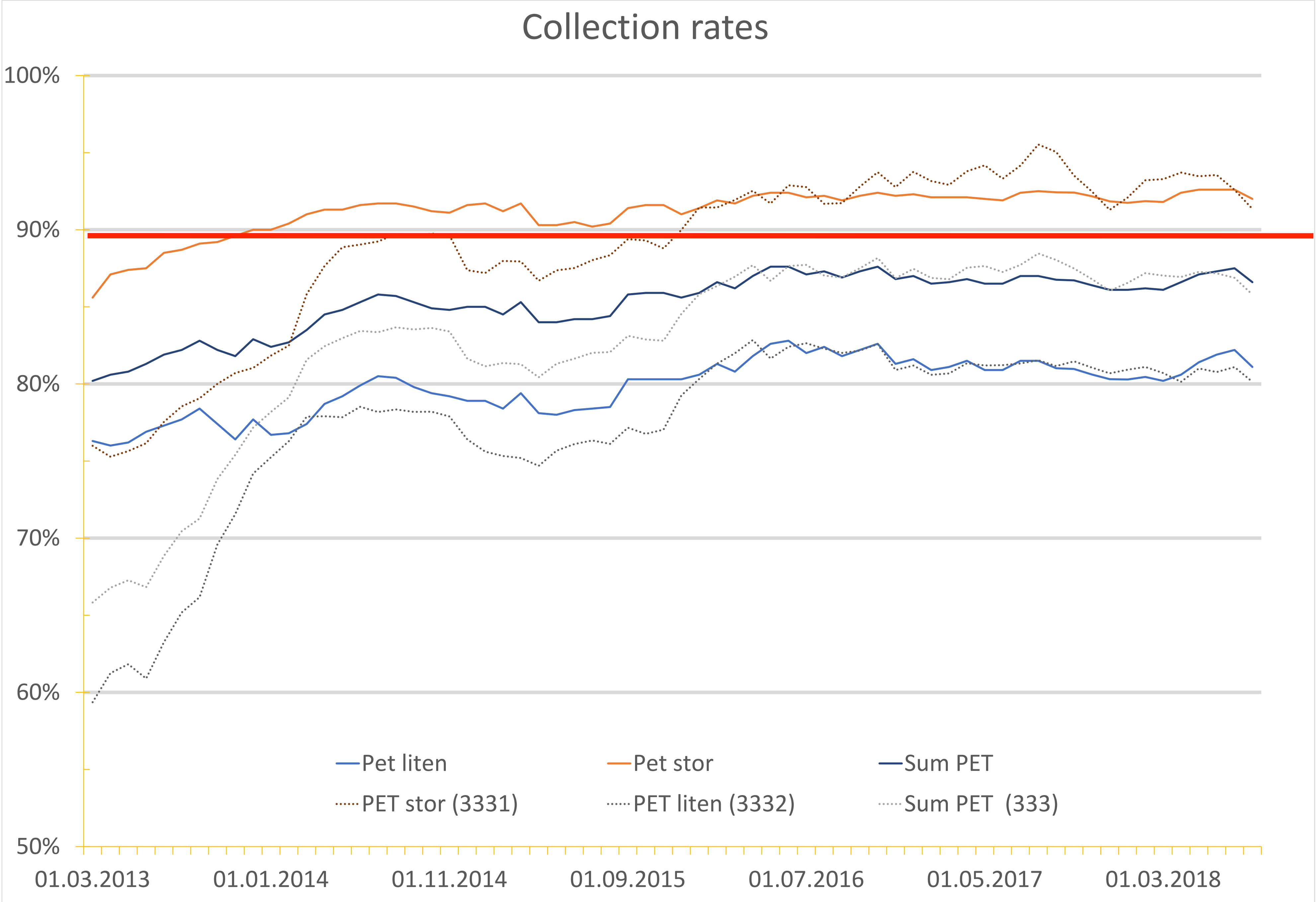


KEY FIGURES 2017

VARESTRØM	ANTALL BOKS	TONN BOKS	% AV TILFØRT	ANTALL PET	TONN PET	% AV TILFØRT
Totalt salg	614 503 691	9 525		622 628 246	22 477	
Verdikjedelager	- 12 100 000 -	188	-	800 000 -	66	
Tilført (Salg + verdikjedelager)	602 403 691	9 337	100 %	621 828 246	22 412	100 %
Totalt pantet i automat	508 096 599	7 875	84,3 %	535 687 113	19 679	87,8 %
Ut fra sentral sortering	7 245 399	112	1,2 %	1 008 428	37	0,2 % *
Ut fra slaggsortering	53 355 898	827	8,9 %			*
Ut fra kildesortert materiale	7 528 793	116,7	1,2 %	1 507 612	55	0,2 % *
Energiutnyttet	11 535 377	178,8	1,9 %	53 138 582	1 929	8,6 %
Totalt gjenvunnet fra avfall	79 665 467	1 235	13,2 %	55 654 621	2 020	9,0 %
Totalt gjenvunnet	587 762 066	9 110	97,6 %	591 341 734	21 699	96,8 %
Rest i bunnaske	11 357 138	176	1,9 %			
Tap energiutnyttelse	2 191 631	34,0	0,4 %	10 016 399	364	1,6 %
Ukjent disponering	1 092 856	16,9	0,2 %	20 470 113	349	1,6 % **
Totalt ikke pantet	94 307 092	1 462	15,7 %	86 141 133	2 733	12,2 %
Totalt	602 403 691	9 337	100 %	621 828 246	22 412	100 %
Utenlandske enheter	28 084 111			4 732 225		



