



Molecules Are Forever

**WASTEWISE  
GROUP**

**PYROLYYSIPILOTTI muovisten  
kaapelipäällysteiden käsittelyyn Nokian  
laitoksella**

Kaisa Suvilampi, Wastewise Group Oy

**KIERTOTIE-pilottien esittelytilaisuus  
webinaari 29.11.2023**





# Global waste problems – Our driving force

Millions of tons Rubber waste, mainly tyres, is disposed globally every year. There's no use to burn them, but to REUSE is a smart solution.



The massive explode in plastic consumption has caused a serious global waste problem. There is a huge need in plastic recycling technologies, both mechanical and chemical!

**With Our Pyrolysis technology we turn waste  
back to sustainable circular raw materials!**

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# Wastewise Production Processes

## Wastewise Oy

MECHANICAL TREATMENT OF  
RUBBER WASTE AND PLASTIC  
WASTE PREPARATION FOR PYROLYSIS

Sorting | Crushing

@ Eco Industrial Park,  
Nokia <https://eco3.fi/>

## Wastewise Group Oy

PYROLYSIS PROCESS  
FOR PRE-TREATED PLASTIC WASTE

Thermochemical treatment in high  
temperature and in the absence of oxygen.



ELT-Recycling



Field coatings



Plastic waste  
550 kg/h,  
4000 tn/a per line

Pyrolysis Oil



75...90 % of production  
3000...3600tn/a  
For recycled plastic  
production

Pyrolysis Charcoal



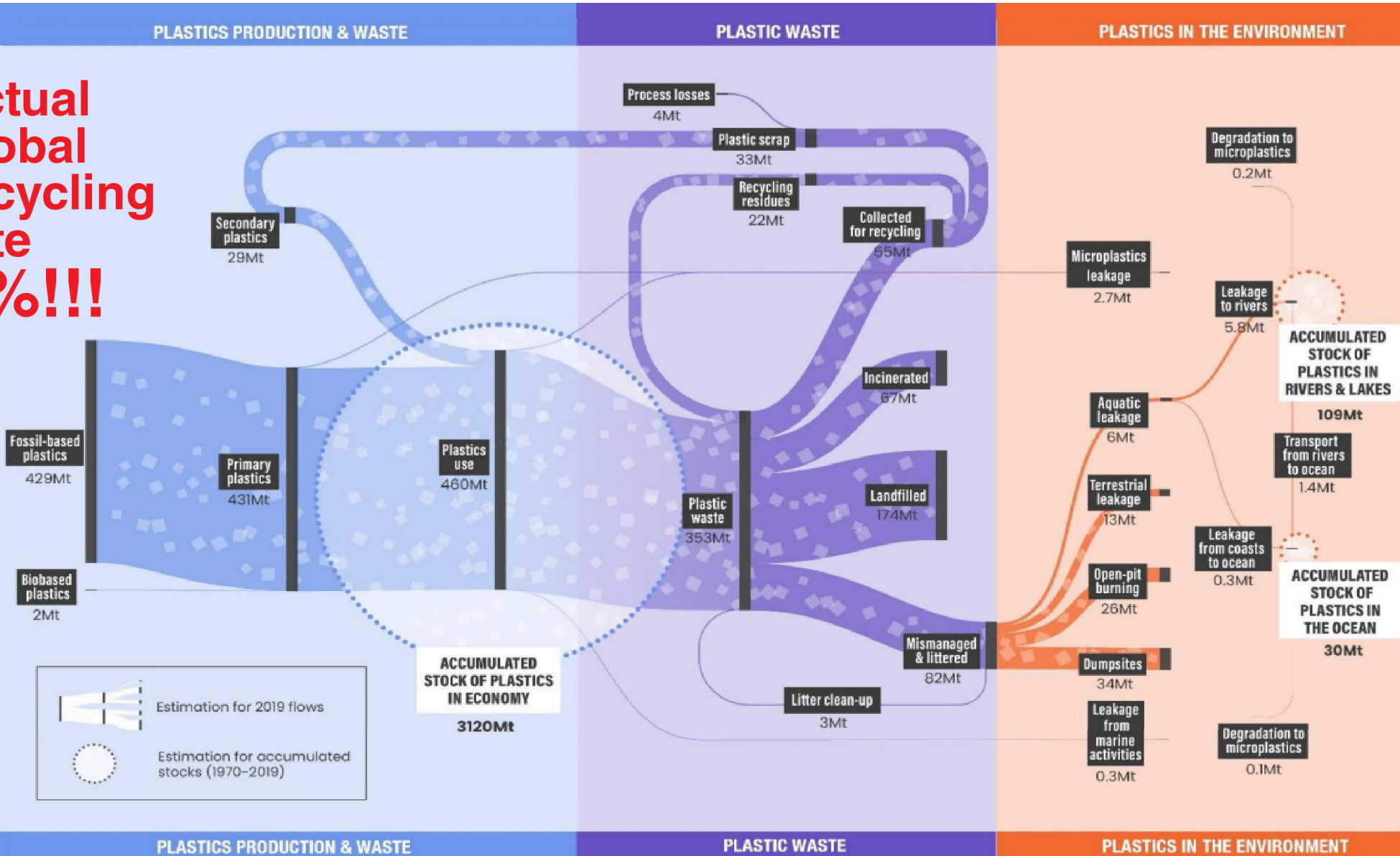
<1...10% of production  
40...600tn/a  
Product development  
for rCB / tarmac /  
filtration purposes

