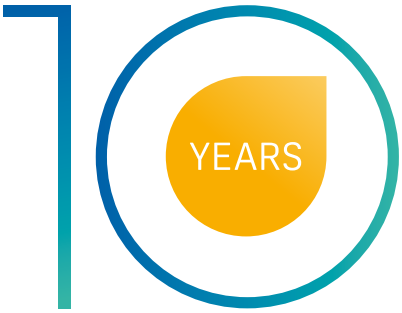
REPORTING ON 2020 ACTIVITIES

and summarising
the key achievements of the past **10 years**

vinyl plus®
COMMITTED TO
SUSTAINABLE DEVELOPMENT



The second 10-year Voluntary Commitment to sustainable development of the European PVC industry came to a close at the end of 2020.

Therefore, besides reporting on 2020 activities, the VinylPlus® Progress Report 2021 summarises the key achievements of the past decade and outlines the way forward towards 2030.

The Progress Report 2021 has been independently verified by SGS, while tonnages of recycled PVC waste and expenditures have been audited and certified by KPMG.

For detailed descriptions of the projects and activities please visit **www.vinylplus.eu**.

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Foreword

Stefan Sommer
Chairman
of VinylPlus

None of us could ever have imagined that our 10-year Voluntary Commitment would end in such a disturbing and complicated year for the whole world. The COVID-19 pandemic has forced all of us to change habits, lifestyles, and ways of working.

Nevertheless, we have continued to work hard together, to address the latest challenges to achieving our 2020 targets, and to make progress towards the common goals of improving the circularity and sustainability of PVC. Our steady progress over the past 20 years has been possible thanks to clearly defined objectives, targets, and deadlines – and thanks to the entire PVC value chain's passionate commitment.

We are all aware of how important it is for us and our stakeholders to support the efforts of VinylPlus to progress towards PVC circularity and to promote products made from recycled materials. And we are all aware that this is a priority in Europe and that there is no viable alternative. That means we must all work together to make circularity a success.

Of course, we are all a bit frustrated to have seen the prospect of achieving the target of 800,000 tonnes fade when we were just one step away from the finishing line, as recycling activities stalled because of the coronavirus emergency in the first half of 2020. Given the situation, however, we achieved a great result, reaching around 730,000 tonnes of PVC recycled. We must remember that since 2000, the European PVC industry has recycled 6.5 million tonnes of PVC and prevented the release of nearly 13 million tonnes of CO_2 into the atmosphere.

As Chairman of VinylPlus, I can only stress again the willingness of the entire PVC value chain to make the Circular Plastics Alliance (CPA) a success. More than two-thirds of PVC products are used in building and construction applications. That is why we, as the voice of the European PVC industry, have taken responsibility for this sector in the CPA platform, chairing the CPA's Construction Working Group. But this is just one example of our active involvement in European policy initiatives that have an impact on the European plastics industry.

We are committed to the safe and sustainable use of chemical substances in PVC formulations. I am very pleased that our validated methodology, the Additive Sustainability Footprint, will be able to help companies self-assess the lifecycle sustainability of current and new additives used in PVC products.

The VinylPlus® Product Label is another flagship of our sustainability programme. We strongly believe in the value of the Product Label to promote sustainability and circularity in the building and construction sector. That is why we worked hard to get official recognition of our sustainability label by third parties – and why we will continue to do so. The official recognition in the Guide for Sustainable Purchases in Belgium was the first visible success.

VinylPlus has already accomplished a lot. But we cannot stay still. In the past months, we have worked hard to build our new sustainability Commitment for the decade to 2030.

To continue progressing towards sustainability, we need to look much harder at innovation, not only in the things we make and the way in which we make them, but also in our overall models for business, management and outreach. VinylPlus is doing all of this, and I am sure that together we will succeed.

Governance

VINYLPLUS STEERING BOARD

As of 1 January 2020, VinylPlus is managed by a Steering Board composed of six voting members and six substitutes, all from partner companies in representation of VinylPlus founding members, and with the participation of the VinylPlus and the Vinyl Foundation[1] Managing Directors. The shift from the previous Board structure was decided mainly to rationalise the VinylPlus governance, by streamlining the Board's membership, and setting up an Advisory Committee. The Advisory Committee is composed of representatives from the VinylPlus member associations and groups of partner companies chosen to ensure a broad representation of all sector groups. Its role is to monitor industry trends, as well as regulatory and policy developments, and to advise the Steering Board.

MEMBERS

Mr Dirk Breitbach | EuPC[2]
Mr Filipe Constant | ECVM 2010[3]
Dr Brigitte Dero | Managing Director of VinylPlus
Mr Rainer Grasmück | ESPA[4]
Mr Andreas Hartleif | EuPC
Dr Ettore Nanni | Treasurer (ESPA)
Dr Matthias Pfeiffer | European Plasticisers[5]
Mr Hans-Christoph Porth | ECVM 2010
Mr Nigel Sarginson | European Plasticisers
Dr Karl-Martin Schellerer | ECVM 2010
Mr Stefan Sommer | Chairman (ECVM 2010)
Mr Geoffroy Tillieux | Managing Director of the Vinyl Foundation
Ms Myriam Tryjefaczka | Vice Chairman[(a)](EuPC)
Mr Christian Vergeylen | Vice Chairman[(b)](EuPC)

(a) From 14 October 2020 **(b)** Until 14 October 2020

MONITORING COMMITTEE

The VinylPlus Monitoring Committee is the independent body supervising the implementation of the Voluntary Commitment. It plays a fundamental role in ensuring the transparency, participation, and accountability of VinylPlus, as well as in providing guidance and advice. Open to all external stakeholders, it currently includes representatives of the European Commission, the European Parliament, academic institutions, trade unions and consumer organisations, as well as representatives of the European PVC industry. The Committee met formally twice in 2020, in virtual form due to the COVID-19 social distancing measures, in May and in December. To ensure maximum transparency, the minutes of each Monitoring Committee meeting are published on the VinylPlus website after formal approval at the following meeting.

MEMBERS

Ms Laure Baillargeon | Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), European Commission
Mr Werner Bosmans | Directorate-General Environment (DG ENV), European Commission
Mr Armand De Wasch | Euroconsumers Group[6]
Dr Brigitte Dero | Managing Director of VinylPlus
Prof. Dr Ir. Jo Dewulf[7] | Chairman of the Monitoring Committee
Mr Ondřej Knotek | Member of the European Parliament
Mr Sylvain Lefebvre | Deputy General Secretary, industriAll European Trade Union[8]
Mr Nuno Melo | Member of the European Parliament
Dr Ettore Nanni | Treasurer of VinylPlus
Mr Geoffroy Tillieux | Managing Director of the Vinyl Foundation

1 Vinyl Foundation: the funding mechanism run by EuPC to collect PVC converters' contribution to VinylPlus (***https://www.vinylfoundation.org***)
2 EuPC: European Plastics Converters (***www.plasticsconverters.eu***)
3 ECVM 2010: the formal legal entity of ECVM (The European Council of Vinyl Manufacturers – ***www.pvc.org***), registered in Belgium
4 ESPA: European Stabiliser Producers Association, is a Sector Group within Cefic, the European Chemical Industry Council. ESPA (***www.stabilisers.eu***) is legally represented in VinylPlus by StabilisersPlus, the legal entity registered in Belgium
5 European Plasticisers: formerly ECPI, is a Sector Group within Cefic. European Plasticisers (***www.europeanplasticisers.eu***) is legally represented in VinylPlus by PlasticisersPlus, the legal entity registered in Belgium
6 European consumer organisation (***www.euroconsumers.org***)
7 Faculty of Bioscience Engineering, Ghent University, Belgium (***www.ugent.be/en***)
8 industriAll: European Trade Union (***www.industriall-europe.eu***)

Jo Dewulf
Chairman
of the VinylPlus
Monitoring
Committee

Statement
from the Chairman of the Monitoring Committee

When I was asked to chair the VinylPlus Monitoring Committee, succeeding Professor Alfons Buekens, I accepted with enthusiasm. Like him, I do not have an industry background but come from academia, so I have a slightly different point of view. Nevertheless, I hope I have been able to add some insights to the work of the Monitoring Committee.

The PVC industry's journey towards sustainable development began 20 years ago. When I took over as Chairman, I immediately perceived the clear results of the years of work towards the Voluntary Commitments. Obvious progress has been made in terms of product stewardship, the elimination of problematic additives, the development of best practices, research into innovative technologies and improvement of the environmental footprint of PVC. Above all, advances have been made in recycling, with the set-up of collection and recycling schemes that were virtually non-existent 20 years ago.

VinylPlus is involved in initiatives to develop PVC recycling technologies that can further advance the resource efficiency and circular material flow of PVC products. One example is the development of chemical recycling. However, as an academic, I would like to emphasise the legacy of the past. We should focus on recycling and recycling targets, which are of course important – but we should also pay attention to the design of products. In the past, products were not designed for circularity as they should be today, which can make recycling difficult. I hope designers look ahead a little and try to build or design for circularity, so that their products can be recycled in a few years from now.

I would also like to draw attention to the theme of research and innovation. As innovative technologies continue to develop today, we ask ourselves: How is innovation supporting the PVC industry's targets in the context of the circular economy? What challenges and opportunities do today's innovative technologies present the PVC industry with? How are the new technologies accelerating innovation towards sustainable development throughout the industry?

I am convinced that, if we want to make real progress, we must join forces across different sectors of society – especially if we intend to face the challenges posed by the United Nations Sustainable Development Goals (SDGs), which are leading the world agenda up to 2030. Collaboration and cooperation with new stakeholders inside and outside the industry will be fundamental, and as Chair of the Monitoring Committee I intend to contribute here.

Finally, I would particularly like to thank my colleagues on the Monitoring Committee whose advice and suggestions have strongly contributed to the growth of VinylPlus.

Now, we must all commit to working hard on the new programme VinylPlus is developing. I look forward to a new decade of progress towards sustainability.

About VinylPlus

Launched in 2011, VinylPlus was the second 10-year Voluntary Commitment to sustainable development of the European PVC industry. Developed through open dialogue with stakeholders – including industry, NGOs, regulators, civil society representatives and PVC users, the VinylPlus programme addressed five key sustainability challenges identified on the basis of The Natural Step System Conditions for a Sustainable Society. The regional scope covered the EU-27 plus Norway, Switzerland, and the UK.

5
CHALLENGES

35
MEASURABLE TARGETS

FOUNDING MEMBERS AND PARTNERS

The European Council of Vinyl Manufacturers,
representing six leading European producers of PVC resin, which account for around 70% of the PVC resin manufactured in Europe. These businesses operate around 36 different plants spread over 23 sites and employ approximately 7,000 people.

pvc.org

The European Stabiliser Producers Association,
representing eight companies that produce more than 95% of the stabilisers sold on the European market. They provide direct employment to more than 2,000 people in Europe.

stabilisers.eu

European Plasticisers,
a Sector Group of Cefic representing eight major European plasticiser manufacturers, producing approximately 90% of the plasticisers manufactured in Europe. Over €6 billion invested in innovative, safe and sustainable alternative plasticisers over the last 25 years.

europeanplasticisers.eu

European Plastics Converters,
an association representing more than 50,000 companies in Europe, which produce over 50 million tonnes of plastic products every year from both virgin and recycled polymers. They employ more than 1.6 million people, generating turnover in excess of €260 billion per year.

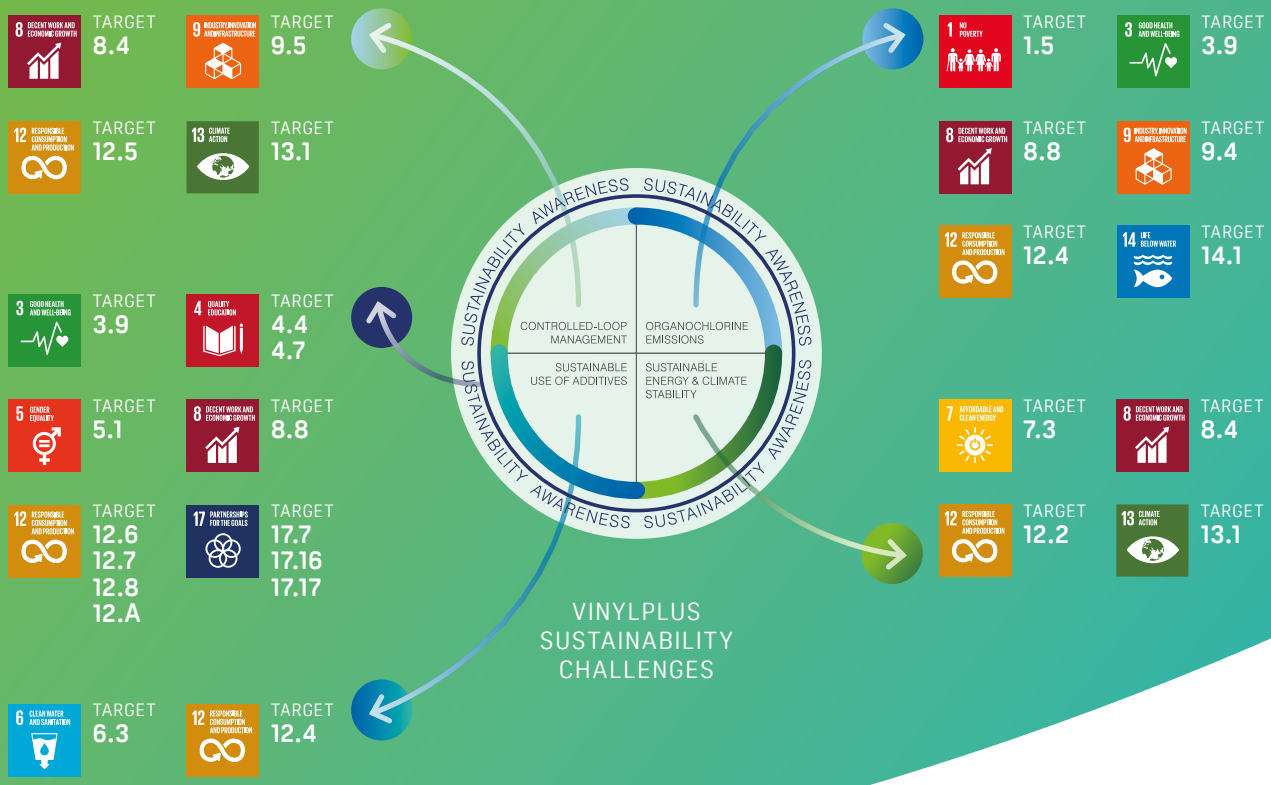
plasticsconverters.eu

200
COMPANIES

+ **3 national** associate members + recovinyl plus 150 recycler partners + The Natural Step

VinylPlus Contribution to the SDGs

Following the adoption of the Sustainable Development Goals (SDGs)[9] in September 2015, VinylPlus assessed its contribution based on the SDG Compass approach[10] and has reported it in its Progress Reports since 2017.