Collection rates





1
PANT

2⁵⁰
PANT

Det som kan pantes
skal ikke i restavfallet.

x 10 000

ROAF

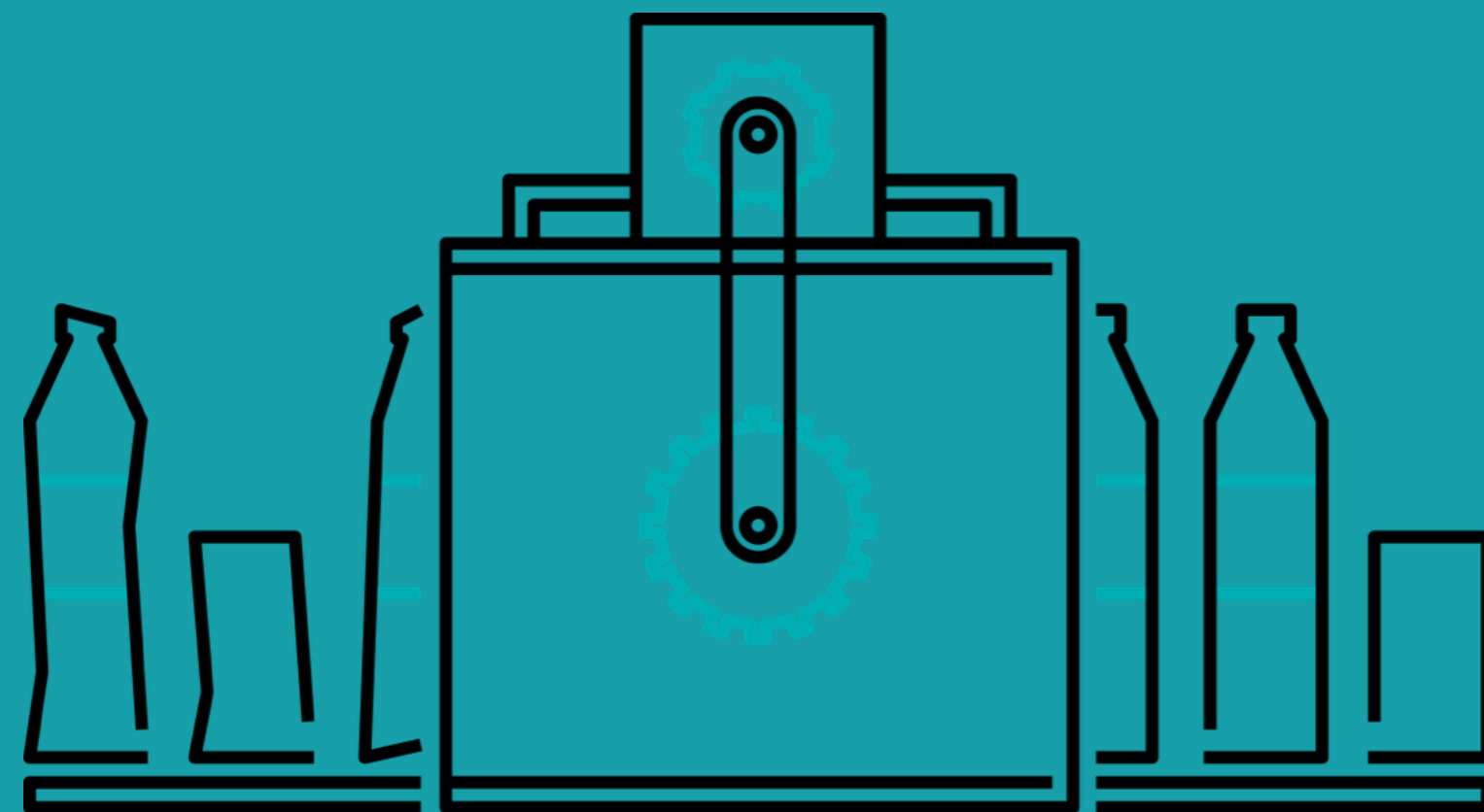
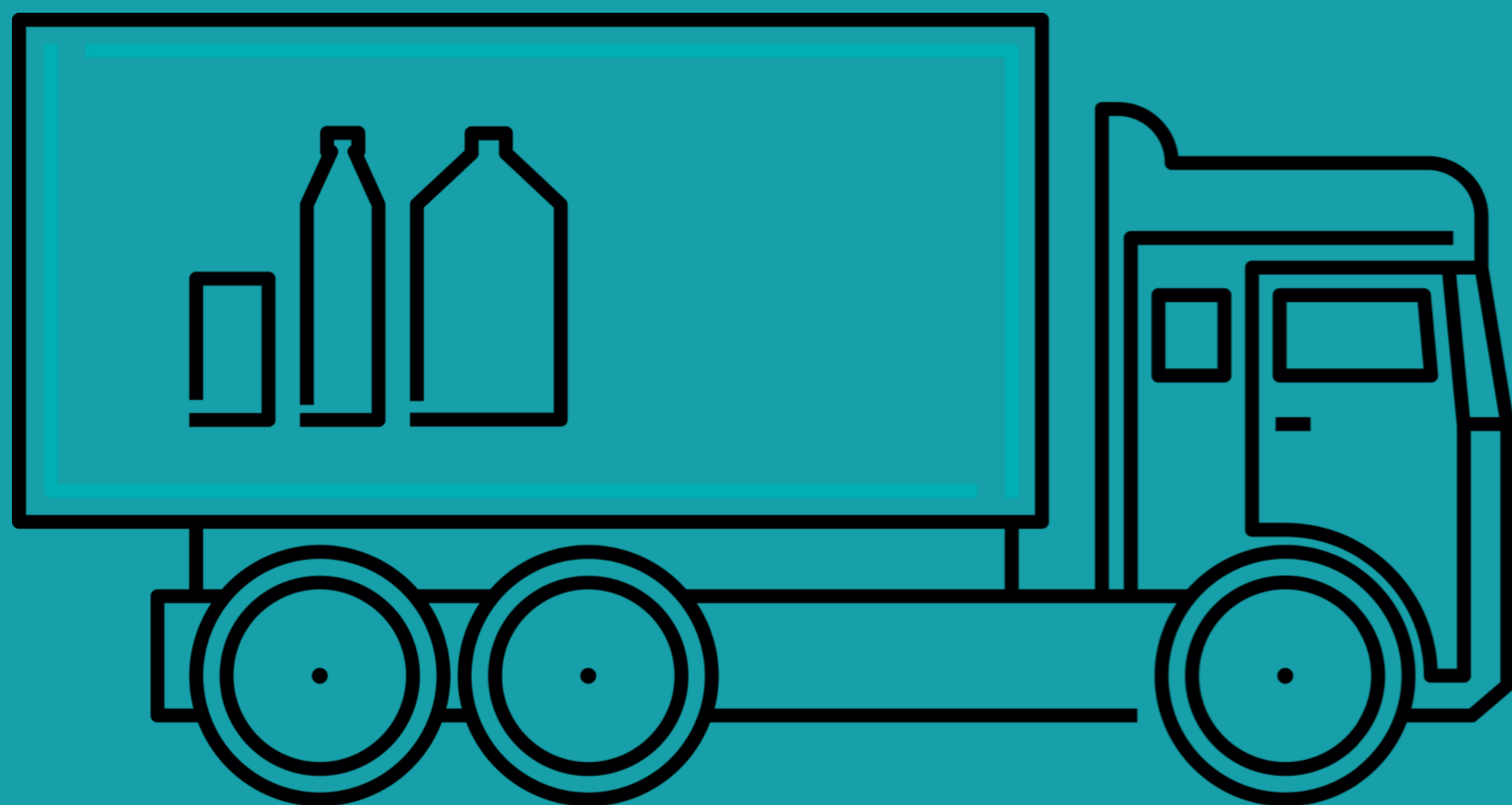
En husholdning på to personer
kaster i gennemsnitt 50 kroner
pant rett i restavfallet hvert år.