Pyrolysis Gas



10...15% of production  
400...600 tn/a  
(~6400...9400 MWh/a)  
For internal energy  
production

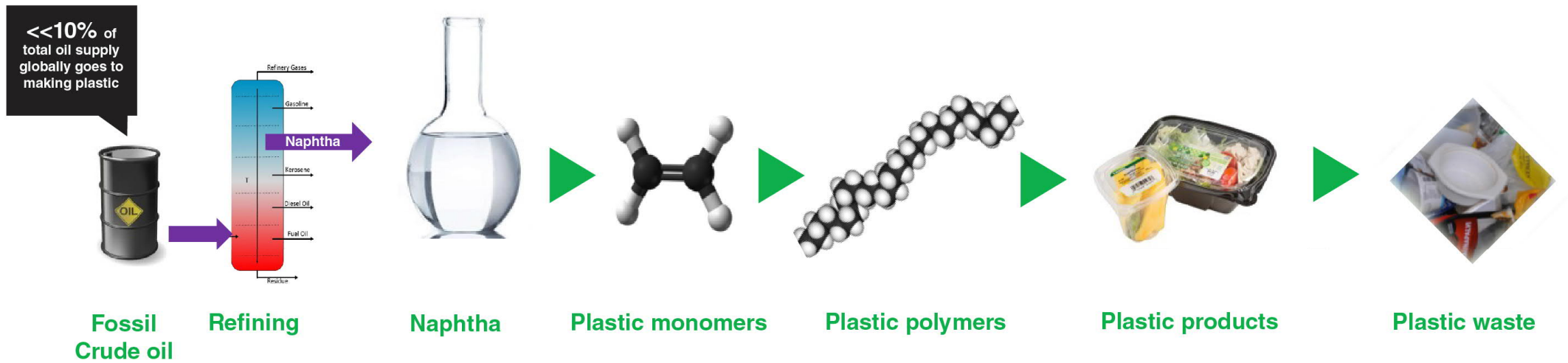
**Actual  
global  
recycling  
rate  
6%!!!**



Source: OECD Global Plastics Outlook Database, <https://doi.org/10.1787/c0821f81-en>.

