

Deltalinqs

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Mark Demuyne



Circular Plastics NL a National Growth Fund program

Category: Research, development and innovation

Program	NGF round	Subsidy amount (M€)
Quantum Delta NL	1	615
Groenvermogen II	2	500
Photondelta	2	471
NXTGEN HIGHTECH	2	450
Luchtvaart in transitie	2	383
Groenvermogen	1	238
BioBased Circular	3	338
Oncode-PACT	2	325
AiNed	1	276
Biotech booster	2	246
Circular Plastics NL	2	220
Nieuwe warmte nu	2	200
Zelfdenkende systemen	2	97

Circular Plastics NL

The goal of the program is:

- to make plastics fully circular and use subsidies to accelerate the transition by realizing material and process innovations and focusing on bottlenecks in different value chains to close the cycles for existing plastics.
- The program runs for eight years and has eight program lines working towards 100% circularity in 2050 and offering the Dutch economy sustainable growth opportunities.
- New materials are being developed that can replace materials that are difficult to recycle in the future. Specific cycles can be closed in showcases.

The program is split into **3 phases**:

- 1st phase: 2023-2024: 124 M€
- 2nd phase: 2025-2026: 43 M€
- 3rd phase: 2027-2030: 53 M€



Circular Plastics NL Program lines

Program lines

P1. System integration & Design (incl. microplastics)