Det ekstra volumet fører til at vi
hvert år tømmer ca. 40 000
beholdere helt unødvendig.

Grovt anslått går det 5 millioner
tapte kroner gjennom sorterings-
anlegget til ROAF hvert år.

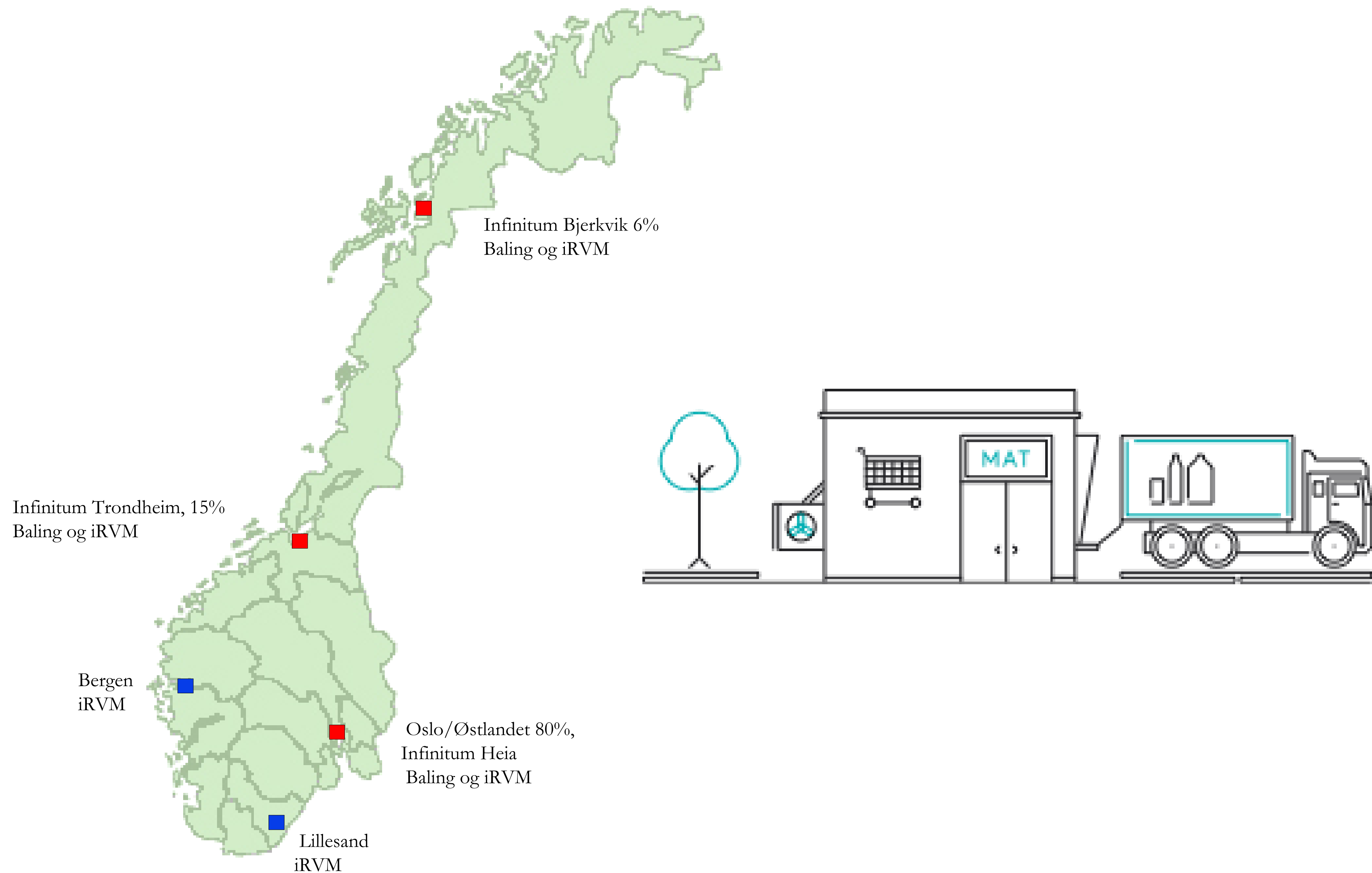


LOGISTICS AND PRODUCTION





PRODUCTION FACILITIES





PRODUCTION FACILITIES

Norway:

Collaboration between Green Dot, Municipalities and Infinitum!

5,5 mill people

11 400 manual return points

3 600 shops with RVM

35 logistic hubs

3 production facilities (investment of EUR 4 mill.)

Startup cost EUR 500 000 in 1999

The shops invest in the RVM, covered with handling fee

Small to medium size shops don't need RVM at startup

Micro loan from every household/value chain (in Norway 36 units i average)

Infinitum Trondheim, 15%
Baling og iRVM

Infinitum Bjerkvik 6%
Baling og iRVM

Bryne
iRVM

Oslo/Østlandet 80%,
Infinitum Helt
Baling og iRVM

Lillesand
iRVM





EFFICIENT LOGISTICS

93% collected through 3 600
RVM in grocery stores
1,5 mill bags

7% from 11 400 pick up
points without RVM
400 000 bags

<1 % Company's with
internet sales of grocery
og beverage



According to the regulations - all outlets selling beverage with deposit is obliged to accept deposit bottles/cans and disburse deposit as cash!



ON THE GO



EDVARD MUNCH VGS

Edvard Munch vgs
@edvardmunchvgs

Startside

Anmeldelser

Bilder

Videoer

Innlegg

Arrangementer

Om

Samfunn

Informasjon og annonser

Opprett en side

Likt Følger Del

Edvard Munch vgs

6. september kl. 12:56

Første helt konkrete ledd i arbeidet med å bli grønn skole kom i dag. Resirkulerte oljetønner til pant plasseres i kantina og ved hovedtrapp ned til resepsjonen - i alle etasjer. Bruk dem flittig! #edvardmunchvgs #grønnskole

124 4 kommentarer 2 delinger

Liker Kommenter Del

Mest relevante

Skriv en kommentar ...

Niklas Lüder bra! Infnitum Movement

Liker · Svar · 6 d

Sarasvati Flygel Jeg tok et gledeslipp i trappa da jeg så den første tønn!

Liker · Svar · 6 d

Karin Madse Kult!

Liker · Svar · 6 d





COST EFFICIENT COLLECTION
LOWEST CARBON FOOTPRINT
HIGHEST REUSE CAPABILITY

100% collection and high-grade recycling





If you invest 1,5 - you'll get 142 back!

Good deal?

