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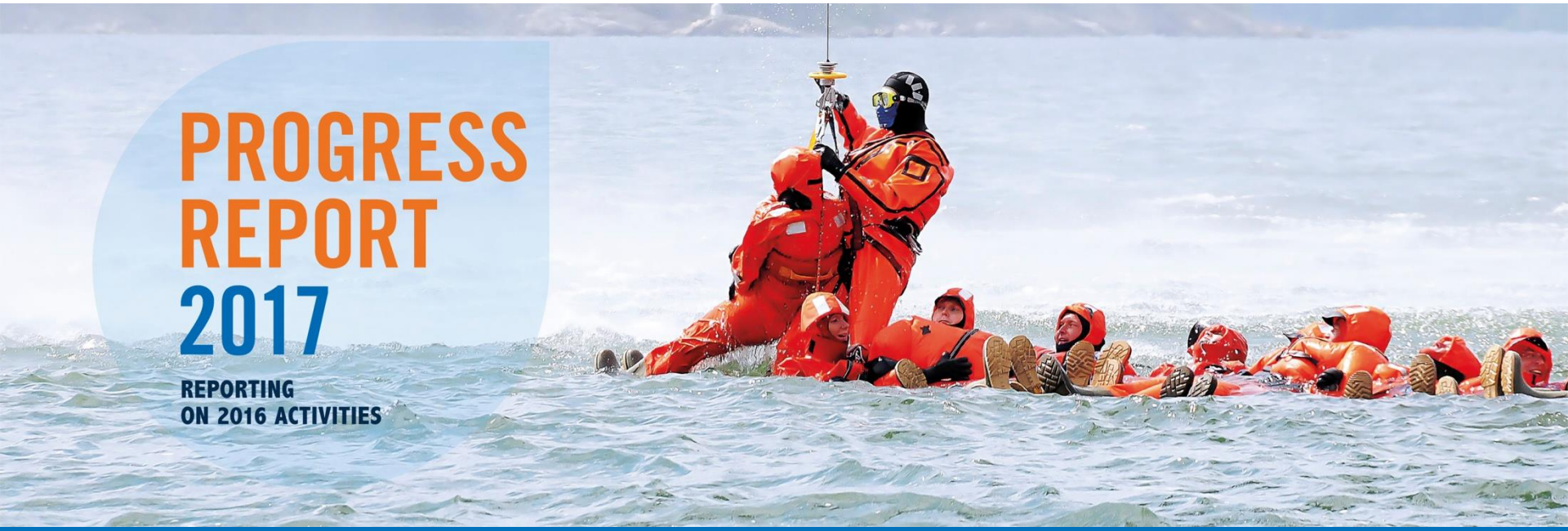
vinyl plus®
COMMITTED TO SUSTAINABLE DEVELOPMENT



VinylPlus: The Voluntary Commitment of the European PVC Industry

2016 Achievements

United PVC Value Chain

VinylPlus Vision

COMMITTED TO
SUSTAINABLE DEVELOPMENT

Together towards a sustainable society with vinyl

VinylPlus Mission

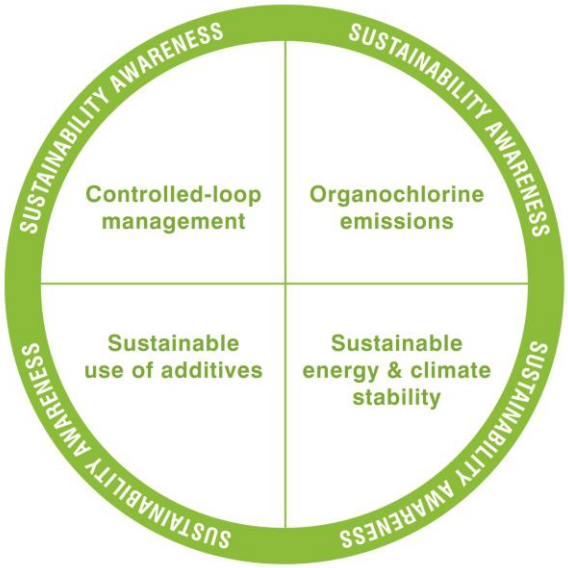
VinylPlus is the sustainable development programme of the European Vinyl industry which:

- **UNITES** players along the entire vinyl value chain
- **PROACTIVELY ADDRESSES** priority areas for action
- **VOLUNTARILY IMPLEMENTS** concrete programmes that contribute to society, the environment and the economy
- **COLLABORATES** with external as well as internal stakeholders and creates supportive networks
- **COMMUNICATES** on the programme's achievements and progress

VinylPlus Voluntary Commitment

35 measurable and concrete targets organised around 5 challenges

1. **Controlled-loop Management**
   (waste management, recycling, use of recycled PVC)
2. **Organochlorines**
   (emissions, transportation)
3. **Sustainable use of additives**
   (responsible 'recipe')
4. **Energy efficiency**
   (reduction of consumption)
5. **Sustainability awareness**
   (transparency, accountability and stakeholder engagement)