P2. Characterization, sorting and washing

P3. Recycling of polyolefin packaging

P4. Recycling of styrenics

P5. Chemical depolymerization

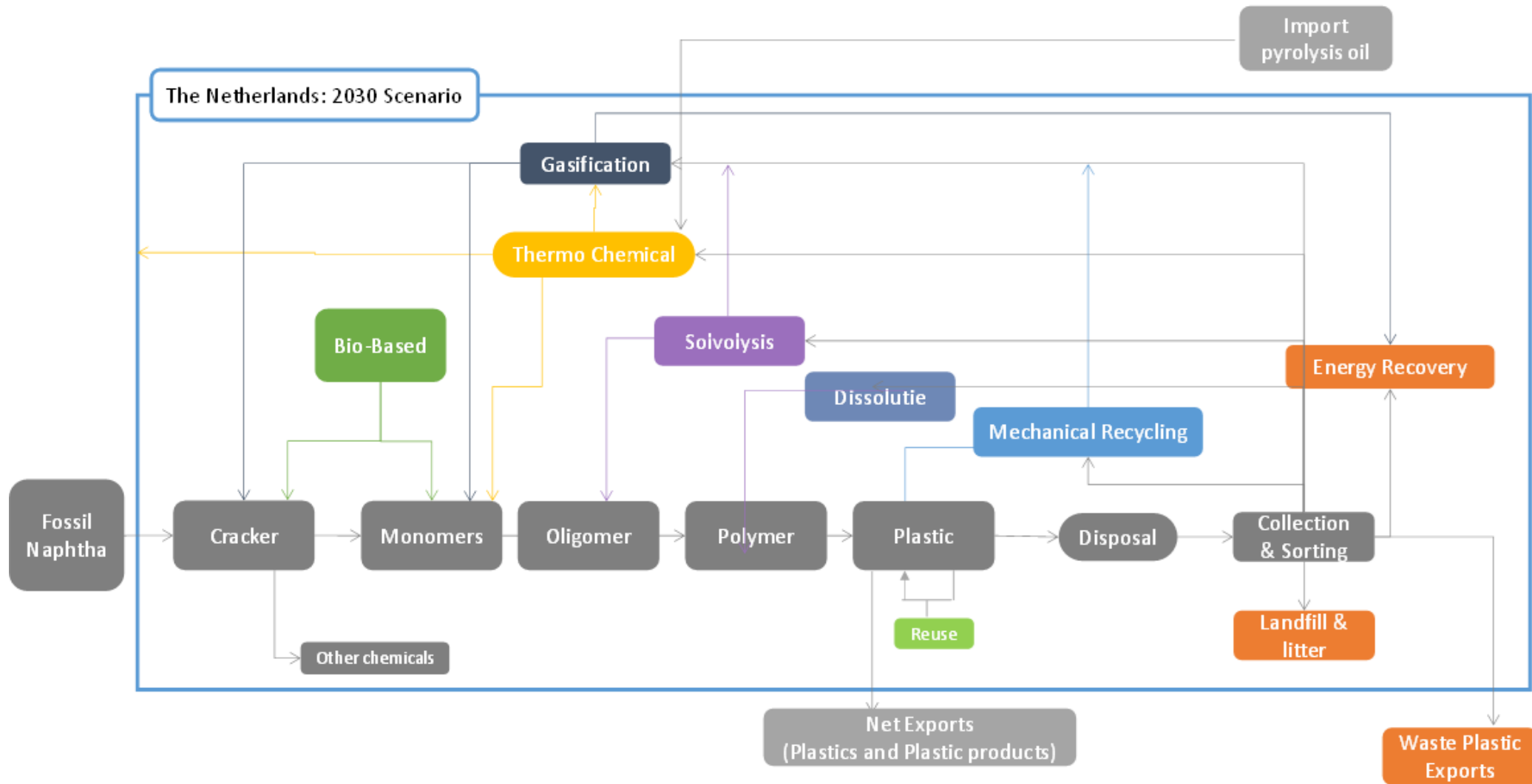
P6. Thermochemical recycling

P7. Brightlands Circular Space

P8. Incubator



NL 2030 Scenario: Recycling Technologies



CPNL Open Calls 2023: **in scope**

Program lines

P1. System integration & Design (incl. microplastics)

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P6. Thermochemical recycling

P7. Brightlands Circular Space

P8. Incubator

RVO: CPNL Tender

Research Projects & Showcases

NWO: scientific research (PPP*)

* Public Private Partnership instrument



NWO: P8 Incubator (PPP)

Public Private Partnerships with a minimum 10% co-finance contribution

Scientific research by universities and TO2 institutes

Themes

Design of circular plastics

Material development for better recyclable products and materials

Characterization, sorting & washing techniques

Higher quality and quantity of sorting output, quality monitoring in recycling processes, microplastics mitigation

Recycling techniques

Recycling techniques with higher efficiency and yields

Budget

Total budget: 6 M€ / 10 projects

Project budget: max. 600 k€ (excluding 10% co-finance contribution)



RVO: research projects and showcases

			program line items	M€
research projects	RVO 1	P2	Research project on characterization technologies to enhance recycling output quality	2,0
	RVO 2	P2	Research project on the development of a digital expert system in plastic waste sorting	1,2
	RVO 3	P2	Research project on the development of specific pre-treatment and sorting techniques for synthetic rubbers	1,5
			subtotal	4,7
show-cases	RVO 4	P3	Showcase HDPE /PP (rigid) packaging	7,8
	RVO 5	P3	Showcase (L)LDPE flexible foils	8,8
	RVO 6	P4	Showcase styrenics	3,0
	RVO 7	P5	Showcase PET packaging	2,0
	RVO 8	P5	Showcase textiles	5,0
	RVO 9	P5	Showcase carpets	2,4
	RVO 10	P5	Showcase PU foams	1,5
	RVO 11	P5	Showcase including demo plant for chemical depolymerisation of PET, PA and/or PU	9,0
	RVO 12	P6	Showcase mixed wasted streams for thermo chemical recycling	3,0
			subtotal	42,5
			GRAND TOTAL	47,2



RVO: research projects and showcases

Timeline

- Opening call 12 October 2023
- CPNL Matchmaking site 12 October 2023 until 1 January 2024
- Application deadline 11 January 2024, 17: 00 hr.
- Decision by an independent commission April 2024

Tender process

- Eligibility check by RVO proposal must be complete
- Advisory board: assessment and ranking under NDA
- After ranking: questions on budget and finance
- Per subject: subsidy for one project
- Awarded: letter with subsidy obligations
- Rejection: letter with ranking and motivation
- Public summary of awarded projects will be published (RVO and CPNL)



RVO: CPNL tender **maximum subsidy %**

participant	IO: Industrial Research	EO: Experimental Development	Demo: Demonstration Plant	Knowledge Dissemination
Knowledge/research institution	80% if not economical	80% if not economical	n.a.	100%
Small company	70%	45%	60%	100%
Middle sized company	60%	35%	50%	100%
Large company	50%	25%	40%	100%
	Includes project management activities	Includes project management activities Includes pilot plant development	Subsidy applies on additional cost versus a reference investment, see AGVV 47	Max. 25k€ for a showcase and 50k€ for a research project For companies under the de-minimize ruling