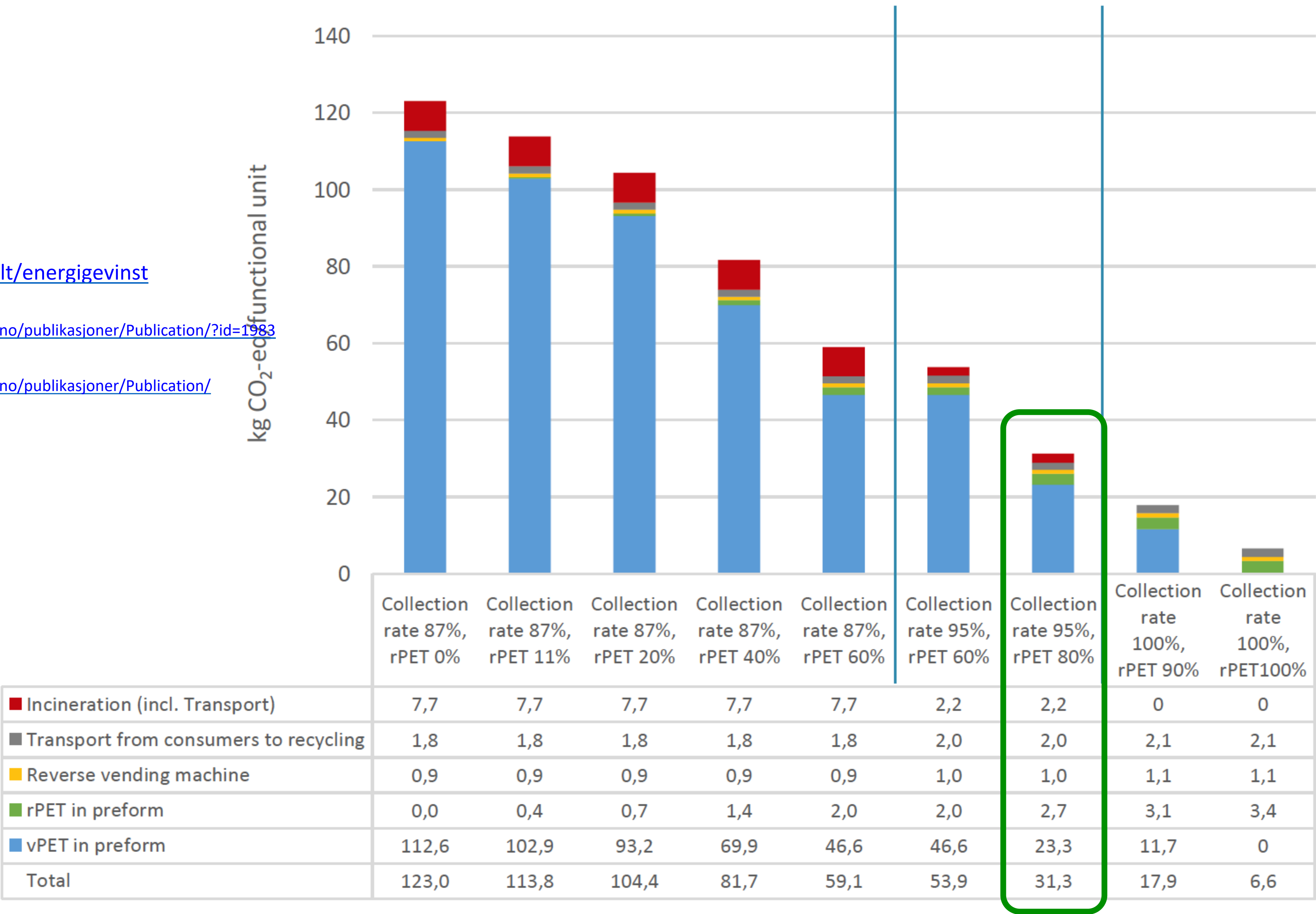
Environmental pay of 9 467%



<http://infinitum.no/aktuelt/energigevinst>

<https://www.ostfoldforskning.no/no/