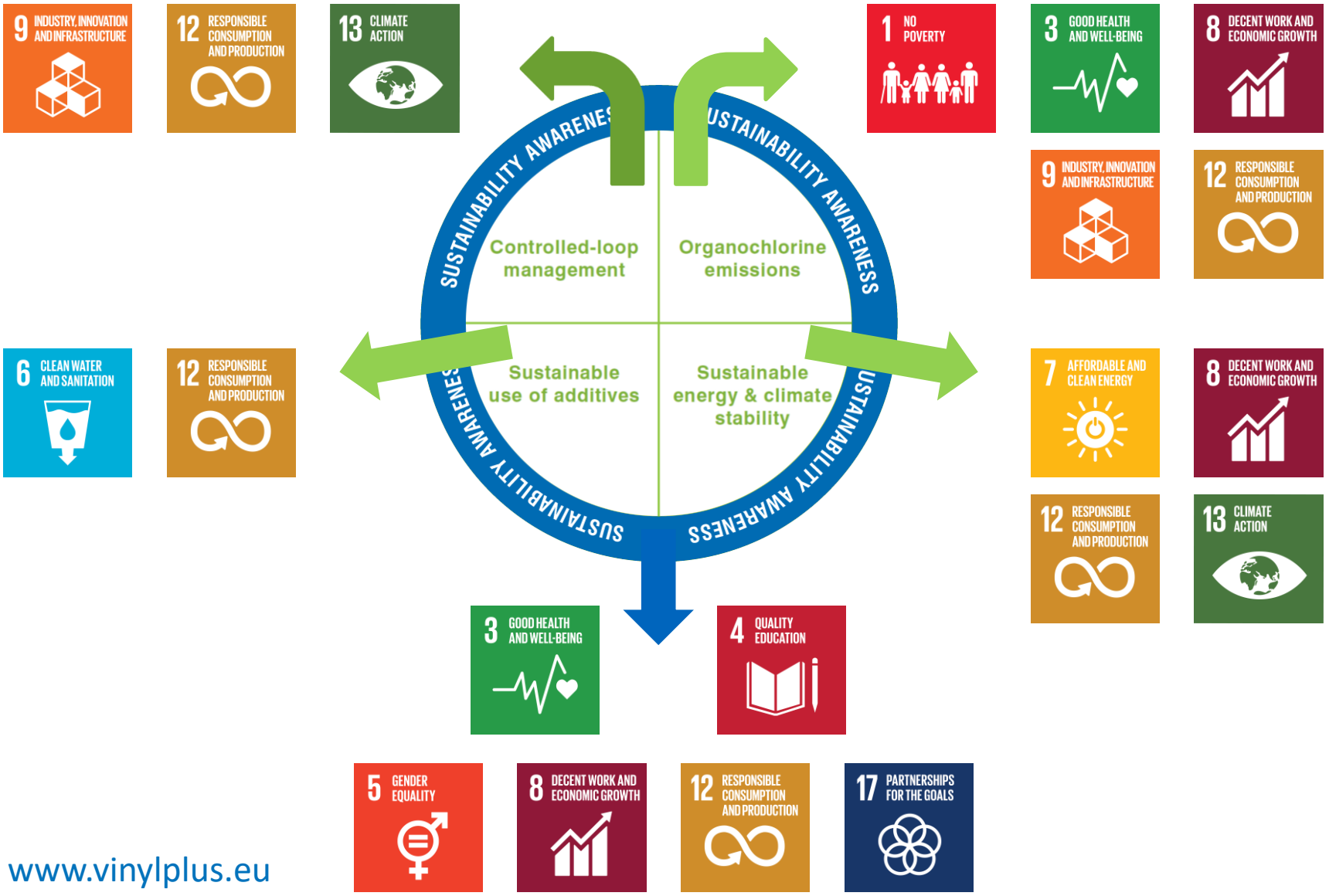
Based on
The Natural Step (TNS) System
Conditions
for a Sustainable Society

VinylPlus Contribution to the SDGs

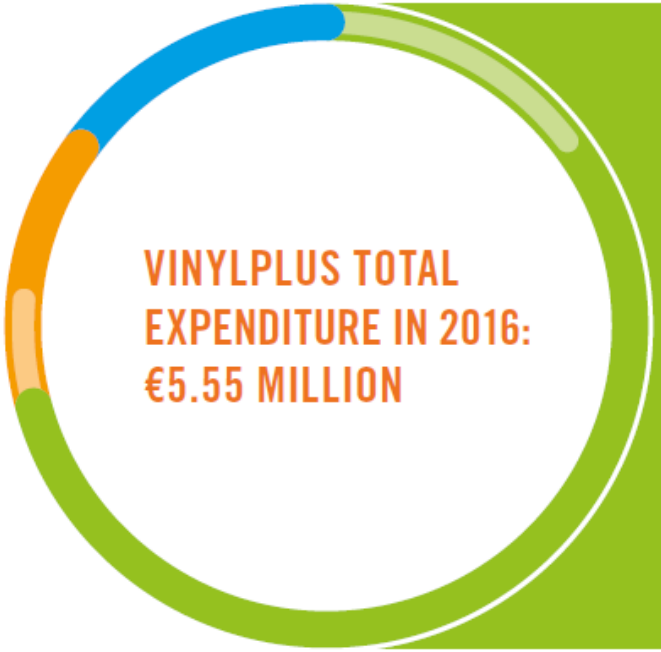
- The **Sustainable Development Goals** define global sustainable development priorities and aspirations for 2030 and seek to mobilise global efforts around a common set of goals and targets. They call for worldwide action by governments, business and civil society