# Plastic Industry needs a green transition!

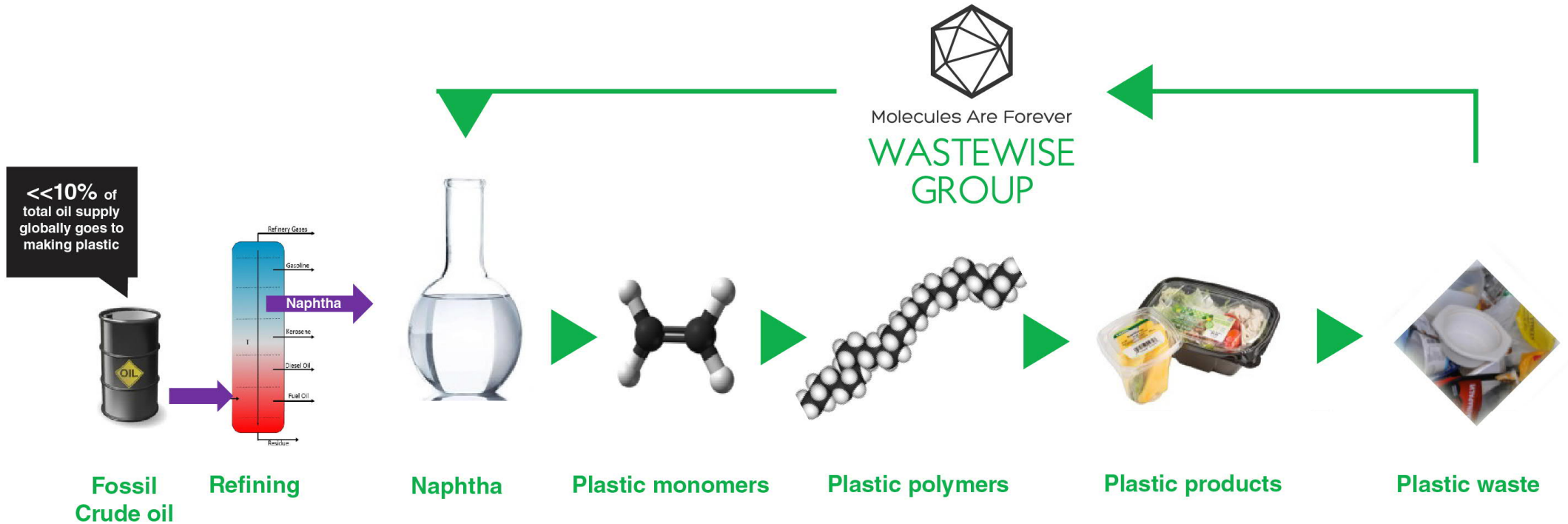
- From linear to circular
- Mechanical and chemical recycling needed



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# Plastic Industry needs a green transition!