publikasjoner/Publication/?id=1983>

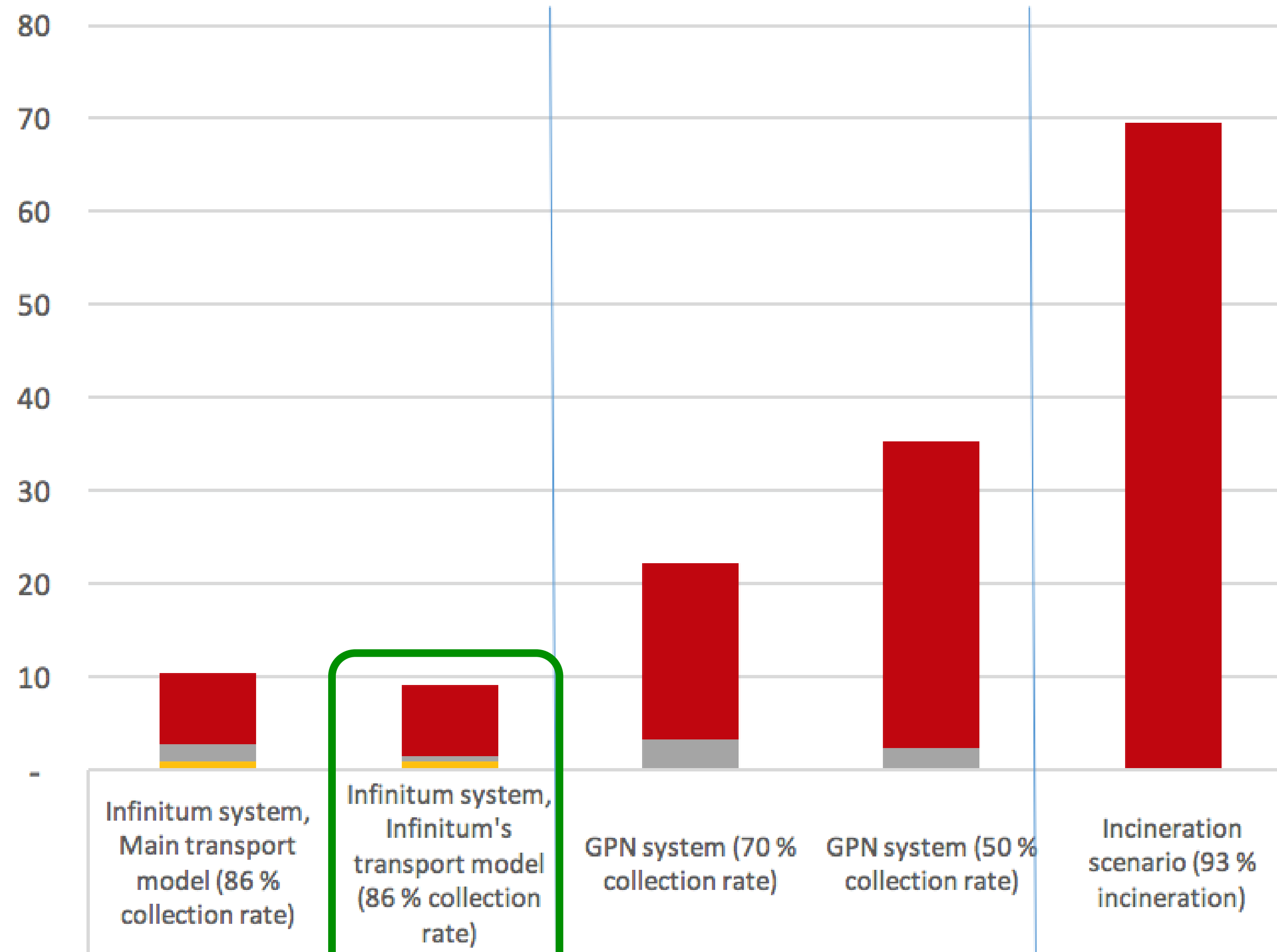
<https://www.ostfoldforskning.no/no/publikasjoner/Publication/?id=2031>