- With its **Voluntary Commitments**, already in 2000 the European PVC industry adopted a pioneering approach, involving the entire value chain, setting challenging and measurable targets, ensuring transparency and accountability. With **VinylPlus**, we expanded the scope of our sustainability initiative and developed the programme through open dialogue with stakeholders
- The VinylPlus programme's contribution to the SDGs has been assessed on the basis of *the '**SDG Compass – The guide for business action on the SDGs**'*.
- As per this year, **VinylPlus is starting to report its progress and achievements** in the context of the expectations set by the SDGs

VinylPlus Contribution to the SDGs



VinylPlus Expenditure in 2016



WASTE MANAGEMENT AND TECHNICAL PROJECTS	TOTAL EXPENDITURE INCLUDING EUPC AND ITS MEMBERS	
FIGURES IN €1,000s	2015	2016
Films and coated fabrics related projects	167	206
Flooring related projects	577	570
EPPA	339	377
ESWA/Roofcollect®	101	107
Recovinyl	1,761	1,700
Studies, start-up & pull concept	43	175
TEPPFA	578	547
EATS (automotive trim recovery)	6	0
Ebene (furniture recycling)	19	26
Medical applications recycling	46	44
Resysta® consortium	10	10
TOTAL PROJECTS	3,645	3,762

68% Waste management and technical projects, including national and sectoral co-funding amounting to 21% of total industry funding

18% Communications, including national and sectoral co-funding amounting to 6% of total industry funding

14% Overheads and Voluntary Commitment development

Controlled-Loop Management:

"We will work towards the more efficient use and control of PVC throughout its life cycle."