PVC: A 'SMART' MATERIAL FOR A SUSTAINABLE SOCIETY

PVC is one of the most versatile and widely used polymers in the world. PVC continues to make life safer and more comfortable through its use in construction, water distribution, automotive, cabling, smart cards and credit cards, packaging, fashion and design, sports, agriculture, telecommunications, medical devices and a wide array of other areas and products.

PVC is an intrinsically low-carbon plastic: 57% of its molecular weight is chlorine derived from common salt; 5% is hydrogen; and 38% is carbon. PVC is extremely durable and cost-efficient, and it can be recycled several times at the end of its life without losing its essential properties.

Several PVC applications – such as pipes, window profiles, cables, flooring, membranes and films – have been analysed in terms of Life Cycle Assessments and eco-efficiency, and they have shown excellent environmental performance.

Thanks to their intrinsic characteristics and properties, PVC products can contribute to efforts towards several of the SDGs' targets. To help eradicate poverty, PVC can provide goods and services that underpin basic human needs, making

9 *https://www.un.org/sustainabledevelopment/sustainable-development-goals/*
10 *https://sdgcompass.org/*

PHOTO: COURTESY OF NATURE URBAINE

Nature Urbaine uses PVC pipes to build vertical structures for urban rooftop gardens, that save space and resources and provide fresh, locally grown products.

PHOTO: COURTESY OF MAX TOMASINELLI

In Italy, CURA provides Intensive Care Units (ICU) for patients affected by COVID-19. The unit is connected to the hospital by an inflatable PVC structure, which serves both as storage and dressing room for medical staff.

them available for all at affordable costs. PVC packaging can help preserve and conserve food, by guaranteeing a longer shelf-life, improving food safety, reducing bacterial proliferation and protecting against external contamination. PVC piping systems are easy to install, extremely durable, and allow efficient irrigation even in remote areas. Specific applications, such as trickle irrigation, can also address the pernicious global issues of soil erosion and water scarcity.

In healthcare, PVC devices account for about 40% of all plastics-based medical devices in hospitals, where they are used for their durability, barrier properties and physiological inertness. Healthcare buildings benefit from PVC applications such as flooring, wall coverings and window profiles in terms of safety and hygiene as well as personal comfort. PVC is also utilised for temporary emergency structures (field hospitals, tents to protect against biological risk and medical devices) that are suitable for the control of epidemics and health emergencies.

PVC piping systems help provide access to clean water and sanitation all over the world. In the building and construction sector, which accounts for 70% of PVC volumes, the main PVC applications such as pipes, windows profiles, flooring, roofing membranes, wires and cables offer solutions that are efficient in terms of cost, energy and resources.

PVC products save energy during use and are vital in renewable energy technologies. Examples include transparent pipes for photo-bioreactors, photovoltaic cells on reflective PVC roofing membranes, wind turbine blades, pressure pipes for geothermal projects, pipes in biogas plants and solar pond liners.

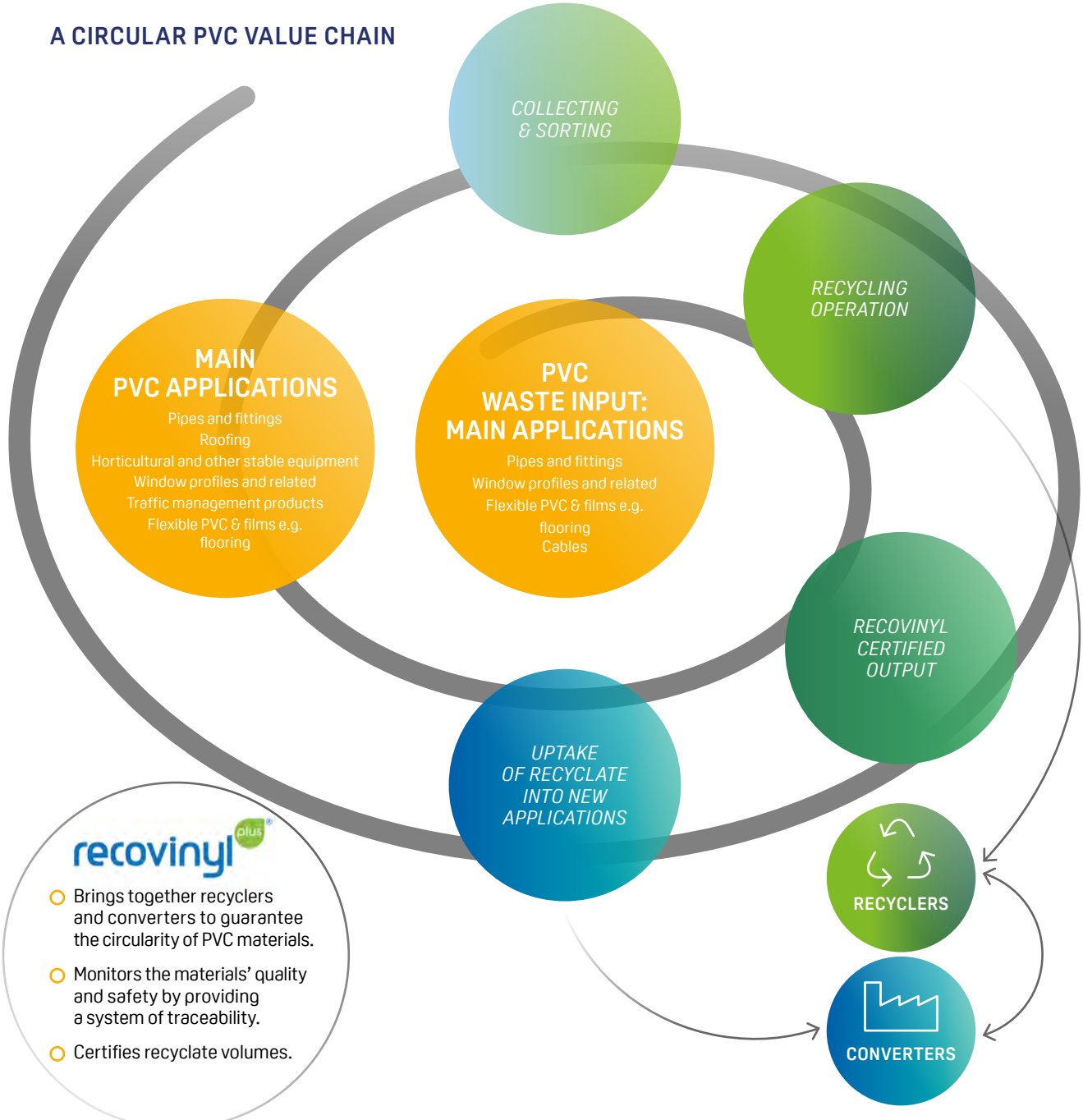
10-Year Highlights

CIRCULAR ECONOMY

VinylPlus is a perfect example of how to make the Circular Economy a reality, being the first value chain in 2000 to take on the challenge of transforming a problem into an opportunity. In addressing the environmental concerns of PVC, VinylPlus and the industry came up with an ambitious and forward-looking approach: to organise, cooperate and communicate with the whole value chain, from the producer to the downstream user and the waste manager.

Kirsi Ekroth-Manssila | Head of Unit, DG GROW, European Commission

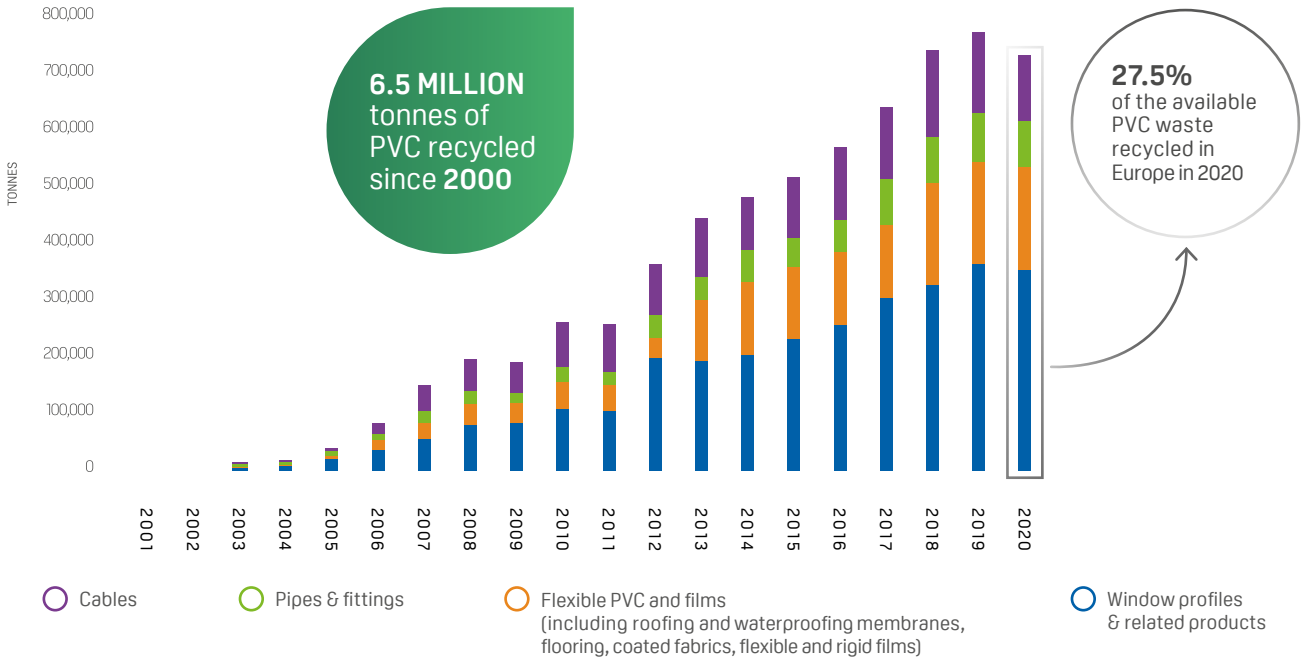
A CIRCULAR PVC VALUE CHAIN



recovinyl plus

- Brings together recyclers and converters to guarantee the circularity of PVC materials.
- Monitors the materials' quality and safety by providing a system of traceability.
- Certifies recyclate volumes.

PVC RECYCLED WITHIN THE VINYLPLUS FRAMEWORK



6.5 MILLION
tonnes of
PVC recycled
since 2000

13 MILLION
tonnes of CO_2 saved
since 2000

Recycled PVC's primary
energy demand is up to
90% LOWER
than virgin PVC production

730,000 tonnes
of PVC recycled in 2020
+1.5 THOUSAND
direct jobs in recycling plants

- In 2019, VinylPlus joined the EU Circular Plastics Alliance (CPA), the European Commission's multi-stakeholder platform aimed at boosting the market for recycled plastics to 10 million tonnes by 2025.
- VinylPlus has chaired the CPA Construction Working Group since December 2019.

I am proud of the work done by VinylPlus and its partners to increase the sustainability performance and use of PVC. We are fully committed to being circular, working closely with the European Commission and actively contributing to the Circular Plastics Alliance.

Brigitte Dero | Managing Director, VinylPlus

SUPPORTING INNOVATION

Looking at all the recovery options that might contribute to a circular economy.