Figur 4: Klimagassutslipp per funksjonell enhet (produksjon, innsamling og behandling av PET flasker benyttet til distribusjon av 1000 liter drikkevarer) for optimaliserte scenarier for Infinitums system for PET- flasker.



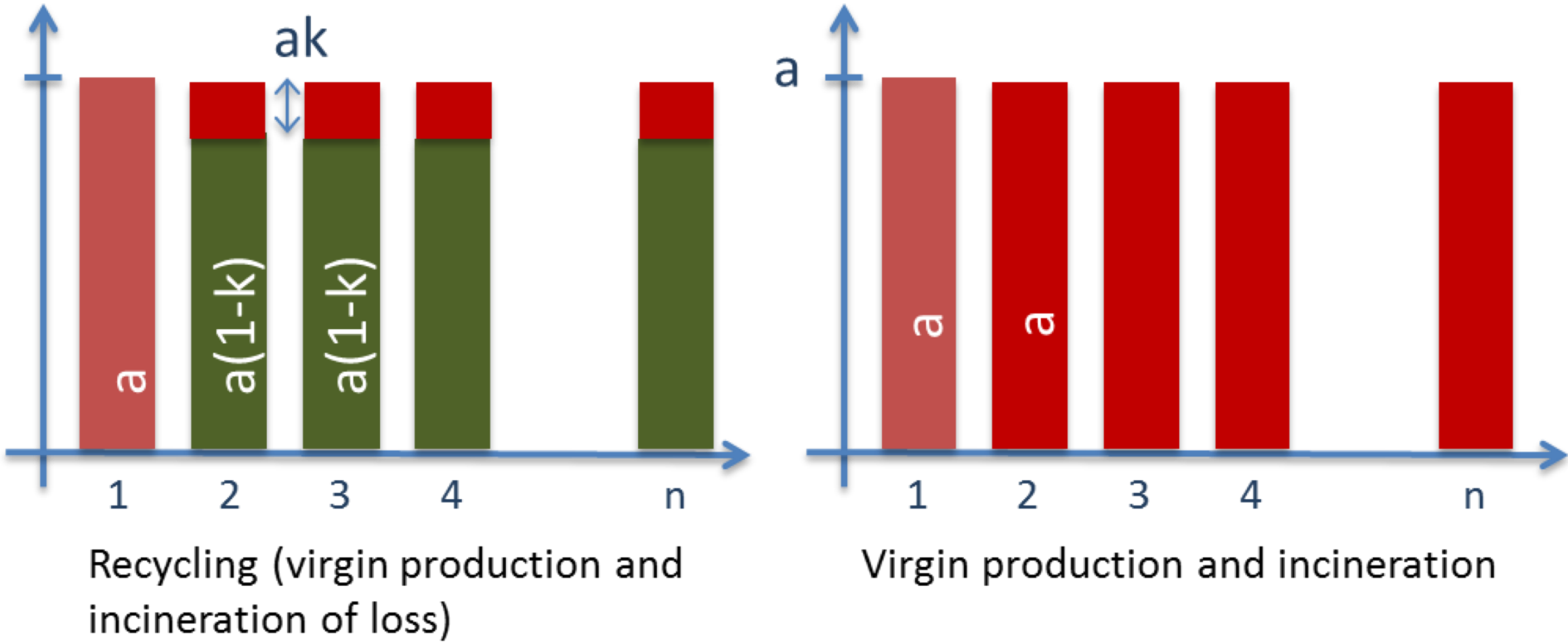
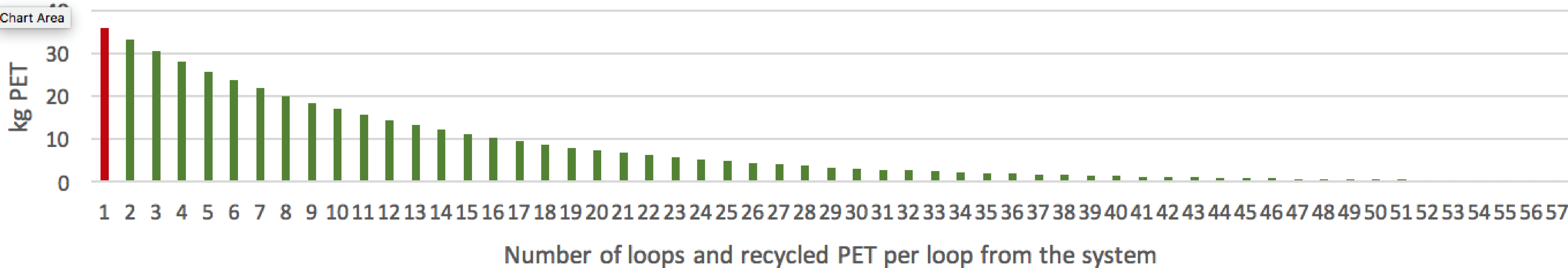
kg CO₂-eq/functional unit



■ Incineration (incl. Transport)	7,70	7,70	18,83	32,98	69,47
■ Transport from consumers to recycling	1,81	0,59	3,38	2,42	0,00
■ Reverse vending machine	0,94	0,94	0,00	0,00	0,00
Total	10,45	9,23	22,21	35,39	69,47



DEPOSIT AGAIN AND AGAIN AND...!