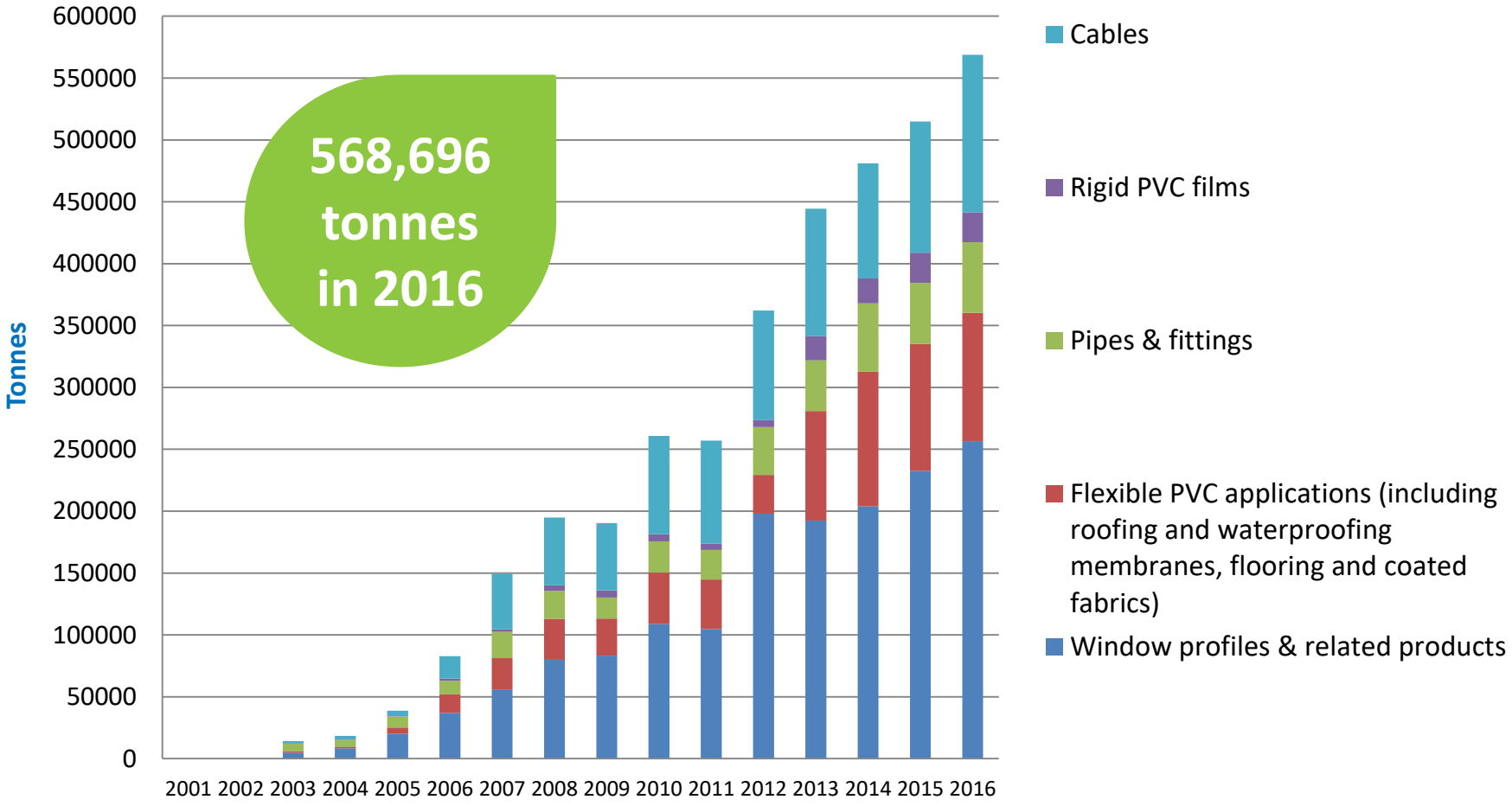
PVC Recycling

Target: 800 kt/year of PVC recycled by 2020

- **568,696 tonnes of PVC recycled in 2016**
- Network of 153 recyclers – www.recovinyl.com
- Traceability of recyclates, including additives, audited and certified on the basis of Recovinyl and EUCertPlast protocols
- Cooperation with EU authorities to addressing the issue of legacy additives (substances that are no longer used in new PVC products but that can be present in recycled PVC)
- Industry investment in waste management and technical projects: €3.76 million in 2016

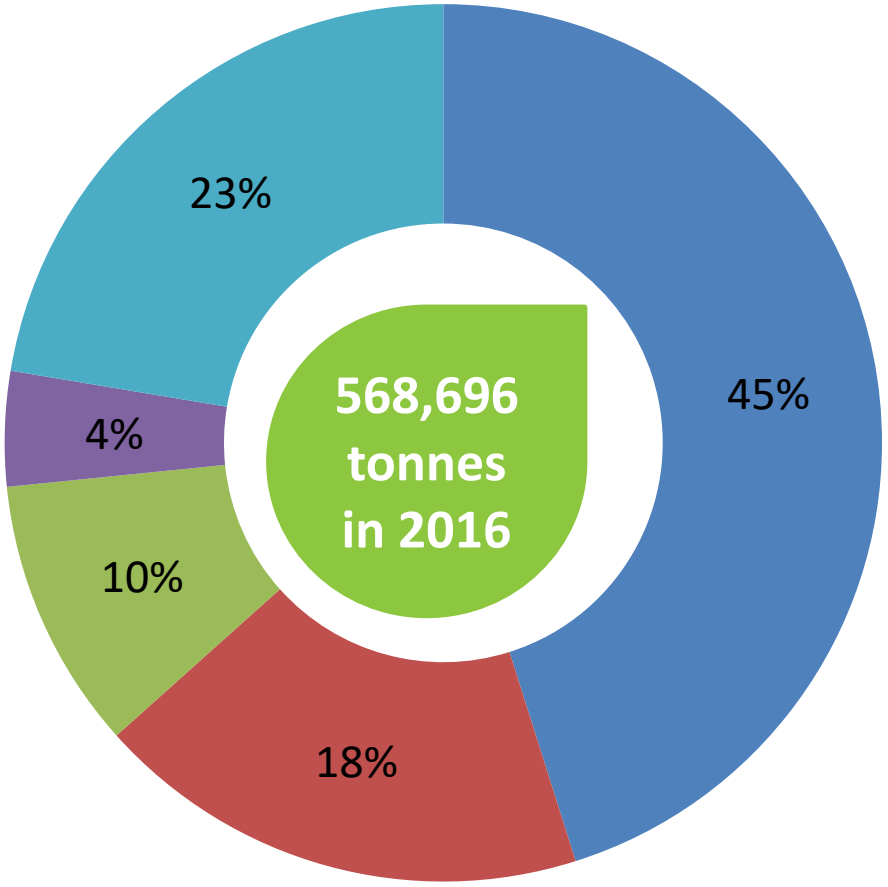
3.6 Million Tonnes of PVC Recycled since 2000