END-OF-LIFE OPTIONS

- *DISPOSAL*
- *RECOVERY*
  - *RECYCLING*
    - *MECHANICAL*
    - *FEEDSTOCK*
  - *ENERGY RECOVERY*
    - *WTE PLANTS*
  - *ENERGY & MATERIAL RECOVERY*
    - *WTE PLANT & CHLORINE RECOVERY*

WTE: *waste to energy*

29 DIFFERENT RECOVERY OPTIONS INVESTIGATED

- Waste separation: **7**
- Conventional mechanical recycling with special features: **5**
- Inclusion in other materials: **2**
- Feedstock recycling: **7**
- Non-conventional mechanical recycling: **3**
- Incineration with energy recovery and material recycling: **5**

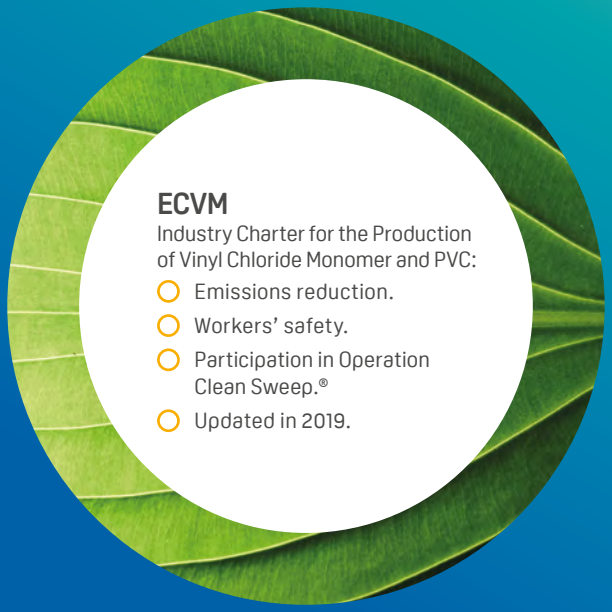
COMMITTED TO RECYCLING

900,000 TONNES
of PVC recycled per year by 2025

1 MILLION TONNES
of PVC recycled per year by 2030

SUSTAINABLE CONSUMPTION AND PRODUCTION

EMISSIONS REDUCTION



ECVM

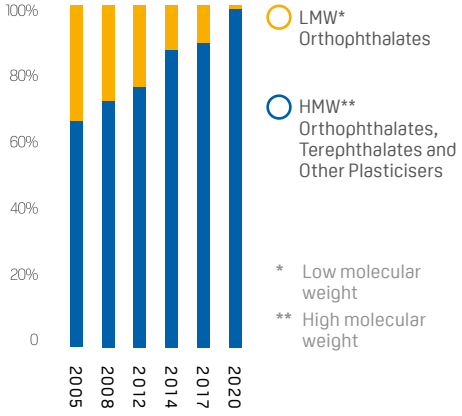
Industry Charter for the Production of Vinyl Chloride Monomer and PVC:

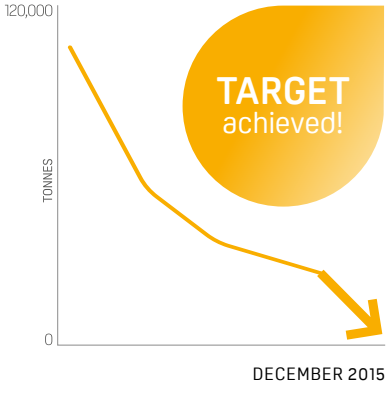
- Emissions reduction.
- Workers' safety.
- Participation in Operation Clean Sweep.®
- Updated in 2019.

- Risk assessment for the transportation of major raw materials completed in 2015.
- Zero transport accidents in Europe with VCM release in the past 10 years.

SUSTAINABLE USE OF ADDITIVES

Additive Sustainability Footprint





- Methodology developed in collaboration with The Natural Step.
- Assesses the lifecycle sustainability of additives used in PVC products.
- Peer reviewed by LCA experts and validated.

OVER €6 BILLION
invested by the European plasticiser industry for the transition from SVHC low molecular weight phthalates to innovative non-SVHC phthalates and other plasticisers.

- Lead-based stabilisers entirely replaced in the EU market by the end of 2015.
- Third-party certified LCAs for solid Ca-Zn stabilisers and for liquid mixed-metal Ba-Zn and Ca-Zn stabilisers.

The legacy additives issue is critical, so it is highly important that companies are not creating 'legacy additives of the future'. For that reason, VinylPlus should strongly encourage the application of the Additive Sustainability Footprint at company level.

Richard Blume | The Natural Step

SUSTAINABLE USE OF ENERGY AND RAW MATERIALS

-9.5% IN ENERGY
consumption and
-14.4% IN CO_2
emissions in average production of PVC resins.

BETWEEN -16% AND -26.5% IN ENERGY
consumption in main applications of PVC converting.

NON-FOSSIL-BASED PVC
additives and compounds, as well as bio-attributed and circular-attributed certified PVC resins, are increasingly available on the market thanks to innovation by the industry.

SUSTAINABILITY AWARENESS

® EMPOWERING CONSUMERS AND PUBLIC BUYERS THROUGH THE VINYLPLUS® PRODUCT LABEL

- The sustainability mark for PVC products developed by VinylPlus in cooperation with BRE and The Natural Step.
- Based on 20 sustainability criteria, including responsible sourcing and the VinylPlus challenges.
- By the end of 2020, **11** companies had been awarded the VinylPlus® Product Label for **128** products and product systems manufactured at **19** European sites.

The VinylPlus certification is an interesting initiative as it not only provides specific criteria for more sustainable PVC production and use, but also opens up discussion and stimulates producers to apply the principles through different approaches. It focuses on recycled content and upcycling potential but also contains aspects of demountability and even return policies.

Stijn Brancart | Expert in Circular Construction, VIBE – the Flemish Institute for Bio-Ecological Building and Living

PARTNERING WITH SPORTS COMMUNITIES FOR SUSTAINABILITY

- She Runs – Active Girls' Lead 2019.
- European Week of Sport 2019.
- Brussels Yoga Day 2020.

I strongly believe that the Environmental Action we signed with VinylPlus for She Runs will pave the way for ISF and its members to start minimising the ecological footprint of our events.

Laurent Petrynka | International School Sport President, IOC Olympic Education Commission Member, and Ministerial Advisor in France

SOCIAL DIALOGUE

Cooperation Agreement with the European Chemical Sectoral Social Dialogue Committee on concrete initiatives and action plans for workers' safety and education and for the digitalisation of SMEs.

STAKEHOLDER ENGAGEMENT

Continuous engagement with stakeholders and international institutions and organisations within technical, political and social communities for an open dialogue on the VinylPlus approach and progress towards sustainability.

- **8** VinylPlus Sustainability Forums organised
- **100+** active participations in major national and international conferences and scientific events
- **82** joint communications projects with European and national industry sector organisations and national PVC associations

RIO+20 United Nations Conference on Sustainable Development

VinylPlus Voluntary Commitment included in the Rio+20 Registry of Commitments

PARTNERSHIPS FOR THE SDGs
GLOBAL REGISTRY OF VOLUNTARY COMMITMENTS & MULTI-STAKEHOLDER PARTNERSHIPS

VinylPlus registered as a SMART partnership on the UN Partnerships for the SDGs Platform

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...

Stephan Sicars | Director, Department of Environment, United Nations Industrial Development Organization (UNIDO)

10-Year
Targets and Achievements

1 Challenge
CONTROLLED-LOOP MANAGEMENT:

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

TARGETS

1. Recycle 800,000 tonnes/year of PVC by 2020.
   > not fully achieved due to the COVID-19 pandemic effects
2. Exact definitions and reporting concept to be available by end 2011.
   > achieved
3. Develop and exploit innovative technology to recycle 100,000 tonnes/year of difficult-to-recycle PVC material (within the overall 800,000 tonnes/year recycling target) by 2020.
   > withdrawn[11]
4. Address the issue of 'legacy additives' and deliver a status report within each annual VinylPlus Progress Report.
   > achieved

2 Challenge
ORGANOCHLORINE EMISSIONS:

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

TARGETS

1. Engage with external stakeholders in the discussion on organochlorine emissions during 2012.
   > achieved
2. Develop a plan to deal with stakeholder concerns on organochlorine emissions by end 2012.
   > achieved
3. Compliance with the PVC resin Industry Charters by first Quarter 2012.
   > achieved in 2020
   3.a. Achieve full compliance with the updated Charter by 2021.
   > ongoing
4. Risk assessment for the transportation of major raw materials, in particular VCM, by end 2013.
   > achieved in 2015
5. Target zero-accident rate with VCM release during transportation in the next 10 years.
   > achieved

3 Challenge
SUSTAINABLE USE OF ADDITIVES:

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

TARGETS

1. Lead (Pb) replacement in the EU-27 by end 2015 (extended to the EU-28 in 2014).
   > achieved
2. Robust criteria for the 'sustainable use of additives' to be developed, with status report by end 2012.
   > achieved in 2014
3. Validation of the robust criteria for the 'sustainable use of additives' in conjunction with the downstream value chain, with status report by end 2014.
   > achieved
   3.a. Develop a methodology for the sustainable choice of additives for profiles. **> achieved**
   3.b. Develop a methodology for the sustainable choice of additives for flexible applications. **> achieved**
   3.c. Develop a systematic framework methodology, taking into account the EU PEF (Product Environmental Footprint) concept. **> achieved**
4. Other PVC additive producers and the downstream value chain will be invited to participate in the 'sustainable additives' initiative. **> achieved**

11 Even though this target has had to be withdrawn (see p. 12 of VinylPlus Progress Report 2017), VinylPlus continued to pursue efforts to find technically and economically viable solutions for difficult-to-recycle PVC waste

4 Challenge

SUSTAINABLE USE OF ENERGY AND RAW MATERIALS

"We will help to minimise climate impacts through reducing energy and raw material use, potentially endeavouring to switch to renewable sources and promoting sustainable innovation."

TARGETS

1. Establish Energy Efficiency Task Force by end 2011.
   > achieved
2. PVC resin producers to reduce their specific energy consumption, targeting 20% by 2020.
   > partially achieved
3. Define targets for specific energy reduction for converters by end 2012.
   > partially achieved

   3.a. PVC converters will report their gains in energy efficiency year on year. **> partially achieved**
4. Energy Efficiency Task Force to recommend suitable environmental footprint measurement by end 2014.
   > achieved
5. Establish Renewable Materials Task Force by end first Quarter 2012.
   > achieved
6. Renewable Materials Task Force's status report by end 2012.
   > achieved in 2015

   6.a. Updated status report by the end of 2020. **> achieved**

5 Challenge

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."

TARGETS

1. VinylPlus web portal to go online in summer 2011.
   > achieved
2. VinylPlus Monitoring Committee, which will meet a minimum of twice a year, will be established by end 2011. **> achieved**
3. A VinylPlus Membership Certificate will be launched end 2011. **> achieved**
4. A public, and independently audited, VinylPlus Progress Report will be published annually and proactively promoted to key stakeholders. With the first edition being published in 2012. **> achieved**
5. Annual external stakeholder meetings will be organised, commencing in 2012.
   > achieved
6. A VinylPlus product label will be launched by end 2012. **> launch achieved in 2014**
7. ECVM will take an active role in promoting VinylPlus within international PVC industry organisations worldwide.
   > achieved
8. ESPA stabiliser producers will actively promote VinylPlus outside the EU-28.
   > achieved
9. VinylPlus will increase the number of programme participants by 20% compared to 2010 by end 2013.
   > not achieved[12]
10. VinylPlus will engage with five global brand holders by end 2013. **> partially achieved**
11. A review of progress towards the globalisation of the approach will be undertaken by end 2015.
    > achieved
12. A Social dialogue commitment endorsed by the EU Sectoral Social Dialogue Committee for the Chemical Industry will be included in the VinylPlus programme by the end of 2016.
    > achieved

12 Even though this target was not achieved in 2013, VinylPlus continued to work on increasing the number of programme participants

Beyond 2020

Thanks to our years of experience, VinylPlus has much to contribute to Europe's sustainability and circular economy objectives.

Stefan Sommer | Chairman, VinylPlus
President, Vynova Group

The European PVC industry journey started 20 years ago with Vinyl 2010 and continued with VinylPlus. The industry committed to collectively address challenges and opportunities, to increase the sustainability performance of PVC and to actively contribute to building the circular economy. As a united value chain, VinylPlus accomplished major achievements recognized by many stakeholders.

As the industry approached the end of its second decade of Voluntary Commitments, consultations with stakeholders, inside and outside the industry, were carried out in 2020, to gather input, suggestions and advice on the priorities for the next 10-year Commitment running to 2030.

The consultation process started early in 2020, with four '*VinylPlus Community Visioning Workshops*' organised in Belgium, Germany, Italy and the UK. Such events provided a great opportunity for the industry to bring the VinylPlus roadmap down to the company level and to create momentum around the new programme. The events were a source of useful and inspiring suggestions and insights.

An extensive external stakeholder consultation then took place in the first half of the year, with interviews targeted across four stakeholder groups: policymakers, civil society, end-user industries and PVC value chain partners. Public-sector stakeholders were the best represented group (at 40% of the interviewees), reflecting their importance in influencing the market and regulatory landscape. This process facilitated the gathering of relevant macro sustainability perspectives and stakeholder expectations for the long-term sustainability of the PVC industry. There was a particular focus on accelerating the transition towards the circular economy, sustainable production and value-chain decarbonisation, as well as engagement with civil society and NGOs.

The virtual VinylPlus Sustainability Forum, in October 2020, provided the perfect occasion to present the outcomes of the stakeholder consultation to the 180 participants. The Forum's delegates also discussed priorities and provided feedback through an online interactive poll.

Building on the valuable input from the internal and external stakeholder consultations, VinylPlus is currently finalising its new 10-year Commitment for the decade to 2030. The official launch is scheduled on 17 June 2021.

VinylPlus can be very proud of the fact that it recognized in 2000 that we would see an increasing international focus on the urgency of dealing with sustainability issues. And when you look at the UN Sustainable Development Goals (SDGs), the Paris Climate Commitments in 2015, the European Green Deal and the European Commission communication related to Chemicals Sustainability, we are seeing an increased urgency. I think that VinylPlus anticipated that and has put the sector in a good position to move forward.