RVO: CPNL tender ranking & criteria

Criteria	Showcase	Research project
Fit with the program	10%	10%
Contribution to the improvement of quality and quantity of recycling (impact)	20%	20%
Succes rate of the project	25%	15%
Quality of the plan and consortium	20%	20%
Degree of innovation	15%	15%
Quality of knowledge dissemination plan	10%	20%

RVO: CPNL tender Consortium roles

Role	Definition
Polymer producer	Producing polymer materials
Product designer	Translating functional requirements of plastics products into polymer material specifications
Brand owner	Specification of functional requirements of plastic product for a brand
Converter	Processing of polymer materials into plastic products
Waste collector	Collecting post-consumer or industrial plastic waste
Waste processor	Sorting, washing and/or treatment of plastic waste streams
Recycler	Recycling of plastic waste via mechanical, physical or (thermo)chemical processes into feedstock for new polymer materials
Engineer	Design, engineering and installation of industrial process equipment and plants
Knowledge/research institution	Applied scientific research and development
Value chain management	Dedicated project management aimed at collaboration and integration of new/innovative activities across the value chain

A company can fulfill different roles in 1 consortium. A role does not need to be its core activity



RVO-1: P2 Characterization Technologies (2 M€)

Goal

Develop in-line measuring and characterization techniques to enhance the output quality of the recycling process (recyclate, oligomer, monomer)

Material / Value Chain

Compatible with feedstock from packaging streams

Scope & Activities

Applied to min. 1 recycling technology
IO / EO

Consortia roles (minimum)

Recycler
Knowledge/research institution

Consortia roles (complementary)

Waste processor
Converter
Product Designer

RVO-2: P2 Digital Expert System for sorting (1,2 M€)

Goal

Development and demonstration of a digital expert system to predict recycle quality and optimize sorting and recycling routes.

Material / Value Chain

Detection of at least PE, PP, and PET from packaging streams

Scope & Activities

Charact. Sorting & Washing
Link with ≥ 1 recycling technology
IO / EO

Consortia roles (minimum)

Waste processor
Knowledge/research institution
Consortia roles (complementary)
Recycler
Waste collector

RVO-3: P2 Pre-treatment & sorting of rubber (1,5 M€)

Goal

Develop methods for pre-treatment and sorting of synthetic rubbers to prepare for a devulcanization step

Material / Value Chain

Synthetic rubbers
Tyres

Scope & Activities

Charact. Sorting & Washing
IO / EO

Consortia roles (minimum)

Waste processor
Recycler

Consortia roles (complementary)

Waste collector
Brand Owner
Value chain management
Knowledge/research institution

RVO-4: P3 Showcase (rigid) packaging (7,8 M€)

Goal

Optimize the value chain and improve recycle quality and quantity of rigid polyolefine packaging

Material / Value chain

Rigid PP and/or (HD)PE from food or non-food packaging waste streams

Scope & Activities

Design
Charact. Sorting & Washing
Mechanical or Dissolution recycling
IO / EO / Demo

Consortia roles (minimum)

Product designer
Waste processor
Recycler

Consortia roles (complementary)

Brand Owner
Waste collector
Value chain management
Polymer producer
Converter

RVO-5: P3 Showcase flexible foils (8,8 M€)

Goal

Optimize the value chain and improve recyclate quality and quantity of flexible PE foils

Material / Value Chain

LDPE and LLDPE from waste streams

Scope & Activities

Design
Charact. Sorting & Washing, Mechanical or Dissolution Recycling
IO / EO / Demo

Consortia roles (minimum)

Product designer
Waste processor
Recycler

Consortia roles (complementary)

Polymer producer
Waste collector
Value chain management
Converter

RVO-6: P4 Showcase styrenics (3 M€)

Goal

Optimize the value chain and improve recycle quality and quantity of styrene-based materials

Material / Value Chain

Focus on PS / EPS / ABS, other materials can also be taken into account
Construction, electronics and/or automotive industries

Scope & Activities

Charact. Sorting and Washing
Dissolution, chemical or thermochemical
Recycling
IO / EO / Demo

Consortia roles (minimum)