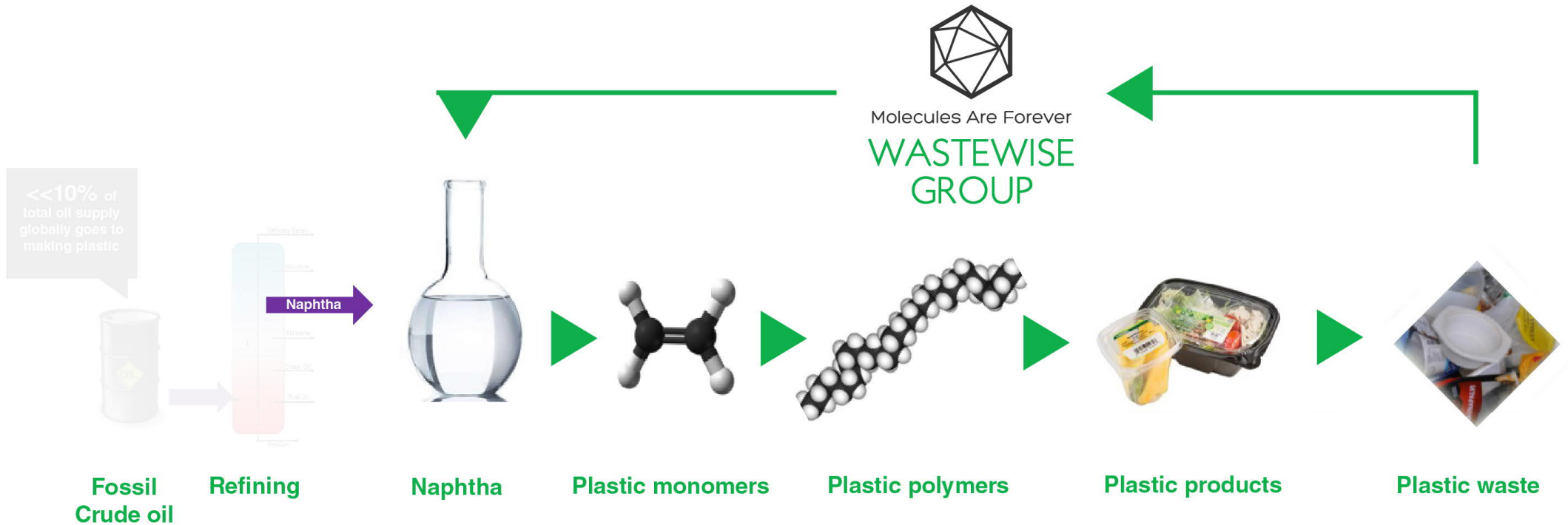
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# Plastic Industry needs a green transition!

- From linear to circular
- Mechanical and chemical recycling needed



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# Wastewise Turns Plastic waste To Raw Material Of Plastic

- Liquefying Mixed plastic waste to high quality naphtha like pyrolysis oil
- Our circular pyrolysis oil replaces fossil crude oil as a refinery feed in production of new plastic raw material
- By replacing plastic waste incineration with our process, we save > 1,7 ton CO<sub>2</sub>eq per ton of waste chemically recycled
- Our Production is ISCC Plus certified (scopes: collection point, processing Unit)