PVC RECYCLED WITHIN THE VINYL 2010 AND VINYLPLUS FRAMEWORKS



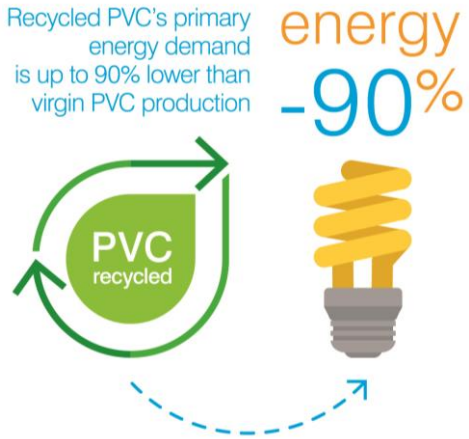
PVC Recycled in 2016 per Application

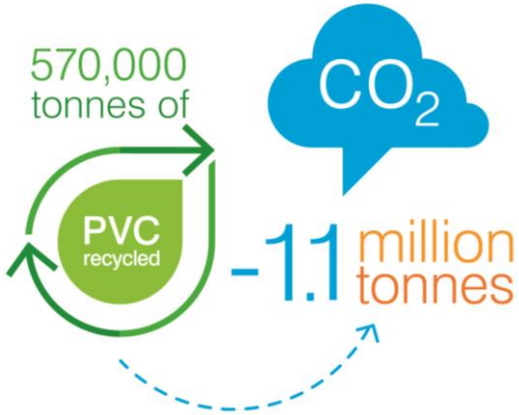
PVC RECYCLED WITHIN THE VINYLPLUS FRAMEWORK IN 2016 PER APPLICATION

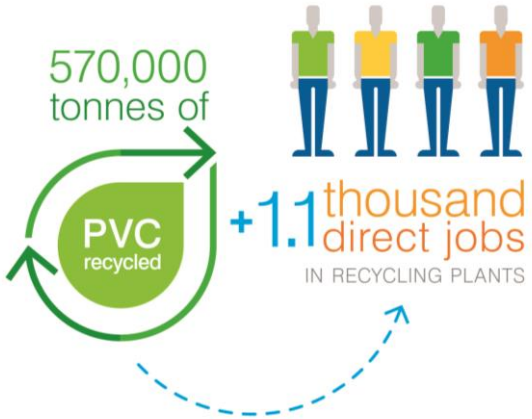


- 45% Window profiles & related products
- 18% Flexible PVC applications (including roofing and waterproofing membranes, flooring and coated fabrics)
- 10% Pipes & fittings
- 4% Rigid PVC films
- 22% Cables

Benefits Associated with PVC Recycling







CO_2 savings of up to 92% are achieved when PVC is recycled: recycled PVC's primary energy demand is typically between 45% to 90% lower than virgin PVC production (depending on type of PVC and the recycling process).

For each kg of PVC recycled, 2 kg of CO_2 are saved (according to a conservative estimation). On this basis, CO_2 savings from PVC recycling in Europe is now at around 1.1 Mt/year.

On average one employee is needed to recycle 500 t/year of PVC (TAUW study). Hence the **568,696 tonnes of PVC recycled in 2016 contributed to the creation of more than 1,100 direct jobs in recycling plants**.

Organochlorine Emissions:

"We will help to ensure that persistent organic compounds do not accumulate in nature and that other emissions are reduced."

Organochlorines

- No transport accidents in Europe with VCM release in 2016
- PVC resin producers committed to achieving full compliance with the ECVM Industry Charters by 2020

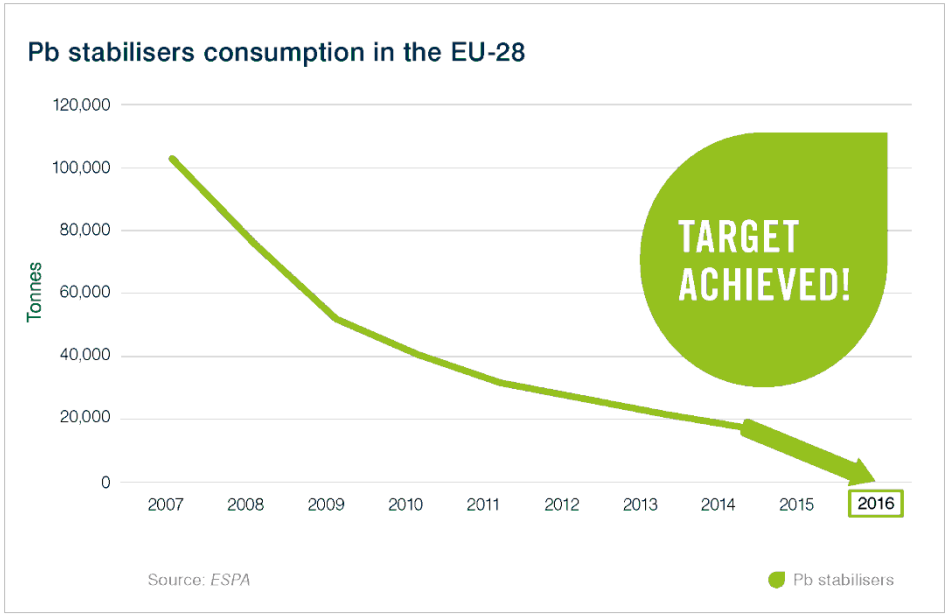
Sustainable Use of Additives:

"We will review the use of PVC additives and move towards more sustainable additive systems."