Product designer
Waste processor
Recycler

Consortia roles (complementary)

Brand Owner
Waste collector
Value chain management
Polymer producer
Converter
Knowledge/research institution

RVO-7: P5 Showcase PET packaging (2 M€)

Goal

Optimize the value chain and improve recyclate quality and quantity of PET materials that are not part of a deposit scheme (like bottles)

Material / Value Chain

PET packaging (e.g. trays for meat) not part of a deposit scheme (like bottles)

Scope & Activities

Design
Charact. Sorting & Washing, for chemical recycling*
IO / EO

Consortia roles (minimum)

Product designer
Waste processor
Recycler

Consortia roles (complementary)

Brand Owner
Waste collector
Value chain management
Converter
Knowledge/research institution

* Development of chemical recycling has a separate budget in P5.55

RVO-8: P5 Showcase Textiles (5 M€)

Goal

Optimize the value chain and improve recyclate quality & quantity of textile materials

Material / Value Chain

Focus on polyester from textiles, other materials like cotton and elastane can also be taken into account
Domestic and industrial textiles

Scope & Activities

Charact. Sorting & Washing, for chemical recycling*
IO / EO / Demo

Consortia roles (minimum)

Waste collector
Waste processor
Recycler

Consortia roles (complementary)

Product designer
Value chain management
Knowledge/research institution

* Development of chemical recycling has a separate budget in P5.55

RVO-9: P5 Showcase Carpets (2,4 M€)

Goal

Optimize the value chain and improve recycle quality end quantity of carpets

Material / Value Chain

PA, PET or PP carpets

Scope & Activities

Design
Charact. Sorting & Washing, for chemical recycling (PET/PA)* or mechanical recycling (PP)
IO / EO

Consortia roles (minimum)

Product designer
Waste processor
Waste collector

Consortia roles (complementary)

Polymer producer
Recycler
Brand owner
Value chain management
Knowledge/research institution

* Development of chemical recycling has a separate budget in P5.55

RVO-10: P5 Showcase PU Foams (1,5 M€)

Goal

Optimize the value chain and improve recycle quality and quantity of soft PU foams

Material / Value Chain

Soft PU foams used in furniture and automotive

Scope & Activities

Design
Charact. Sorting & Washing
Chemical recycling
IO / EO

Consortia roles (minimum)

Product designer
Waste processor
Recycler
Knowledge/
research institution

Consortia roles (complementary)

Polymer producer
Waste collector
Brand owner

RVO-11: P5 Demoplant Chem. Depolymerization (9 M€)

Goal

Demonstration of chemical depolymerization of PET, PA and/or PU on a large pre-commercial scale

Material / Value Chain

PET, PA and/or PU

Scope & Activities

Chemical recycling

Consortia roles (minimum)

Waste processor
Recycler
Engineer

Consortia roles (complementary)

Polymer producer
Converter
Knowledge/research institution

RVO-12: P6 Showcase mixed waste streams (3 M€)

Goal

The development and demonstration on pilot scale of a scalable process to use mixed waste streams in thermochemical recycling for synthesis of monomers.

Material / Value Chain

Mixed waste streams that are not suitable for mechanical, dissolution recycling.
Production of syngas is out of scope

Scope & Activities

Charact. Sorting & Washing
Thermochemical recycling
IO / EO

Consortia roles (minimum)

Waste processor

Recycler

Consortia roles (complementary)

Polymer producer

Engineer

Knowledge/research institution

CPNL program lines: **Team Expertise**



Roland ten Klooster
Susanne Waaijers

P1. Design
P1. Systemintegration and Microplastics



Louis Jetten

P2. Characterization, sorting and washing



Mark Demuyne

P3. Recycling of polyolefine packaging

Tom Claessen

P4. Recycling of styrenics
P5. Textiles



Jan Willem Slijkoord

P5. Chem. Depolymerization (excl. Textiles)

Joop Groen

P6. Thermochemical recycling



Maurits Boeije

P8. Incubator

Circular Plastics NL – beyond 2023

- Consortium building
- Network building
- Knowledge dissemination
- Preparation new calls



Direct networking and online matchmaking via B2Match

<https://circular-plastics-nl-community.b2match.io/>



circular-plastics-nl | info@circularplasticsnl.org | www.circularplasticsnl.org