Paul Hohnen | Founder, Sustainability Strategies

2020
ACHIEVEMENTS

PHOTO: COURTESY OF BRUSSELS YOGA DAY ©

1 Challenge

CONTROLLED-LOOP MANAGEMENT

PHOTO: COURTESY OF BEER SINGNOI

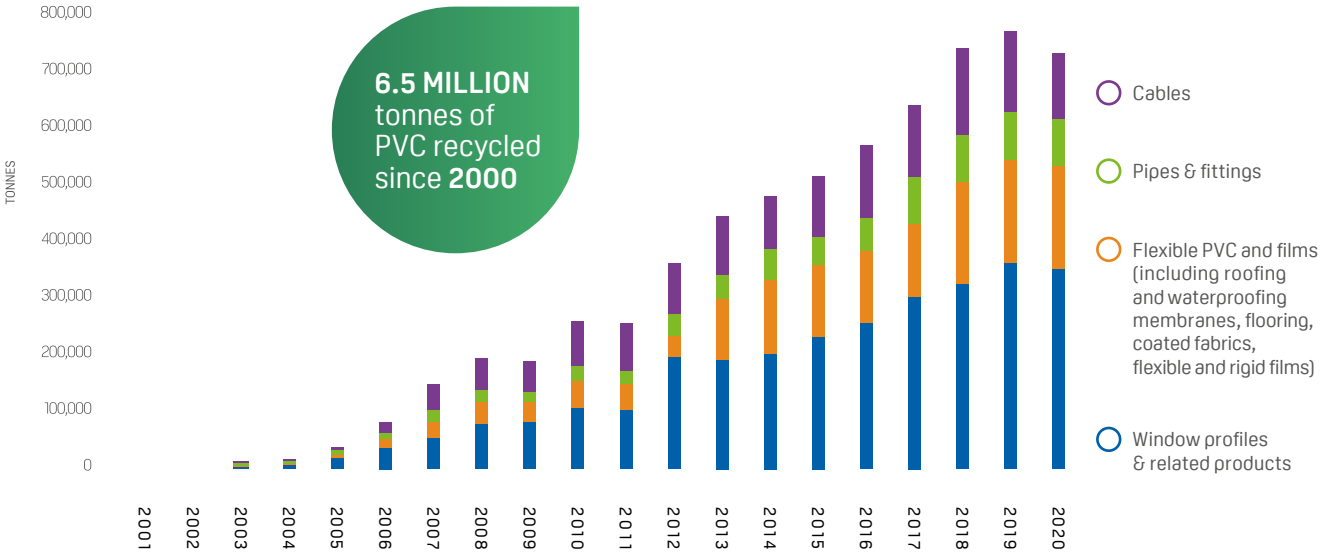
Pyramid modules made of PVC membranes characterise the Pylonesque project's multi-purpose space for a primary and middle school in Thailand. The structure provides functionality and aesthetics, as well as climatic sensitivity to monsoons and droughts.

RECYCLING ACHIEVEMENT

The COVID-19 pandemic provoked severe market disruption during the first half of 2020: recycling operations decreased throughout Europe, as many companies were forced into lockdowns. The situation improved in the second part of the year, however, with a positive trend for PVC recycling in Europe. Several recyclers were able to continue to operate their facilities, and lockdowns only partially affected the construction sector.

Despite a generally positive market in the second half of the year, a complete recovery from the first wave of COVID-19 was not possible. In view of these circumstances, and against all odds, PVC waste recycling within the VinylPlus framework still reached an outstanding volume of 731,461 tonnes, only a 5% decrease from 2019.

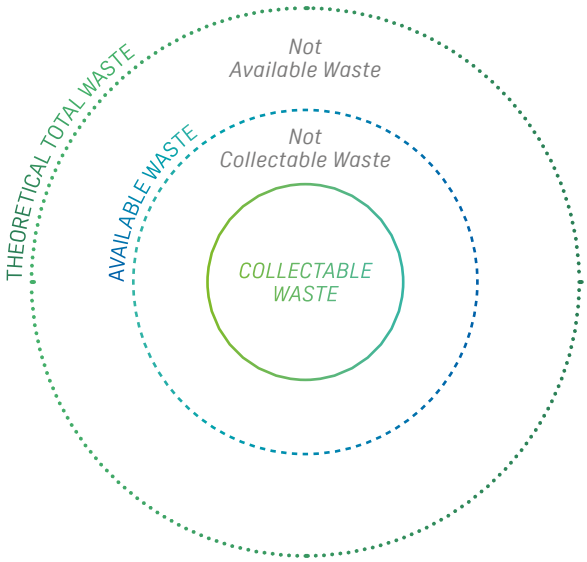
PVC RECYCLED WITHIN THE VINYLPLUS FRAMEWORK



For the livestreamed session of the Brussels Yoga Day 2020, VinylPlus provided 500 high-quality PVC yoga mats, expressly designed for the event with the symbolic image of the Yogi Smurfs.

The amount of PVC waste recycled represents about 27.5% of the estimated PVC waste arisings (available waste) in 2020 in the EU-27 plus Norway, Switzerland and the UK.

DEFINITION OF WASTE



THEORETICAL TOTAL WASTE is the calculated PVC waste generation from all sectors at the end of use, whether it be pre- or post-consumer waste. Calculation is based on lifecycle estimates. Theoretical total waste includes both available and not-available waste.

AVAILABLE WASTE is PVC waste that is in principle available to waste streams. It does not include 'not-available' waste, such as pipes abandoned in situ. It encompasses all waste arisings that go to different end-of-life treatments (recycling, incineration or landfill).

COLLECTABLE WASTE is PVC waste that can be reclaimed, graded, and transported for recycling. It does not include some components of available waste that are not economically or technically feasible to collect or recycle. This is a variable proportion that depends on the specific recycling system used.

In 2020, a new traceability survey was carried out by Recovinyl[13] to verify in which applications PVC waste recycled in 2019 had been used. (See chart on p. 21).

The new NBA offices in Mexico City offer a dynamic and playful environment, also thanks to PVC flooring and adhesive decors.

Over the year, Recovinyl was heavily involved in the EU Circular Plastics Alliance (CPA – also see p. 26) Monitoring Working Groups. Recovinyl contributed its experience to define a shared methodology of reporting and to draft the CPA audit protocol for recyclers and converters and the requirements for the data collector.

In 2020, Recovinyl also developed RecoTrace™ (https://recotrace.com), a new database for recyclers and converters in line with the CPA requirements and objectives, which is now ready for use in the new VinylPlus Commitment.

13 Set up in 2003, Recovinyl is the organisation aimed at facilitating PVC waste collection and recycling in the framework of the European PVC industry's Voluntary Commitments (***www.recovinyl.com***)

PHOTO: COURTESY OF PROFINE GROUP

Old PVC windows can be easily recycled in new window profiles as well as in doors made of 100% R-PVC.

We at profine have returned to an official VinylPlus partnership in 2020 – and we see many opportunities in this, as well as similarities with our own goals: the focus of the European Sustainability Programme on a circular economy, the contribution to the Circular Plastics Alliance and to the new goals of the circular economy.

Dr Peter Mrosik | Owner and CEO, profine Group

PHOTO: COURTESY OF DP DESIGN

A new concept of cinema for families: four types of seats upholstered in stain-resistant PVC fabrics in vibrant colours, specially designed to appeal to a child's sensibilities. Colourful PVC flooring were also used for children's fun.

Industry-Sector Projects for PVC Waste Management

With 353,443 tonnes recycled in 2020, window profiles and related building products accounted for 48% of the total PVC recycled in the VinylPlus framework.

In 2019, EPPA[14] started a technical project aimed at understanding the potential hazard classification under European waste legislation of rigid PVC containing legacy additives. The risk assessment study, based on the available test methodologies for HP 14 (Hazardous Properties ecotoxic) classification, was finalised in 2020. It confirmed that there is no ecotoxicity of virgin-layered recyclate profiles.

In 2020, EPPA and Recovinyl joined forces to develop a common approach to boost the recycling of window

RECOVINYL TRACEABILITY SURVEY 2020: USAGE OF 2019 R-PVC

35%	15%	13%	10%	5%	4%	4%	3%	3%	3%	3%	2%
Windows and profiles	Traffic management	Pipes	Floor covering	Thermoformed sheets	Roof covering	Others	Horticultural and stable equipment	Another recycler	Compounding	Export	Coils and mandrels

14 EPPA: European PVC Window Profile and Related Building Products Association (***www.eppa-profiles.eu***)

PVC piping systems help provide access to clean water and sanitation all over the world.

profiles to attain the VinylPlus 2025 targets. The action plan will focus on Germany, France and Poland, which have been identified as the countries with the highest potential for post-consumer window recycling.

In Germany, Rewindo[15] estimated that two-thirds of the 300 million windows currently in use are made of PVC. As they will progressively come to the end of their useful life, there is considerable potential for further expanding the recycling of PVC windows in Germany.

In France, strong cooperation was established with UFME (Union des Fabricants de Menuiseries – the Association of Doors and Windows Manufacturers, www.ufme.fr). It is aimed at consolidating and further developing the collection and recycling of end-of-life windows, also in view of the application of the related EPR (Extended Producer Responsibility).[16]

In Poland, a coordinating body was set up to build a value chain network aimed at developing collection schemes and promoting the recycling of post-consumer PVC profiles.

In 2020, TEPPFA[17] continued to motivate PVC pipe manufacturers to use PVC recyclates in multi-layer sewage pipes. A promotional video – *PVC Pipes Recycling towards a Circular Economy* – was also produced, which is being translated into French, German, Polish and Spanish. To maximise the uptake of externally recycled content, in line with its commitment in the EU Circular Plastics Alliance, TEPPFA is voluntarily opening up its product standards as part of CEN/TC 155. It is doing this without compromising on quality, hygiene, safety, longevity or fitness for intended purpose.

A buried pipe project and pipe testing were carried out to assess pipes' potential contribution to the release of microplastics in the use-phase. Thirty-year-old excavated plastic stormwater pipes, including PVC pipes, confirmed excellent performance in use, showing no notable internal pipe wall abrasion. Furthermore, lab testing carried out by DTI (Danish Technological Institute)[18] on various polymers for drinking water pipes, including PVC-U, confirmed that zero microplastics were found in the test samples.

Co-funded by VinylPlus, Revinylfloor is the platform set up within ERFMI[19] to promote a circular economy for the PVC flooring sector in Europe. During the year, ERFMI carried out a gap analysis on the existing recycling technologies and collection schemes for PVC flooring. Furthermore, the consultancy firm Solfirmus (www.solfirmus.be) was selected to carry out an in-depth analysis of suitable recycling technologies and to investigate identification and sorting technologies for PVC flooring containing legacy additives.

15 Rewindo: the German recycling initiative for PVC windows, roller shutters and related products (***www.rewindo.de***)

16 EPR: Extended Producer Responsibility, a policy approach under which producers are given a significant responsibility for the treatment or disposal of post-consumer products

17 TEPPFA: The European Plastic Pipes and Fittings Association (***www.teppfa.eu***)

18 DTI: Danish Technological Institute, Denmark's largest and leading knowledge centre for construction materials (***www.dti.dk***)

19 ERFMI: European Resilient Flooring Manufacturers' Institute (***www.erfmi.com***)

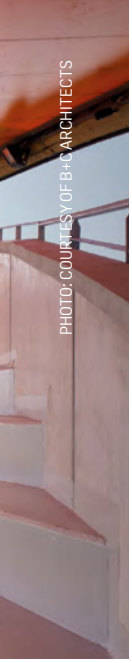


PHOTO: COURTESY OF B+G ARCHITECTS

Stadia roofing made of tensile PVC membranes protects the public from sun and rain while allowing soft, natural lighting.

In 2020, around 14,115 tonnes of roofing and waterproofing membranes were recycled through ESWA's[20] project Roofcollect® (www.roofcollect.com) or reported through the Recovinyl scheme. ESWA performed collection trials in the Netherlands and initiated a pan-European project to characterise the recyclability of end-of-life roofs in an effort to further expand outlets for recyclate.

Other Recycling Projects

The Oreade chemical recycling process, which has been studied at the Oreade-Suez plant in France, combines energy and material recovery. Following the promising results of the 2017-2018 small-scale test trials, larger-scale trials were run in 2019 to test waste streams with different chlorine concentrations. In total, more than 300 tonnes of end-of-life PVC tarpaulins and flooring were treated. The trials confirmed the overall feasibility of the approach, which allows the recycling of the chlorine part of the PVC molecule. In the next step, selected waste-to-energy plants across Europe that use the same chlorine neutralisation technology (dry scrubber with sodium bicarbonate) will be involved in further trials to test the influence of different plant configurations on the efficiency of chlorine recovery.

The primary objective of the ThermoVinyl project, which started in 2019 in Switzerland, is to assess the possible environmental benefits of using recovered hydrochloric acid produced by the incineration of chlorine-containing wastes in Swiss municipal waste-to-energy plants. The acid obtained from flue gas washing via a wet-scrubbing process is used to treat filter ashes to recover salts of heavy metals such as zinc, lead, cadmium and copper. The recovered metals are then recycled. Most incineration plants in Switzerland use the acids produced in their own flue gas washing facilities to extract heavy metals from the filter ashes, but the available quantities of acid are insufficient. The use of selected PVC waste streams to generate hydrochloric acid avoids buying additional acid on the market and presents an interesting alternative from both the environmental and economic points of view.
The project will continue in 2021 by focusing on the potential enhancement of the generation of hydrochloric acid via increased treatment of suitable PVC waste streams that are difficult to recycle mechanically.