Lead Replacement

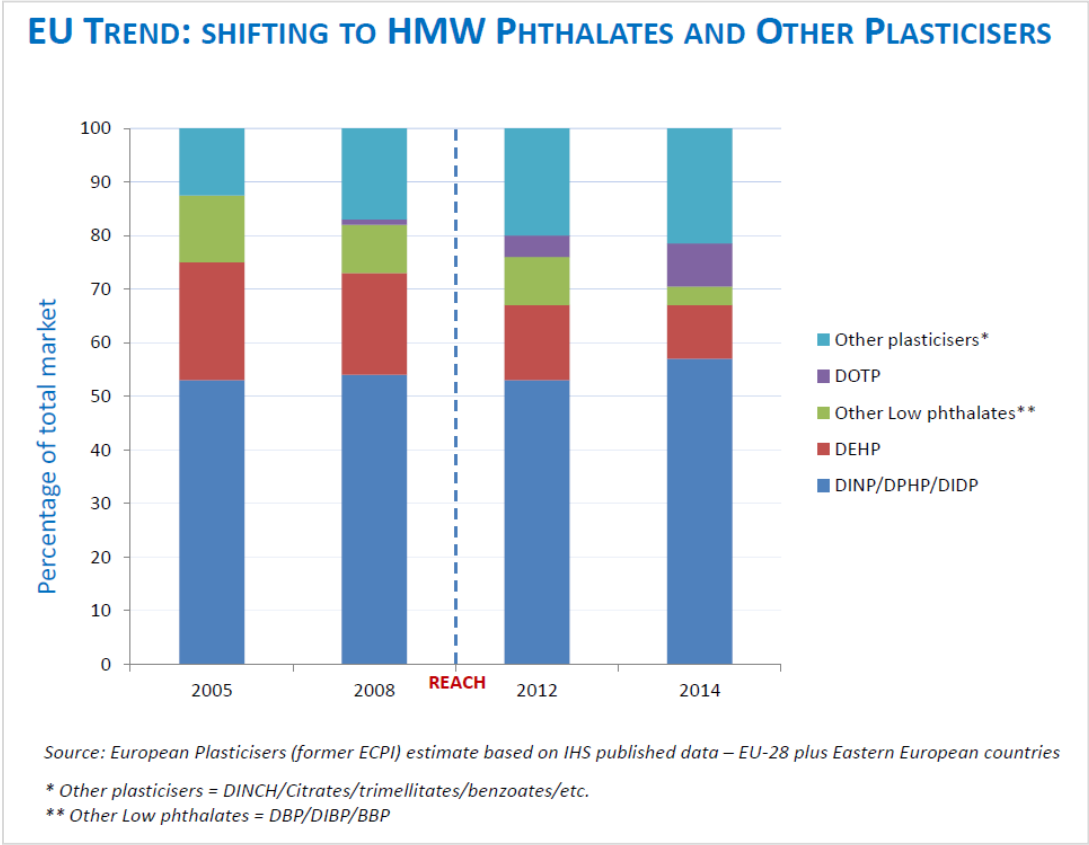
- By the end of 2015, ESPA members had completed the replacement of lead-based stabilisers for PVC applications in the EU-28

- This achievement was verified in 2016 by an external audit company



Plasticisers

- European Plasticisers (former ECPI) estimates confirm a positive trend in Europe for High Molecular Weight (HMW) Ortho-phthalates, cyclohexanoates, terephthalates and other plasticisers, accompanied by a progressive decline in the use of Low Molecular Weight (LMW) Ortho-phthalates
- This trend was corroborated by a review study of phthalates exposure in Europe conducted by Holger M. Koch and published in the International Journal of Hygiene and Environmental Health



Sustainable Use of Additives

- Updating of industry EPDs and LCAs with latest producer data:
  - Completion of LCAs for two of the main family of calcium-based stabilisers by ESPA
  - LCAs for liquid mixed-metals stabilisers been developed
- A new methodology named ASF (Additives Sustainability Footprint) to provide a systematic framework to evaluate the use of substances utilised as additives in PVC products from the perspective of sustainable development
- The work started with PVC window profiles in 2016, and will continue with flexible applications in 2017

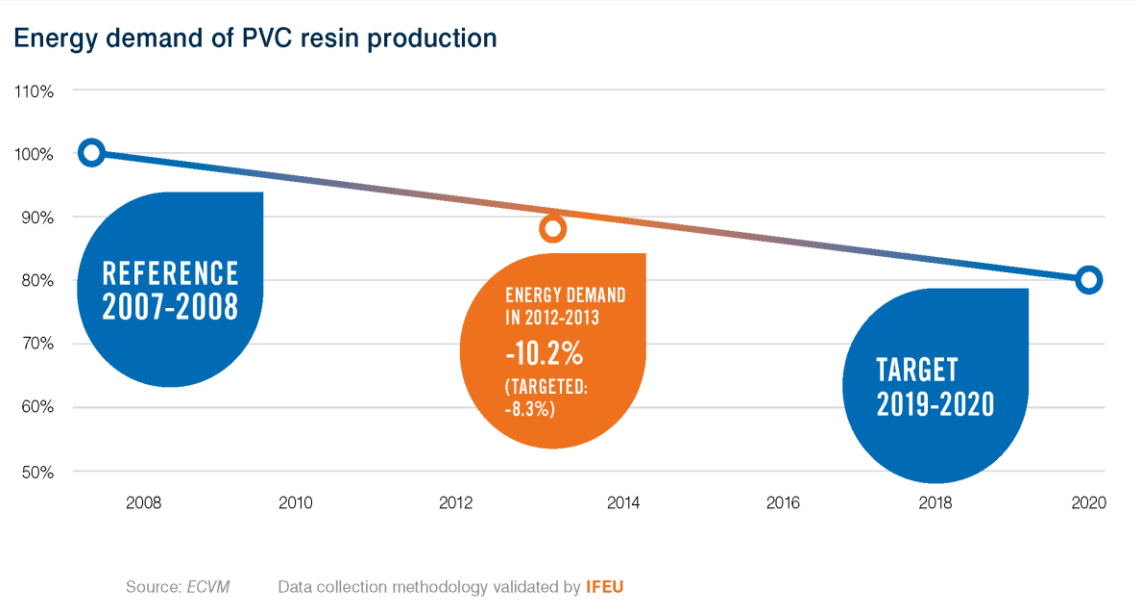
Sustainable Use of Energy and Raw Materials:

"We will help to minimise climate impacts through reducing energy and raw material use."