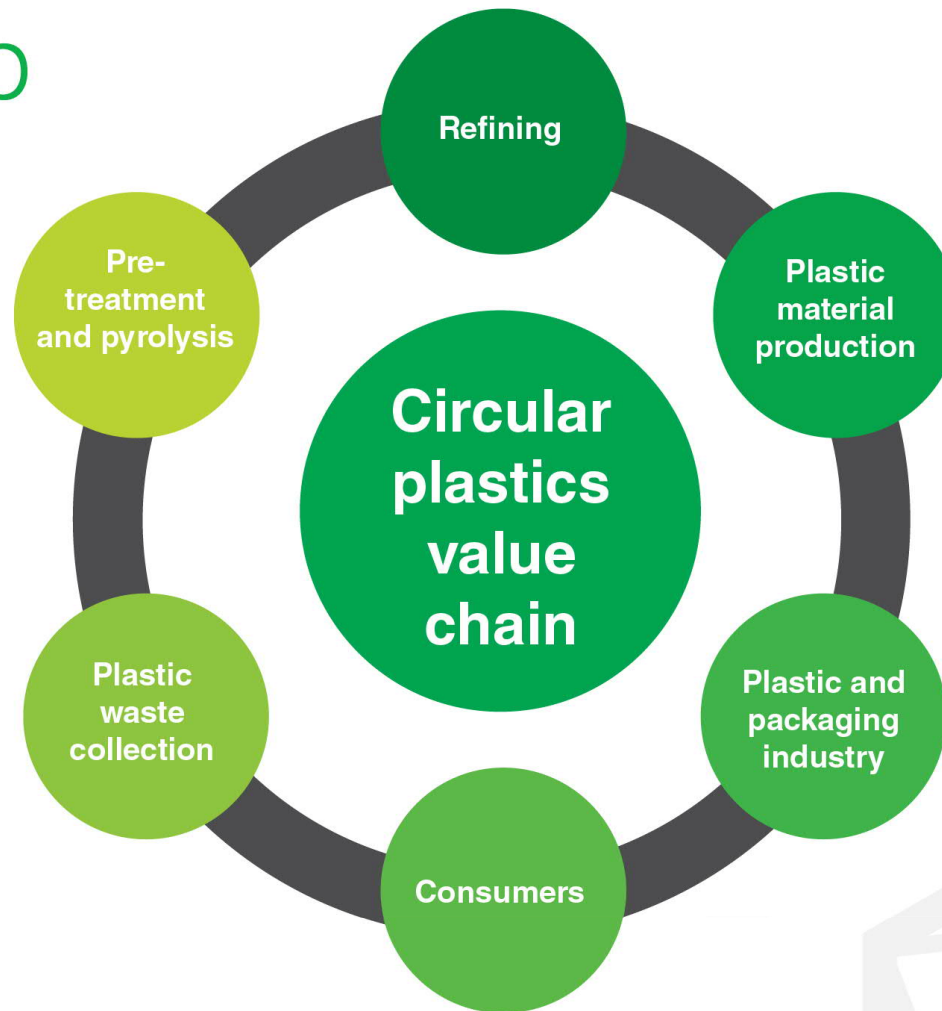


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# Closing the loop together with our partners

- enabling plastic industry to take their jump from fossil economy to a circular economy!



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# Kiertotalouspilotin tavoitteena laajentaa PEX- muovijätteen käsittelymahdollisuuksia Nokian laitoksella ja lisätä muovijätteen kierrätystä (poltosta –kemialliseen kierrätykseen)

- ✓ Wastewisellä onnistunut referenssi PEX-putkijätteen kemiallisesta kierrättämisestä takaisin putkituotteeksi, case Uponor.
- ✓ Uuden jätejakeen saaminen pyrolyysin avulla kemialliseen kierrätykseen vaatii edellyttää aina standardiemme mukaisen esiselvitysvaiheen, sekä pilotoinnin jätteen soveltuvuuden selvittämiseksi



**Neste, Uponor, Wastewise and Borealis have successfully produced pipes made of cross-linked polyethylene (PEX) which was based on feedstock gained from chemically recycled post-industrial waste plastic from PEX pipe production.**

Project among the first implementations of chemical recycling of PEX.

Little more than six months passed between project start and production of first pipes.

Partners will evaluate further opportunities for cooperation, including higher recycled volumes.

“We are very excited about this collaboration as it gives us a head start on our transition to circular materials. PEX is by far the material that has the most versatile application uses, thanks to its superior properties for the construction industry.”

THOMAS FUHR, Chief Technology Officer at Uponor

# Kiertotalouspilotissa testaamme kaapeleiden pinnoitusmuovijätteen (PEX muovi) soveltuvuuden keemialliseen kierrätykseen

Jätettä syntyy suoraan teollisen tuotannon sivuvirtana (post Industrial waste) sekä käytettyjen kaapeleiden esikäsittelyn jälkeen (post consumer waste). Tällä hetkellä jäte päättyy polttoon.

## PILOTIN TOTEUTUS ja AIKATAULU

- ✓ Jätejakeen laatutietojen kerääminen ja jätejakeen kemiallisen koostumuksen selvittäminen laboratorioanalyseilla.
  - ✓ VALMIS → soveltuu laadun puolesta prosessiin
- ✓ Noin 1000 kg jäte-erän pilot-tuotanto Nokian tuotantolaitoksella.
  - ✓ N. 1000kg näyte-erä saatu Nokialle, pilotajo arviolta vko 49.
- ✓ Pilot-tuotannossa syntyvän pyrolyysiöljyn laadun analysointi laboratorioanalyseilla ja Nesteen soveltuvuusarviointi.
  - ✓ Tavoite saada valmiiksi vko 51 (riippuu Nesteen aikataulusta)
- ✓ Pilot -testin raportointi. Aikataulu joulukuu 2023.





Thank You!

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