DEPOSIT AGAIN AND AGAIN AND...!

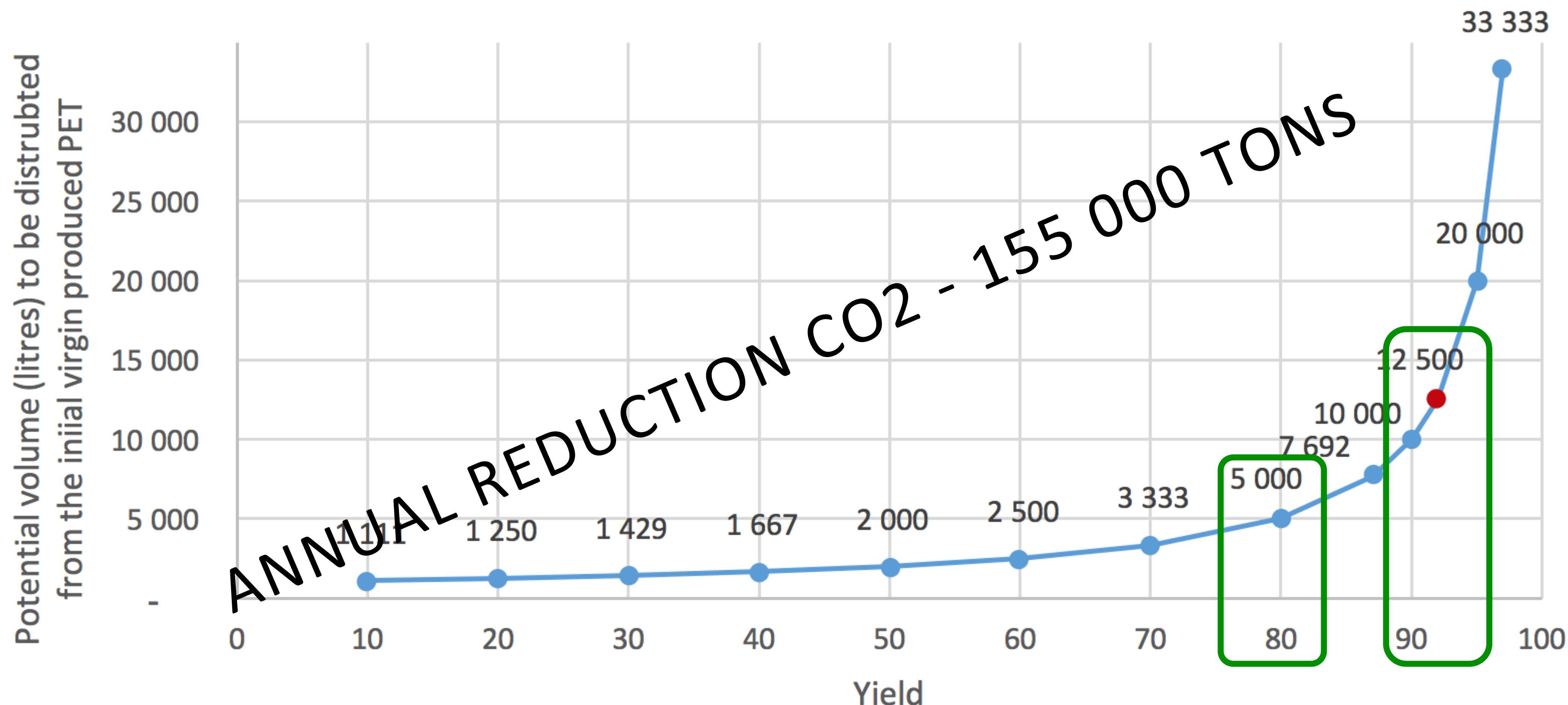


Figure 2. Potential delivered volume of beverage from the initial virgin produced PET material for distributing 1 000 litres according to recycling yield. Data for yield 92% shown by red point.



Annual saving of 2 640 GWh when using
NrPet bottles instead of glass bottles!