Reducing Energy & Raw Material Use

PVC Resin Producers

- Committed to improve energy efficiency by 20% from 2007 levels



PVC Converters

- Committed to reporting annually their gains in energy efficiency
- Due to the complexity and variety of operations in the converting sectors an overall target would be meaningless, as would targets for many of the subsectors

Reducing Energy & Raw Material Use

Sustainable Footprint

- A dedicated VinylPlus Task Force identified the EU Product Environmental Footprint (PEF) approach currently under development as a promising start
- VinylPlus will continue to monitor developments in the EU PEF and will consider potential VinylPlus Sustainability Footprint metrics after the EU PEF pilot phase has been completed

Renewable Raw Materials

- VinylPlus will continue to monitor developments in the production of PVC resin and additives from renewable raw materials
- VinylPlus will produce an updated Status Report by the end of 2020

Sustainability Awareness:

"We will continue to build sustainability awareness across the value chain – including stakeholders inside and outside the industry – to accelerate resolving our sustainability challenges."

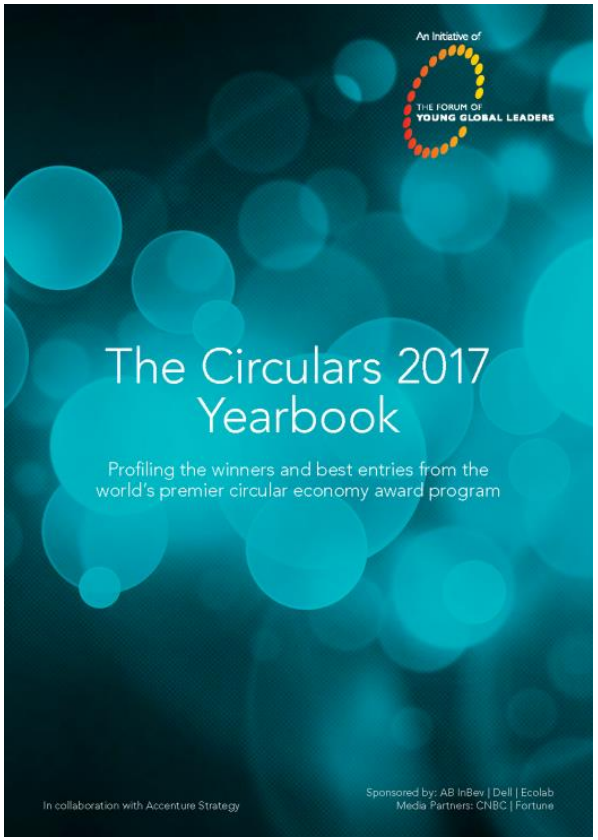
Sustainability Awareness

- VinylPlus approach, progress and achievements are shared through conferences, events, exhibitions in the EU and throughout the world
  - Increasing recognition – VinylPlus considered by many as a frontrunner for the circular economy
- Ongoing dialogue with all stakeholders, inside and outside the PVC Industry

VinylPlus Recycling Trip, VinyLoop Plant, Italy, March 2017

Sustainability Awareness

- VinylPlus selected as a *"Highly Commended"* entry by The Circulars 2017, the circular economy award programme of the World Economic Forum and the Forum of Young Global Leaders



https://thecirculars.org/content/resources/TheCirculars_2017_Yearbook_Final.pdf

Sustainability Awareness

- Proactive dialogue with EU and international institutions
  - VinylPlus Voluntary Commitment has been included in the Rio+20 Registry of Commitments
  - Since 2013, VinylPlus is a member of the Green Industry Platform, a joint initiative of UNIDO and UNEP
  - VinylPlus is registered as a SMART partnership on the UN Partnerships for SDGs platform

UNIDO

UN environment
United Nations Environment Programme

GIP GREEN INDUSTRY PLATFORM

PARTNERSHIPS FOR SDGs

Sustainability Awareness

- With the theme '***Smart Vinyl for Our Cities***', the 4th VinylPlus Sustainability Forum, in Vienna, Austria, discussed the way forward to a more sustainable low-carbon future