Both the Oreade and ThermoVinyl processes offer technically feasible solutions for the treatment of selected PVC waste streams that cannot be eco-efficiently recycled mechanically. As a result, the amount of waste sent to landfills is reduced, leading to less pollution, and preserving natural resources by reducing the need to produce new materials. The processes take advantage of existing European infrastructure, such as municipal waste-to-energy plants, which means that additional investment to build new plants is not necessary.

The REMADYL project[21] was launched in June 2019, funded by the Horizon 2020 Framework Programme for Research and Innovation. It is aimed at removing hazardous legacy phthalates and lead from PVC and at recycling 'old PVC' into high-purity PVC. The REMADYL project involves a consortium of 15 multidisciplinary European partners, including VinylPlus. Researchers from the University of Valencia (UVEG) joined the project in 2020 to develop scavenger materials for the removal of lead stabilisers from end-of-life PVC.


PHOTO: COURTESY OF HITZIG MILITELLO ARQUITECTOS

The COVID-19 pandemic also impacted architectural solutions. This 54-m² area of only sitting allows to host guests under the necessary social-distancing and sanitary measures. The fibreglass bars and circular PVC strips, both red, contrast the neutrality of the metallic materials, creating an appealing atmosphere.

20 ESWA: European Single Ply Waterproofing Association, an EuPC sectoral association (***www.eswa.be***)

21 ***https://cordis.europa.eu/project/id/821136*** and ***www.remadyl.eu***


PHOTO: COURTESY OF FORBO

Healthcare buildings benefit from PVC applications such as flooring, wall coverings and window profiles in terms of safety and hygiene as well as personal comfort.

Using the scavenger complexes synthesised by UVEG, the technology centre AIMPLAS (www.aimplas.net) is currently testing the removal of lead stabilisers via a continuous melt filtration process in an extruder. As part of the REMADYL project, the first promising plasticiser batch-extraction tests were performed at the Fraunhofer Institute for Chemical Technology (www.ict.fraunhofer.de) on PVC dry blends and PVC sheets (mostly containing mainly DEHP). The extraction achieved good yields of over 70%.

The EuPolySep project is aimed at setting up a small pilot plant in Belgium to separate PVC from complex laminated products. Polymer-laminated materials and polymeric materials with composite structures are commonly used to combine the particular performances of different polymers. The Australian PVC Separation (PVCS)[22] technology has been identified as the most promising to be tested at a pilot scale. This innovative process allows polymers to be delaminated and separated from polymer-composite structures for subsequent recycling.

The Resysta® recycling consortium (www.resysta.com/en) produces a recyclable wood-like material based on rice husks and PVC. In 2020, the Resysta network continued to work on the development of a European collection infrastructure for waste Resysta material along the whole value chain (sanding, offcut, installation and end use), in order to be able to return clean material into the production process. LCAs and EPDs for Resysta material and end products are currently being developed with the Institut für Fenstertechnik of Rosenheim, in Germany (www.ift-rosenheim.de).

RecoMed is a partnership project between the British Plastics Federation (BPF)[23] and Axion,[24] co-funded by VinylPlus. It is aimed at collecting and recycling non-contaminated used PVC medical devices from UK hospitals, including face masks and tubing. The project currently involves 43 hospitals from 15 hospital trusts. Another 98 hospitals from 83 trusts and private healthcare providers are ready to enrol in the scheme. COVID-19 has adversely affected the project outcomes for 2020, causing an 81% drop in recycling quantities. To date, 24,211 kg of medical devices have been collected and recycled. RecoMed is currently developing a new business model to improve financial sustainability.

Building on the successful experience of RecoMed, in 2020 VinylPlus started a new collaborative project called VinylPlus® Med. The project, which was officially unveiled in February 2021, is aimed at developing a recycling scheme for single-use PVC medical devices in Europe, to help hospitals sort their PVC medical waste stream. Starting with a pilot project in Belgium, the scheme will focus on clean and REACH-compliant PVC waste that can be recycled into a wide range of value products marketed across Europe. In partnership with Europe Hospitals (www.cliniquesdeleurope.be/en), high-quality and non-infectious PVC waste of various departments will be collected and recycled. VinylPlus® Med also involves Raff

On the topic of product circularity, a vast majority of respondents in our survey confirmed that PVC recycling should be scaled up, hand in hand with exploring new circular business models. This will allow PVC to build on the strong sustainability track record established over the last decade and to continue to be seen as a frontrunner in circularity.

Michael Ulbrich
Managing Director – Global Lead for
Circular Economy in Chemicals, Accenture


PHOTO: COURTESY OF TMG

PVC provides high durability, resistance to scratches, excellent 'soft-touch' and aesthetic characteristics to car seats.

22 PVCS: PVC Separation Pty Ltd is a proprietary and patented process for separating laminated polymer and other materials (***www.pvcseparation.com***)

23 BPF: British Plastics Federation, the leading trade association for the UK plastics industry (***www.bpf.co.uk***)

24 Axion: circular economy specialists (***www.axiongroup.co.uk***)

PHOTO: COURTESY OF RECOMED

PVC devices account for about 40% of all plastics-based medical devices used in hospitals.

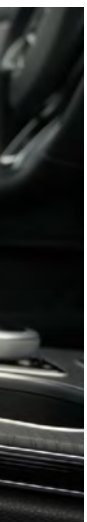
Plastics (www.raffplastics.be/en), as the recycler, and Belgian waste management companies. All Belgian VinylPlus® Med partners are located within a radius of 120 km, to limit transport distances and thus minimise the carbon footprint.

Launched in 2019, the EATS Recycling Project is a joint technical project between VinylPlus and VFSE[25] Automotive Working Group (EATS – European Automotive Trim Suppliers) aimed at developing a product for the automotive industry, made of recycled polymers from the automotive industry, thereby creating a closed loop. In 2020, the project was successfully completed with the production of a heel mat containing recycled PVC.

In 2020, IVK Europe[26] started a technical project aimed at exploring the mechanical separation of soft PVC material lined with woven fabric or polyester. The objective was to develop a technique for separating fabric, tissue and composites fibre from soft PVC foils or membranes such as synthetic leather, truck tarpaulins, banners, conveyor belts and swimming pool foils. Trials were carried out by the recycling company KKF reVinyl GmbH (re-vinyl.de), with promising results. Further tests are foreseen in 2021, using the recycled material produced so far and exploring sieving techniques, alternative separation proceedings and laboratory tests. The main objective is to improve the quality of the gained recyclate.

As the reintroduction of a tax on soft PVC was under discussion in Denmark, the Danish manufacturers decided to investigate whether a recycling scheme for soft PVC could be established there. The consultancy Ramboll[27] was commissioned to conduct a best-available-technique (BAT) analysis of existing collection and recycling schemes and assess the potential environmental benefits of Denmark joining the European recycling system. Preliminary conclusions show that the analysed soft PVC products (flooring, roof membranes, medical devices, tarpaulins, climate protection equipment, sport applications and tents) are very difficult to substitute: substitution would result in more-expensive products with reduced technical performance. The study also concludes that recycling technologies exist for soft PVC waste and that there are circular potentials for soft PVC products in Denmark.

WREP (Waste Recycling Project) was launched in 2016 by PVC Forum Italia[28] to assess the improvement potential for PVC recycling in Italy and to promote the development of pilot PVC waste collection and recycling schemes. Despite the difficulties due to the COVID-19 pandemic, cooperation with ETRA SpA (www.etraspa.it) continued in 2020 and demonstrated that intercepting and recycling PVC waste is economically as well as environmentally worthwhile. One essential element for the success of the pilot project was training the operators of the plants involved in the experimentation, which equipped them to recognize, separate and select the PVC elements. The project also confirmed the importance of an appropriate selection and separation of high-quality PVC waste: the more it is free from contamination, the easier it is to use the recycled material in the same application (closed loop) or in other high-performance applications (upgrading), increasing the R-PVC value on the market. Thanks to the cooperation with ETRA, WREP is part of CIRCE2020's initiatives[29] in Italy.



25 VFSE: Vinyl Films and Sheets Europe, the association representing the European suppliers of plastics sheets and foils (***www.vfse.org***)
26 IVK Europe: Industrieverband Kunstoffbahnen e.V. (Plastic Sheets and Films Association – ***www.ivk-europe.com***)
27 Ramboll: a leading engineering, design and consultancy company founded in Denmark in 1945 (***ramboll.com***)
28 PVC Forum Italia: the Italian association of the PVC value chain (***www.pvcforum.it***)
29 ***https://www.interreg-central.eu/Content.Node/CIRCE2020.html***

I am very pleased with the commitment and the proactive role of VinylPlus in the Circular Plastics Alliance.
DG GROW knows that we can count on VinylPlus as a top-class and reliable member in the Construction Working Group of the Alliance.

Kirsi Ekroth-Manssila
Head of Unit, DG GROW, European Commission

CIRCULAR PLASTICS ALLIANCE

The EU Circular Plastics Alliance (CPA) is a collective endeavour aimed at taking actions to boost the EU market for recycled plastics to 10 million tonnes by 2025, a target set by the European Commission in its 2018 Plastics Strategy.

More than 275 organisations – representing industry, academia and public authorities and covering the whole plastics value chain and interested stakeholders – have to date signed the declaration of the Circular Plastics Alliance, which was officially launched in September 2019. These organisations included VinylPlus, several of its partners and PVC sectoral associations. Since December 2019, the VinylPlus Managing Director has been chairing the CPA Construction Working Group. In 2020, this working group actively contributed to the first deliverables of the CPA, namely the Research and Development Agenda and the Design for Recycling Guidelines. It also made progress on other deliverables such as collection and sorting, recycled content and monitoring.

LEGACY ADDITIVES

Legacy additives are substances that are no longer used in new PVC products but can be present in recycled PVC. Since the use of legacy additives may be restricted by legislation, VinylPlus is committed to addressing the issue in cooperation with regulatory authorities.

Over the years, VinylPlus has contributed to discussions on legacy additives by supporting research and a considerable number of studies. Several substances (such as cadmium compounds, lead-based stabilisers and low molecular weight phthalates) have been investigated from several angles with a major transition over the last 25 years from these additives to innovative, safe and sustainable alternatives (such as calcium-zinc stabilisers, high molecular weight phthalates and other plasticisers). In December 2020, the Fraunhofer IVV[30] produced the final report on *Screening Analyses of Legacy Additives in PVC Recyclates and Recycled Articles*. A study of BPA (bisphenol A) and ATO (antimony trioxide) migration and environmental modelling was also completed by FABES[31] in October 2020.

PVC windows and doors provide a perfect balance between energy efficiency and comfortable living.

An example of artistic installation with three-dimensional sculptural signage made of coloured PVC strings, which colonises the central void of the venue. On the flooring they become a two-dimensional PVC adhesive signage.

30 Fraunhofer IVV: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Engineering and Packaging – ***www.ivv.fraunhofer.de***)

31 FABES: German research institute (***www.fabes-online.de***)

PHOTO: COURTESY OF RENOLIT

PVC wall cladding is easy to install, resistant to atmospheric agents and recyclable.

Lead Restriction

In November 2019, the REACH Committee accepted the European Chemical Agency's (ECHA) proposal for the revision of lead-content limits in articles containing recycled PVC.[32] The proposal contained a derogation period of 15 years, to be reviewed after 7.5 years. The draft regulation was sent for scrutiny to the European Parliament and Council. On 21 January 2020, the European Parliament ENVI Committee adopted a motion for resolution objecting to the draft Commission regulation, considering it incompatible with the aim and content of the REACH Regulation.[33] On 12 February 2020, a plenary session of the European Parliament voted in favour of this resolution. The draft proposal was then returned to the European Commission for review. VinylPlus is helping the European Commission to address the concerns raised by the European Parliament and is updating its wealth of relevant information for that purpose.

CONTROLLED-LOOP COMMITTEE

The Coronavirus emergency has strongly impacted all human activities, including those in the PVC industry, from the production stage to recycling. Already in spring 2020 it was clear that COVID-19 would have a significant impact on 2020 recycling volumes.

Despite the difficult situation, Controlled-Loop Committee (CLC) activities remained focused throughout the year on ensuring progress on VinylPlus recycling targets for 2020 and beyond.

The new dynamic model developed by the consultancy Conversio (www.conversio-gmbh.com), which estimates the amounts of post-consumer PVC waste arising, available and collectable each year from 2020 to 2040, underwent further refinements during the year.

With a view to the new VinylPlus Commitment towards 2030, a study was also carried out in co-operation with the University of Ghent in Belgium to evaluate material flows in the PVC industry over a 10-year period. The different scenarios estimated how material resources can evolve. Examples included more PVC recyclates replacing virgin PVC, chlorine produced from sodium chlorine mined in salt mines and from recycling, the hydrocarbon part of PVC from fossil feedstock, bio-sourcing and chemical recycling. The study also discussed the possible impact of such evolution on pre-defined key sustainability indicators.