NO LITTERING

LOWEST COLLECTION COST

BASE FOR RECYCLING BUSINESS

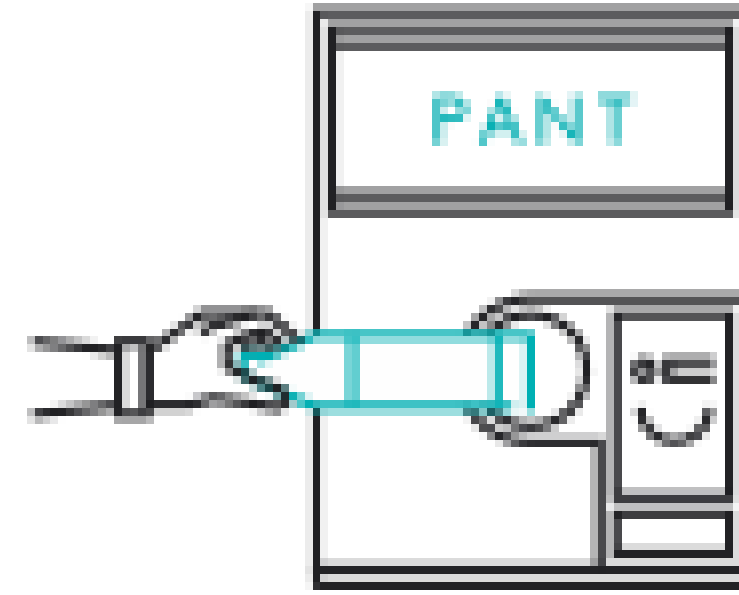
REDUCED COST FOR MUNICIPALITIES

REDUCES NEED FOR OIL TO PLASTIC WITH 80 %

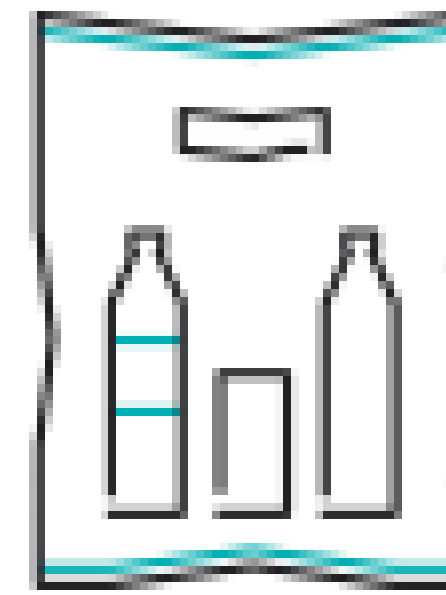
REDUCED MARIN LITTERING



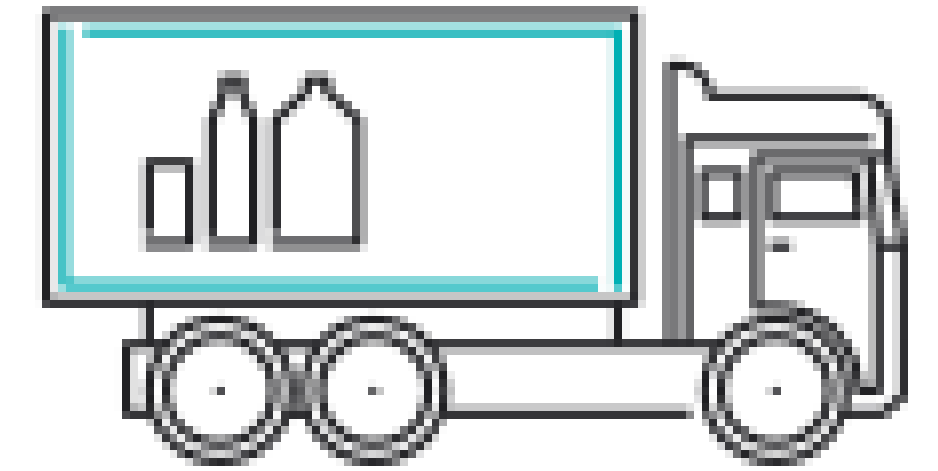
Happiness



Pant



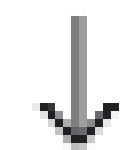
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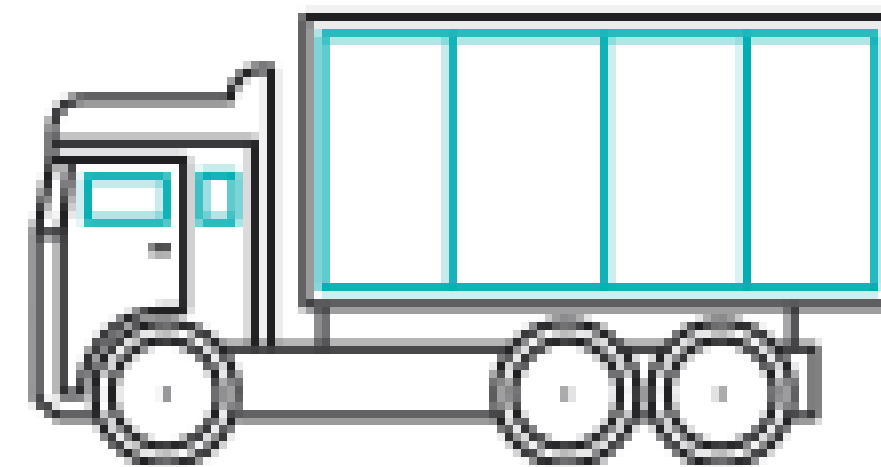
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INFINITUM



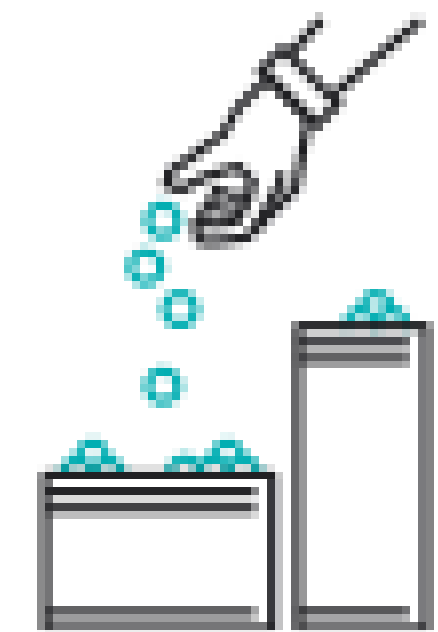
High grade recycling



Transport



Sorting and bailing



Transport



Annual saving of 2 640 GWh when using NrPet bottles instead of glass bottles!
Equivalent to annual energy consumption of 1.1 million Tesla cars