STEPHAN SICARS
UNIDO

Vienna, April 2016

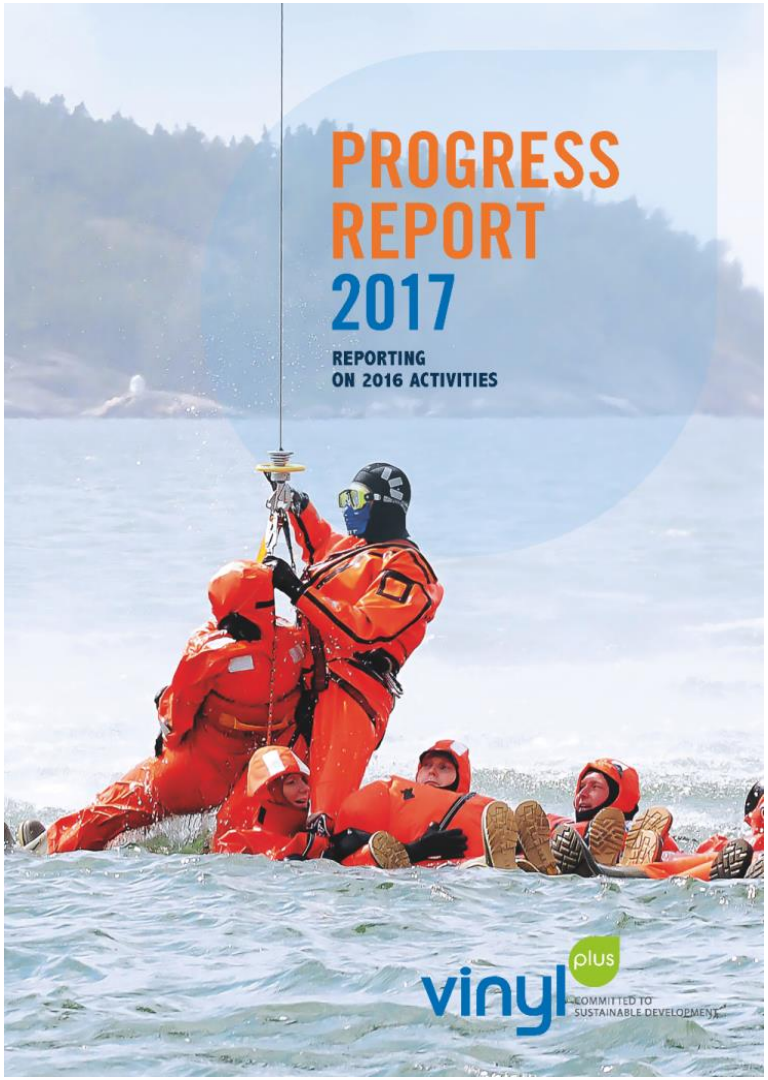
"The role of VinylPlus aligns very well with the Sustainable Development Goals. VinylPlus allows industry to come together and discuss the main characteristics of sustainability and how they can contribute. VinylPlus can make that visible for Governments, for civil society..."

Sustainability Awareness

- New **Cooperation Agreement** signed between VinylPlus and the social partners of the European Chemical Sectoral Social Dialogue Committee

- **Global engagement**: active participation in the Global Vinyl Council, the organisation which groups the main regional PVC associations at global level

Sustainability Awareness



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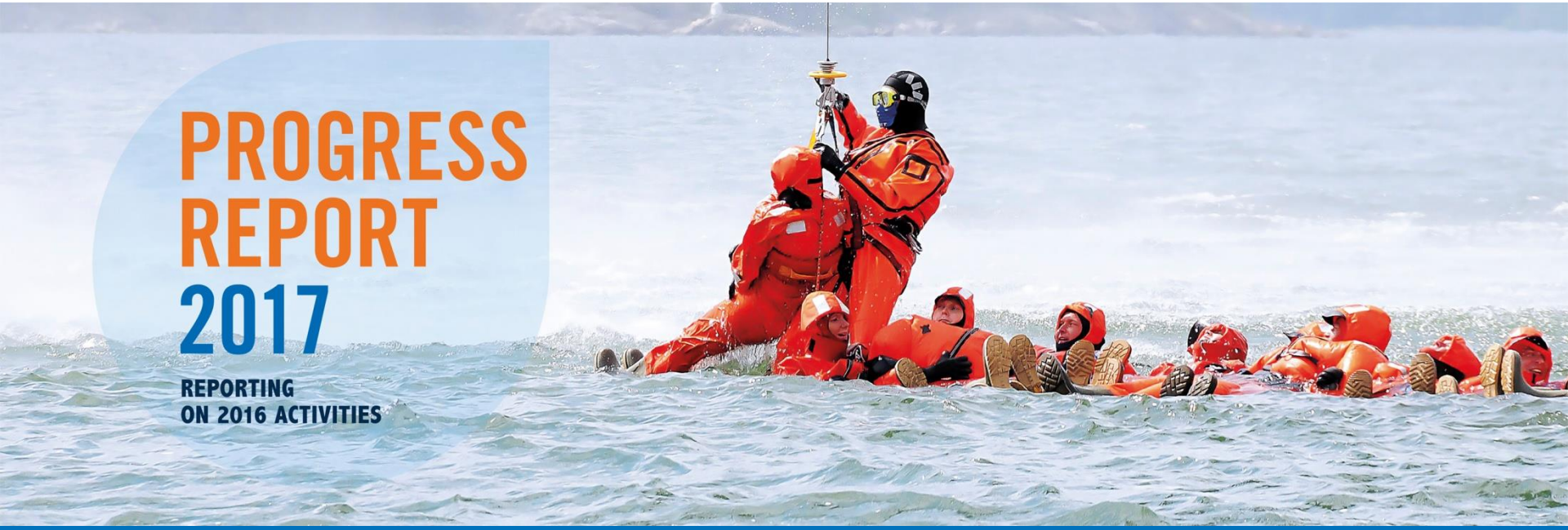

PROGRESS REPORT 2017

REPORTING ON 2016 ACTIVITIES

www.vinylplus.eu **info@vinylplus.eu** **@vinylplus_eu**