In April 2020, the consultant TNO (www.tno.nl) finalised its critical investigation of PVC chemical recycling technologies available on the market. The study assessed three technologies: Ebara-Ube (gasification); Agylix (pyrolysis); and Oreade. Municipal solid waste (MSW) incineration was used as a reference. The final report showed that gasification is potentially the best option for waste with a 10% PVC content, but also, that "*… chemical recycling technologies are not yet available at commercial scale for municipal solid waste. And these technologies work currently with well-defined input streams and further research is needed regarding operation with mixed input streams.*"

The CLC plays a key role in monitoring and screening potential innovative recycling technologies. It will continue to do so also in the future – not only to find solutions for the more difficult-to-recycle PVC waste streams, but also for the legacy additives that remain the main challenge for future recycling commitments.

VinylPlus has come of age – now used as THE blueprint for a successful Voluntary Commitment by European Commissioners!

Jason Leadbitter
Chairman, VinylPlus Controlled-Loop Committee
Sustainability and Corporate Social Responsibility Manager, INOVYN

32 Also see p. 10 of VinylPlus Progress Report 2019

33 ***https://www.europarl.europa.eu/doceo/document/B-9-2020-0089_EN.html;*** and ***https://www.europarl.europa.eu/doceo/document/TA-9-2020-0030_EN.html***

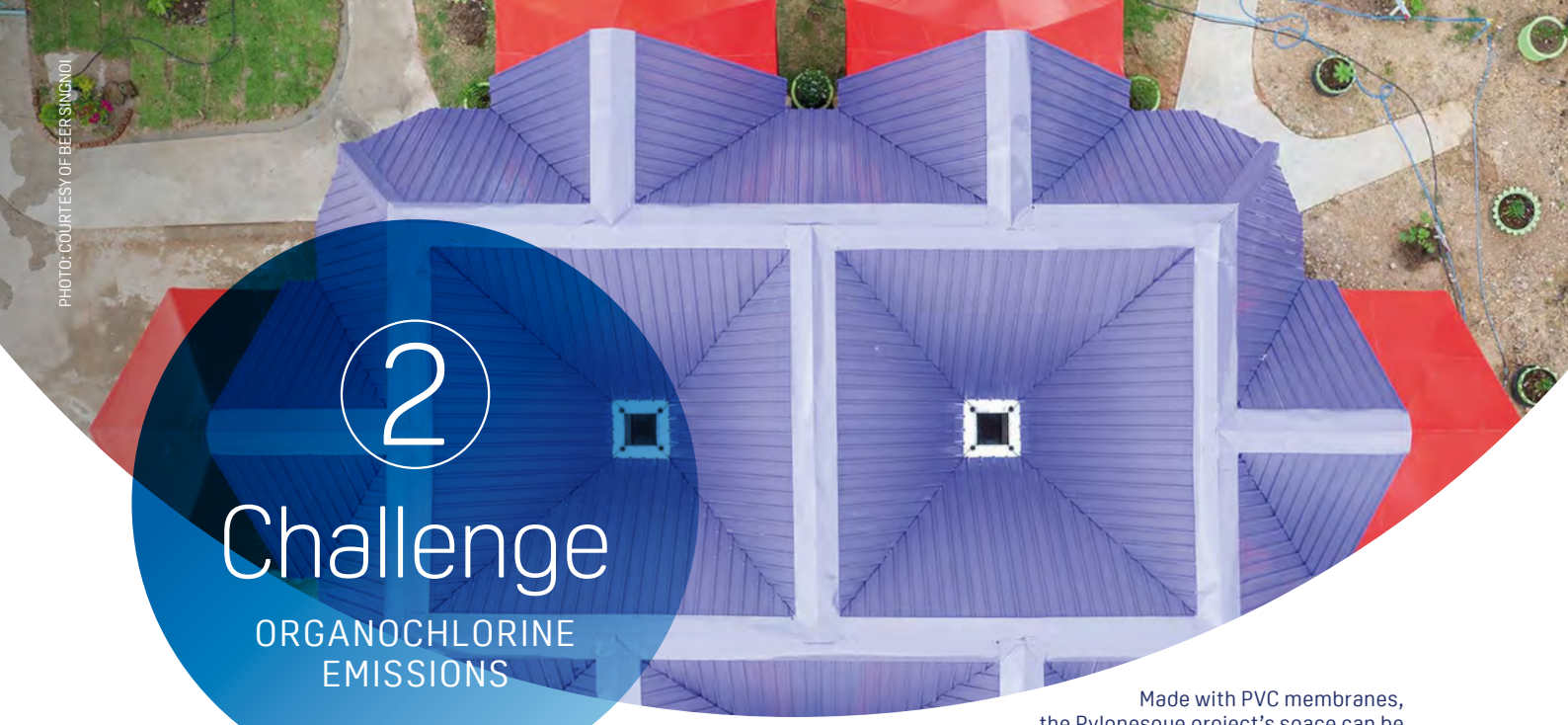


PHOTO: COURTESY OF BEER SINGNO!

2 Challenge

ORGANOCHLORINE EMISSIONS

Made with PVC membranes, the Pylonesque project's space can be reconfigured as needed, into a canteen, classrooms, an event area, and an after-school hang-out spot. Furthermore, it responds architecturally and ecologically as a water harvesting system.

SAFE TRANSPORT

There were no transport accidents in Europe with VCM release in 2020, thus achieving the target of zero accidents with VCM release during transportation over the 2011-2020 decade.

PHOTO: COURTESY OF NIKITA SHOHOV, ANDREJ JAGUBSKIJ

Emotionally intelligent and environmentally responsive PVC route enables users to explore new experiences in moving and perceiving their surroundings.

PVC RESIN INDUSTRY PRODUCTION CHARTERS

The industry charters for suspension (VCM and S-PVC Charter) and emulsion (E-PVC Charter) PVC were aimed at reducing environmental impact in the production phase. Taking into account the current best available techniques, they were updated in 2019 and unified into a single document: *ECVM Industry Charter for the Production of Vinyl Chloride Monomer and PVC*.[34]

The updated Charter includes two new commitments: to limit workers' exposure to VCM as much as technically feasible and to participate in the Operation Clean Sweep® programme[35] by applying the auditing method adapted to PVC plants.

The members of ECVM are committed to achieving 100% compliance with the updated Charter by the end of 2021.

PHOTO: COURTESY OF ALPHACAN

PVC window profiles, aesthetic and cost-effective solutions to save energy and resources.

34 The updated version of the ECVM Industry Charter can be downloaded at ***https://pvc.org/about-ecvm/ecvms-charter/***; the previous versions are available at: ***https://pvc.org/wp-content/uploads/2019/03/ECVM_Charter_VCM_PVC.pdf*** and ***https://pvc.org/wp-content/uploads/2019/03/Emulsion-PVC-Charter.pdf***

35 ***https://vinylplus.eu/community/operation-clean-sweep***

PHOTO: COURTESY OF VERSEIDAG

3 Challenge

SUSTAINABLE USE OF ADDITIVES

Temporary structures for sports, events and exhibitions benefit of PVC's lightweight, easy installation, durability, re-usability and recyclability.

PLASTICISERS

Estimates by European Plasticisers confirm a constant growth (a 33% increase compared to 2005) in the use of high molecular weight (HMW) orthophthalates, cyclohexanoates, terephthalates and other plasticisers in Europe, together with a progressive decline in the use of low molecular weight (LMW) orthophthalates.
Given the large tonnages involved, the transition from SVHC (Substances of Very High Concern) LMW phthalates to more innovative, safe and sustainable non-SVHC HMW phthalates and other plasticisers has involved major investment (over €6 billion) by the European plasticiser industry over the last 25 years. Hazard and risk assessments were conducted on the alternative plasticisers during this period by regulators with the involvement of all stakeholders via public consultations and meetings.

"Transparency and a proactive, collaborative approach are essential. Science is a building block of any constructive discussion and the foundation of any debate with regulators.

Michela Mastrantonio
Manager, European Plasticisers

This is a remarkable example of how an innovative, safe and sustainable transition can be achieved with the involvement of regulators, industry and all stakeholders, and in compliance with EU competition law.

Studies and Research

European Plasticisers is committed to robust weight-of-evidence science and is constantly engaged in fostering a sound scientific debate around plasticisers. To encourage research activities and raise awareness of the safe and sustainable use of plasticisers in the younger generation, in January 2020 European Plasticisers, with the support of VinylPlus, launched a call for the best essays on plasticisers and flexible PVC. The project – called *Hands on Vinyl: Students of Today, Experts of Tomorrow* – attracted several interesting works from Bachelor, Master and PhD students at Belgian, German and Italian universities. A selection panel composed of industry experts reviewed all the papers and appreciated the high quality of the essays submitted, as well as the dedication and commitment of all the authors. The winners were Federico Acciaretti and Andrea Pasquale of the University of Milano-Bicocca, Italy, with a work on bio-based processes to synthesise di(2-ethylhexyl) adipate (DEHA).

A scientific project aimed at developing PBPK (physiologically-based pharmacokinetic) models for several plasticisers was started in 2017 by European Plasticisers and co-funded by VinylPlus. The objective was to demonstrate the safe use of plasticised PVC and support scientifically solid risk assessments. The PBPK model for DINCH (Di-isononyl cyclohexanoate) was published in November 2019,[36] and the model for DINP (Di-isononyl phthalate) was published[37] in August 2020. PBPK models for DEHT (Di-octyl terephthalate) and DPHP (Di(2-propyl heptyl) phthalate)/DIDP (Di-isodecyl phthalate) are being validated. PBPK models for DEHA, DINA (Di-isononyl adipate) and DBA (Di-n-butyl adipate) will follow, taking into account their differences compared to the phthalates identified in recently published studies.

A *Systematic Comparison of the Male Reproductive Tract in Foetal and Adult Wistar Rats exposed to DBP and DINP in Utero during the Masculinisation Programming Window* was undertaken at the University of Edinburgh and published[38] in the peer-reviewed journal Toxicology Letters in December 2020. It concludes that DINP does not cause the adverse reproductive effects known to occur with DBP (Di-n-butyl phthalate), a Category 1B Reproductive Agent, which is an SVHC and an endocrine disruptor under REACH.

Regulatory Updates

As reported in last year's Progress Report,[39] the updated EFSA[40] risk assessment of the phthalates DBP, BBP (Butyl benzyl phthalate), DEHP (Di(2-ethylhexyl) phthalate), DINP and DIDP for use in food-contact materials (December 2019), concluded that *"current exposure to these five phthalates from food is not a concern for public health"*.[41] Nevertheless, based on the limited scope of the mandate and the uncertainties identified, the EFSA's CEP Panel[42] considered that the current assessment of the five phthalates, individually and collectively, should be on a temporary basis. Further evaluations of a broad range of plasticisers (39 in total) are now in progress.

In November 2020, EFSA received a new mandate[43] from the EU Commission and will now address the limitations of the work carried out in the previous mandate; prioritise and identify phthalates, structurally similar substances and replacement substances; and establish a protocol for dietary exposure assessment to and hazard assessment of the prioritised substances. European Plasticisers will keep providing data and other relevant information as appropriate.

PHOTO: COURTESY OF IVC

Educational environments should inspire and facilitate learning. PVC flooring provide thoughtful design combined with excellent acoustic performance.

PHOTO: COURTESY OF EVONIK

R&D is core to the development of safe and sustainable additives for PVC applications.

36 *https://doi.org/10.3389/fphar.2019.01394*
37 *https://doi.org/10.1080/15287394.2020.1798831*
38 *https://www.sciencedirect.com/science/article/pii/S0378427420304434*
39 Also see p. 17 of VinylPlus Progress Report 2020
40 EFSA: European Food Safety Authority (*www.efsa.europa.eu*)
41 *https://www.efsa.europa.eu/en/news/faq-phthalates-plastic-food-contact-materials*
42 The EFSA Panel on Food Contact Materials, Enzymes and Processing Aids
43 *http://registerofquestions.efsa.europa.eu/roqFrontend/questionLoader?question=EFSA-Q-2020-00725*

PHOTO: COURTESY OF AMTICO

In PVC flooring, colours represent a functional, aesthetic and 'humanising' element.

In 2020, European Plasticisers contributed to the European Commission public consultation on amending the Authorisation List (Annex XIV of REACH) entries by adding the four phthalates DEHP, BBP, DBP and DIBP for their endocrine disrupting properties.[44] Since these four phthalates were already on Annex XIV for the same adverse effects (reproductive effects), European Plasticisers expressed concern for the over-regulation of these substances. Once the European Commission decides on the amendment, some previously REACH-exempted uses will require authorisation. For example, if DEHP is listed as an endocrine disruptor for the environment, authorisation applications will have to be submitted for it to be used in food-contact materials and medical devices.

As of 7 July 2020, the use of the low molecular weight orthophthalates DEHP, DBP, DIBP and BBP has been restricted in articles produced in or imported to Europe. They cannot be used in a concentration greater than or equal to 0.1% by weight of the plasticised material.[45]

CRITERIA FOR THE SUSTAINABLE USE OF ADDITIVES

The ASF (Additive Sustainability Footprint – https://vinylplus.eu/asf) is the methodology developed by VinylPlus and The Natural Step[46] to proactively evaluate the sustainability positives and negatives of the additives used in PVC products across their whole lifecycles and prioritise actions to maximise the positives.

The ASF methodology and criteria were peer reviewed by LCA experts and validated for the key additives used in a generic window profile formulation. In 2020, a specific Homogeneous Flooring Task Force was set up by VinylPlus and TNS, in collaboration with ERFMI, ESPA and European Plasticisers, to validate the ASF criteria for the key additives – stabilisers and plasticisers – used in a generic homogeneous PVC floor covering.

Now that the ASF criteria have been validated for the key additives used in generic rigid (window profile) and flexible (floor covering) PVC formulations, additives manufacturers will be able to use the ASF for their own products. One major strength of the ASF approach is that it can be used by any additive manufacturer willing to self-assess the lifecycle sustainability of the additives used in PVC products. A dedicated ASF team was set up to help the additive manufacturers use the ASF for their products, supporting the creation of internal teams and structures.

Sustainability is a continuous improvement journey, and ESPA's and my personal goal for the future is to demonstrate the great value that safely-designed PVC additives can offer to all highly valuable vinyl applications: saving fresh water, energy, food, and allowing the perfect mechanical recyclability of articles into new ones. This, not only in Europe, but worldwide.

Ettore Nanni
President of ESPA and VinylPlus Steering Board Member
CEO, Reagens

44 *https://echa.europa.eu/fr/-/endocrine-disrupting-properties-to-be-added-for-four-phthalates-in-the-authorisation-list*
45 Commission Regulation (EU) 2018/2005
46 The Natural Step: sustainability experts (*www.thenaturalstep.org*)

4 Challenge

SUSTAINABLE USE OF ENERGY AND RAW MATERIALS

ENERGY EFFICIENCY

PVC resin producers committed to reducing their energy consumption for the production of EDC (Ethylene dichloride), VCM and PVC, targeting a 20% reduction by 2020.

As previously reported, in 2018 IFEU[47] completed the second verification of ECVM members' energy consumption data, for the 2015-2016 period. The energy needed to produce one tonne of PVC decreased by an average of 9.5% compared to the baseline period 2007-2008. There was no progress since the previous verification of consumption data, which was for 2012-2013, and progress appeared to be levelling off. An investigation of the reasons showed that the energy use was nearing the thermodynamic limits of the monomer and polymer production processes.

As verified by IFEU, a 14.4% reduction in CO_2 emissions for average PVC production was achieved between the baseline period and 2015-2016.

For converters, differences among products and production processes make it difficult to report on an average reduction in energy consumption across applications. Reporting is therefore related to internal surveys and revision of Environmental Product Declarations. However, across main applications such as window profiles, pipes, flooring, films and sheets energy consumption decreased between 16% and 26.5% compared to 2010.

PHOTO: COURTESY OF KRISTOF LEMP, MERCK

PVC is used in renewable energy technologies, for example in photovoltaic cells on reflective PVC roofing membranes and wind turbine blades.

Energy savings were achieved through, among others:

- Change of converting equipment motors from DC drive to AC
- More efficient cooling systems using 'free cooling' in cold periods and countries
- Intelligent control of pumps and ventilators
- Reduction of rework and scrap
- New LED lightning in factories and site area.

Moreover, several companies are also shifting towards renewable energy, investing in wind parks or solar panel farms.

47 IFEU: Institut für Energie- und Umweltforschung Heidelberg GmbH (German Institute for Energy and Environmental Research – *www.ifeu.de*)

PHOTO: COURTESY OF STUDIO VELOCITY

PVC roofs allow flexible and creative solutions to designers. The twelve large white PVC roofs that float the upper part allow the entire site to be felt from inside, making it a liveable space.

PHOTO: COURTESY OF INOVYN

RENEWABLE RAW MATERIALS

Thanks to technical and scientific improvements, industry innovation and changes in market conditions over the past few years, non-fossil-based PVC additives and compounds are starting to become available. Commercially viable bio-attributed and circular-attributed certified PVC resins have also recently been launched on the market.[48] [49]

Today there are no technical barriers to the production of plastics and some additives from renewable raw materials. This is described in the updated *VinylPlus Status Report on Renewable Raw Materials.*[50]

VinylPlus shares the views of society of the benefits of developing renewable raw materials to complement the major oil and gas sources of raw materials. It recognizes the opportunity offered by the bioeconomy to diversify the chemical industry's raw material base. But sustainability, underpinned by lifecycle thinking, must play a major role when plastics are developed from biogenic sources, since such products have their own impacts, for example for land and water use.

The City of Gothenburg, Sweden, is building the first fossil-free preschool. Its pipe systems are produced in climate-friendly, recyclable, bio-attributed PVC that provide CO_2 savings of 90% compared to conventional PVC.

48 *https://www.inovyn.com/news/inovyn-launches-worlds-first-commercially-available-grade-of-bio-attributed-pvc/*
49 *https://www.vynova-group.com/press-releases/launch-bio-attributed-pvc;* and *https://www.vynova-group.com/press-releases/launch-circular-attributed-pvc*
50 *https://vinylplus.eu/uploads/VinylPlus%20Report%20on%20Renewables%202020.pdf*

PHOTO: VINYLPLUS®

A new hybrid format for the VSF 2020, livestreamed from a TV studio.

5 Challenge

SUSTAINABILITY AWARENESS

STAKEHOLDER DIALOGUE AND COMMUNICATIONS

VinylPlus is committed to raising awareness of sustainability at all points along the value chain and to a frank and open dialogue with all its stakeholders – whether they be inside or outside the PVC industry. Due to the COVID-19 pandemic, several conferences and events VinylPlus had planned to take part in over the course of 2020 were cancelled or postponed to 2021. Others were held in virtual form, so VinylPlus could take part in a series of virtual major national and international conferences and scientific events, where it continued to present its approach and achievements and to exchange experiences and best practices.

In June 2020, VinylPlus gave a speech on *Sustainability Certifications for the European PVC Supply Chain* at the PVC Compounding and Product Cycle Forum online conference.

PHOTO: COURTESY OF JASON BAILEY

PVC: an inspirational material for artists and designers all over the world.

In July 2020, VinylPlus made a presentation at the AGPU – now VinylPlus Deutschland[51] – General Assembly, entitled *A Circular Future with Vinyl*.

Thanks to our hard work and consistent commitments, VinylPlus has accomplished major achievements as a united value chain, recognized by many stakeholders, including the EU and national authorities.

Brigitte Dero
Managing Director, VinylPlus

In September 2020, VinylPlus contributed a presentation on its *2019 Achievements* in the webinar on Post-Consumer PVC Recycling and Circular Economy organised by PVC Forum Italia. The webinar was held as part of the first digital edition of the RemTech Expo, an Italian international event dedicated to sustainable development, the circular economy, and sustainable

51 AGPU – Arbeitsgemeinschaft PVC und Umwelt e.V., the German association of the PVC value chain, has been renamed VinylPlus Deutschland in February 2021

A translucent PVC-PES façade characterises the Kigali Convention Centre's dome, inspired by traditional Rwandese housing huts. The entire site represents a benchmark for sustainable construction in tropical regions.

PHOTO: COURTESY OF SPACIAL SOLUTIONS

PHOTO: COURTESY OF MARC HERNANDEZ FOLGUERA, FERRARI

A PVC coated polyester membrane was chosen to provide both acoustic insulation and an attractive textured finish for this eco-resort's organic architecture, fully integrated into the site.

chemical industry. VinylPlus also hosted a virtual stand in the RemTech digital exhibition room.

Still in September 2020, VinylPlus presented its approach and achievements at ISOPA, the European Diisocyanates and Polyols Producers Association.

Under the theme #CIRCULARVINYL, the 8th VinylPlus Sustainability Forum (VSF2020) took place in Brussels, Belgium, in October 2020, in a new format, with few speakers and panellists in a TV studio and the others attending via livestreaming video conference.
The Forum brought together around 180 stakeholders from 24 countries, including representatives from the European Commission, European Parliament, consumer organisations, academia, specifiers, recyclers and the PVC value chain. The mix of presentations and speeches, panel discussions and videos, allowed participants to debate the new challenges and opportunities for the PVC industry, take part interactively in live polling sessions and contribute to the architecture of the new Commitment to 2030. The event concluded with the VinylPlus® Product Label Awards Ceremony, celebrating the five companies that were certified in 2020.

In November 2020, VinylPlus contributed the speech *VinylPlus: 2019 Achievements and Looking Forward to 2030* at the PVCH[52] General Assembly.

At the online seminar PVC – Innovation and the Drive for Circularity, organised by VinylPlus UK[53] in November 2020, VinylPlus presented *A Decade of Leadership: How VinylPlus has moved PVC Towards Sustainability*.

In December 2020, VinylPlus took part in the Plastics Recycling Show Europe virtual event organised by PRE[54] to debate *VinylPlus: 2019 Achievements and Looking Forward to 2030*.

The VinylPlus Sustainability Forum created a warm and safe space to engage into challenging conversations about what it means to be responsible in the context of an industry obliged to reinvent itself. The challenge of making the vinyl industry work for a sustainable future goes beyond the borders of Europe, it is truly global.

Carlos Alvarez Pereira,
Club of Rome and UNESCO Chair
on Global Understanding for Sustainability

52 PVCH is the Association of the Swiss PVC Industry (***https://www.pvch.ch***)
53 VinylPlus UK is the PVC value chain's Members Group of the British Plastics Federation (***www.bpf.co.uk***)
54 PRE: Plastics Recyclers Europe (***www.plasticsrecyclers.eu***)

Partnering with the Sports Community for Sustainability

Sports play a key role in ensuring social wellbeing and in spreading positive values such as education, fairness, and gender equality.

As part of its strategic partnership with the sports community, VinylPlus was a main partner of the Brussels Yoga Day 2020 held on 21 June. The day is the official International Day of Yoga established by the United Nations, and yoga sessions are organised every year in 177 countries worldwide.

Due to the COVID-19 pandemic, the well-known event, organised every year in Brussels since 2012 by the association Vidonne, went virtual. This format was in line with the theme set by the United Nations for 2020, *Yoga for Health – Yoga at Home*. The session, which took place under the Atomium with a restricted number of people, was livestreamed by RTL TVI (a French-language Belgian television channel) on its online platform RTL Play. It was followed by over 250,000 viewers. After the Yoga Day, the PVC yoga mats provided by VinylPlus for the event were donated to hospitals for their rehabilitation programmes and to youth and citizens associations.

National Engagement

To further reinforce VinylPlus engagement at the national level, and enhance cooperation and joint initiatives, three national organisations – AGPU in Germany,

In recent years we have seen the intense collaboration between VinylPlus and the national PVC associations further strengthening. We are extremely pleased that the European PVC industry not only continues to progress together towards sustainability, but also begins to speak under a single name as demonstrated by the renaming of VinylPlus Deutschland and VinylPlus UK. And Italy will follow soon.

Filipe Constant | VinylPlus Steering Board Member
Business Director, INOVYN

PHOTO: COURTESY OF MOTOELASTICO

An example of flexible and functional structure, easily collapsible, stackable, and re-usable for temporary markets, made with PVC tarp.

BPF in the UK and PVC Forum Italia in Italy – have been associate members of VinylPlus since 2017.

In Germany, VinylPlus and AGPU have been working closely together for many years in joint projects and committees sharing resources and expertise. Since 2017, all AGPU's sustainability activities have been implemented under the VinylPlus brand. To give a clear signal of a strong joint European commitment, AGPU was renamed VinylPlus Deutschland in February 2021, thus confirming the joint journey to sustainability.

In Italy, the PVC Forum's engagement with VinylPlus had already been consolidated by the constant presence of VinylPlus in communication activities and in joint projects and initiatives. The engagement was further strengthened through the adoption of a joint visual identity and the integration of VinylPlus into the PVC Forum's digital communications in Italy, on its website and in social media.

The British Plastics Federation's VinylPlus UK Group continued to work collaboratively with VinylPlus across the wide spectrum of activities to promote the PVC industry and its environmental credentials. The shared approach encompassed projects and communications and encouraged the visibility to promote common goals in the UK, with a particular advocacy focus on educating downstream users of PVC products.

Engaging Globally

As part of the commitment to promote its approach to the worldwide PVC industry, VinylPlus participated virtually in the 25th Asia Pacific Vinyl Network (APVN)

A moment of the Yoga Day ceremony which took place at the Brussels Atomium.

General Assembly and in the Global Vinyl Council (GVC) in November 2020.

United Nations

In 2020, VinylPlus continued to share its progress and contributions to the Sustainable Development Goals (SDGs) through annual reporting on the UN Partnerships for the SDGs Platform.[55]

VinylPlus had also planned to participate with an SDG booth at the Regional Forum on Sustainable Development (RFSD) for the UNECE Region, which was scheduled to take place in Geneva on 19-20 March 2020. The aim was to share VinylPlus' progress and achievement towards its 2020 targets, and its contribution to the SDGs; to get RFSD participants' comments and feedback; and to gather their input for the new VinylPlus Commitment for 2030. Due to the coronavirus outbreak, however, the Forum was held as a half-day virtual meeting on 19 March 2020.

THE VINYLPLUS® PRODUCT LABEL

The VinylPlus® Product Label (https://productlabel.vinylplus.eu) is a sustainability certification scheme for PVC products used in the building and construction sector. Developed by VinylPlus in cooperation with BRE[56] and The Natural Step, it combines elements of BRE's *Framework Standard for the Responsible Sourcing of Construction Products (BES 6001)* and VinylPlus' five sustainability challenges.

By the end of 2020, 128 products and product systems manufactured by 11 companies in 19 European sites had been certified. Despite the COVID-19 pandemic, all label holders have been recertified or applied for a recertification. In addition, a PVC producer from eastern Europe was recognized as a legitimate PVC supplier for certified products, having been verified as compliant with the standards of the ECVM Charters.

In 2020 the Product Label scheme was recognized as a Responsible Sourcing Certification Scheme within BREEAM,[57] the world's most used green building standard. The Product Label has also been recognized in the new voluntary Sustainable Carpentry label launched by the Belgian Construction Certification Association for Belgian manufacturers of exterior carpentry.[58]

We have seen and observed that VinylPlus has really increased and improved its communication to markets, the value chain and downstream users significantly in recent years. For Verseidag, it was clear that in welcoming this kind of initiative, we would like to become part of it as well.

Henric Leuer | Managing Director, Verseidag

The Product Label received a positive evaluation from the designated governmental body in Belgium for its compliance with the five criteria of article 43(1) of the EU Directive 2014/24/EU, which is a legal prerequisite for inclusion in public procurement specifications. The Label is now recommended to Belgian public purchasers in the *Guide for Sustainable Purchases*.[59] Finally, the Label has been directly specified by architects for building projects in Germany.

Early in 2020, VinylPlus officially launched the VinylPlus® Supplier Certificate (VSC) for raw material suppliers that are partners of VinylPlus. The VSC is intended to give these suppliers the chance to demonstrate their sustainability performance and to help their converter customers shorten audit times and gain quicker access to the VinylPlus® Product Label.

55 ***https://sustainabledevelopment.un.org/partnership/?p=91***

56 BRE: Building Research Establishment, UK-based certification experts on responsible sourcing for building and construction products (***www.bregroup.com***)

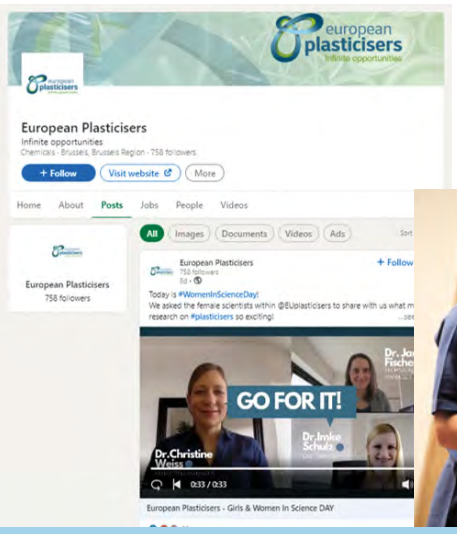
57 BREEAM is the world's leading sustainability assessment method for master planning projects, infrastructure and buildings (***https://www.breeam.com/***)

58 Label Duurzaam Schijnwerk/Menuiserie Durable (***https://duurzaamschrijnwerk.be/***)

59 Gids voor Duurzame Aankoop/Guide des Achats Durables (***https://guidedesachatsdurables.be/***)

VINYLPLUS JOINT COMMUNICATIONS PROJECTS

Every year VinylPlus co-funds a range of projects with the aim of expanding the scope of its communications activities. Eight projects were implemented in 2020, by one European industry sector organisation and four national PVC associations.



LINKEDIN PROCURERS CAMPAIGN

In 2020, European Plasticisers launched a LinkedIn advertising campaign targeting procurement and sustainability professionals to raise awareness of the sustainability profile of flexible PVC. The project focused on all EU Member States, Switzerland, Norway and the UK. Viewers were encouraged to visit the dedicated section of the European Plasticisers website. The results of the campaign were very positive, with more than 380,000 impressions and around 105,000 video views.

Project led by
European Plasticisers
Geographic scope: EU

RERECORD – WORKING WITH THE MUSIC INDUSTRY ON A RECYCLING SCHEME FOR VINYL RECORDS

The ReRecord project is aimed at exploring the potential for recycling vinyl records.
A recycling partner has been identified to conduct a feasibility study, and York University is currently looking at solutions to recycle waste vinyl into 'virgin' grade PVC suitable for manufacturing new records.
The project will also involve the charity sector, which is the main recipient of old vinyl records, and record distributors.
Due to some delays caused by the COVID-19 pandemic, the project will continue in 2021.

Project led by
VinylPlus UK
Geographic scope: UK

THE VINYLPLUS SUCCESS STORY FOR CSR AND SUSTAINABILITY MANAGERS

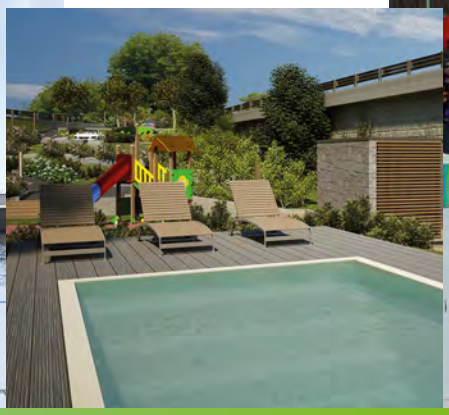
This project targeted sustainability and corporate social responsibility (CSR) managers and high-level specialists in industry and regulatory authorities.
The aim was to position VinylPlus as a role model for sustainability in selected magazines, make VinylPlus more visible and known in Germany to the target group and position the VinylPlus® Product Label as the sustainability mark for building and construction products.
The magazine *Forum Nachhaltig Wirtschaften*, Germany's most influential publication on sustainability and corporate responsibility topics, was selected for the publication of two advertorials, in February and April 2020.

Project led by
VinylPlus Deutschland
Geographic scope: Germany

VINYLPLUS DIALOGUE WITH DECISION MAKERS AND INFLUENCERS

This project aimed to raise awareness of VinylPlus and open positive dialogue – in politics, with local authorities and political influencers; and with demolition and recycling companies.
Due to the COVID-19 pandemic, one of three selected events was cancelled. However, the Fachtagung Abbruch (Demolition Conference) took place in Berlin in February as scheduled, and the KPV – Kommunalpolitische Vereinigung der CDU und CSU Deutschlands – was held as a virtual conference.
VinylPlus Deutschland participated in the KPV's panel discussion on climate protection and supported its participation with two articles in the magazine kommunalwelt.de.

Project led by
VinylPlus Deutschland
Geographic scope: Germany



ENERGY- AND RESOURCE-EFFICIENT PRODUCTS FOR GREEN PUBLIC PROCUREMENT

This project started in 2016 and focused on PVC products providing sustainable solutions in public procurement, thanks to their energy- and resource-efficiency, as well as their low whole-life cost. The VinylPlus® Product Label was also presented in the context of the circular economy and the renovation wave strategy. The magazine *KBD* was confirmed as media partner again in 2020 because of its special relevance for decision makers, local authorities and public procurement operators. Three advertorials were published during the year.

Project led by VinylPlus Deutschland
Geographic scope: Germany

PVC PARK 2 – A HOLISTIC APPROACH WITH PVC FOR GREEN AND COMMON SPACES IN SUSTAINABLE CITIES

The project started in 2019 and aimed to spread new criteria for the sustainable design of green and common spaces using PVC applications. It also aimed to improve the perception of PVC products by promoting their use as sustainable solutions for the design and requalification of urban green areas (SDG11). A real case-study architectural project was developed in 2019 and presented to Italian institutions, authorities and local administrations. In 2020, the project's focus was shifted to the private sector, addressing engineers, designers, architects and landscape architects. With more than 1,260 participants actively involved in the three PVC PARK webinars organised and over 30 articles published, the project was successfully implemented in spite of the COVID-19 pandemic.

Project led by PVC Forum Italia
Geographic scope: Italy

2026 WINTER OLYMPICS MILANO-CORTINA

Italy (Milan-Cortina) won the right to host the 2026 Winter Olympics. The project addresses institutions, authorities, local administrations, and Olympics organisers and aims to ensure that PVC can be considered a material of choice – for its sustainability and recyclability features and for its technical and economic characteristics. By its nature, this project is not geographically limited to Italy but might have European and even global breadth. The Coronavirus emergency significantly changed the original scenario, and activities in 2020 focused on the preparatory phase, such as the collection of materials, identification of relevant interlocutors, and preparation of documents and materials. After explorative contacts, meetings with the identified target audiences were postponed to 2021.

Project led by PVC Forum Italia
Geographic scope: Italy and beyond

PROFILING PVC AS A SUSTAINABLE MATERIAL IN DENMARK IN THE CONTEXT OF THE CIRCULAR ECONOMY

The objective of the 2020 project was to boost VinylPlus visibility and to increase external recognition for WUPPI,[60] its associated companies and their products. The main activities in 2020 included: communications with members over Parliament's vote on the lead derogation; meetings with the Danish Environmental Protection Agency (EPA) to map out the amount of PVC waste in Denmark and achieve a common understanding; and organisation of two seminars with the companies Wexøe and Rambøll to introduce VinylPlus and PVC recycling. The activities were supported by new videos, social media and advertising campaigns.

Project led by WUPPI
Geographic scope: Denmark

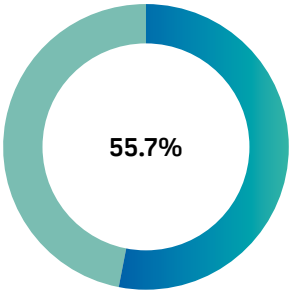
60 WUPPI: Danish company set up to collect and recycle rigid PVC *(www.wuppi.dk)*

Financial Report

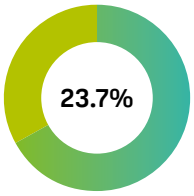
In 2020, industry expense increased by 10%. Taking into account COVID-19, the VinylPlus Steering Board continued a prudent management of expenses. A major increase in co-funding can be explained by new projects supported by EPPA members to expand window profiles collection in Europe. On the other hand, the increased percentage of funds allocated to overheads and voluntary commitment development is due to the stakeholder consultation for the development of the new programme running to 2030.

Expenditure by VinylPlus, including EuPC and its members, and national and sectoral co-funding, amounted to €5.77 million in 2020.

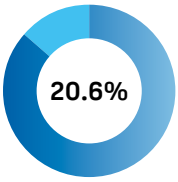
VINYLPLUS TOTAL EXPENDITURE IN 2020: €5.77 MILLION



WASTE MANAGEMENT AND TECHNICAL PROJECTS, including national and sectoral co-funding amounting to **26.1%** of total industry funding



OVERHEADS AND VOLUNTARY COMMITMENT DEVELOPMENT, including stakeholder consultation for the development of the new programme amounting to **7.8%** of total industry funding



COMMUNICATIONS, including national and sectoral co-funding amounting to **2.8%** of total industry funding

WASTE MANAGEMENT AND TECHNICAL PROJECTS

TOTAL EXPENDITURE INCLUDING EUPC AND ITS MEMBERS

Figures in €1,000s	2019	2020
Films and coated fabrics related projects	31	65
Flooring related projects	548	672
EPPA	343	765
ESWA/Roofcollect®	62	84
Recovinyl	1,100	1,020
Studies, start-up & pull concept	466	201
TEPPFA	479	479
Medical applications recycling	85	55
Resysta® consortium	12	15
Oreade chemical recycling	15	-307
Development of recycling applications in automotive (VFSE)	37	33
Urban agriculture	45	0
Set up of a soft PVC collection scheme in Denmark	0	59
EuPolySep (PVC composites delamination)	0	70
Total projects	**3,224**	**3,212**

Recycled PVC Tonnages

The table below summarises the tonnages of PVC recycled within the VinylPlus framework in the period 1 January 2020 to 31 December 2020, by initiatives of EuPC sector groups and sectoral associations, and by Recovinyl.

The complete Report of Factual Findings regarding the Agreed-Upon Procedures ("AUP") Engagement can be found at page 43.

PROJECT	TYPE OF PVC	TONNAGE RECYCLED IN 2019	TONNAGE RECYCLED IN 2020
Recovinyl (incl. IVK Europe)	Coated fabrics	7,114 [A]	7,530 [A]
Flooring post-consumer recycling initiative (part of **Revinylfloor**)	Flooring	3,157 [A]	2,910 [A]
EPPA (incl. Recovinyl)	Window profiles & related profiles	363,137 [B]	353,443 [B]
TEPPFA (incl. Recovinyl)	Pipes & fittings	85,260 [B]	82,344 [B]
Recovinyl and **ESWA – ROOFCOLLECT®**	Flexible PVC and films	170,042 which consists of:	170,182 which consists of:
ESWA – ROOFCOLLECT®	Flexible PVC	414 [A C]	369 [A C]
Recovinyl (excluding Revinylfloor)	Flexible PVC and films	169,628 [B]	169,813 [B]
Recovinyl	Cables	142,603	115,052
TOTAL		**771,313**	**731,461**

A Tonnage including Norway and Switzerland
B Tonnage including Switzerland
C Volumes partially transferred under the Recovinyl flexible PVC and films category

Verification Statements

KPMG CERTIFICATION OF EXPENDITURE

Independent Accountants' Report on Applying Agreed-Upon Procedures

To the Management of VinylPlus

We have performed the procedures agreed with you and enumerated below with respect to the costs of the supported charges for the different projects of VinylPlus, as included in the VinylPlus Progress Report for the period from January 1, 2020 to December 31, 2020 prepared by the management of VinylPlus.

Scope of Work

Our engagement was carried out in accordance with:

- International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-Upon Procedures regarding Financial Information* as promulgated by the International Federation of Accountants ('IFAC');
- the *Code of Ethics for Professional Accountants* issued by the IFAC. Although ISRS 4400 provides that independence is not a requirement for agreed-upon procedures engagements, you have asked that we also comply with the independence requirements of the *Code of Ethics for Professional Accountants*.

We confirm that we belong to an internationally-recognized supervisory body for statutory auditing.

VinylPlus management is responsible for the overview, analytical accounting and supporting documents.

The scope of these agreed-upon procedures has been determined solely by the management of VinylPlus. We are not responsible for the suitability and appropriateness of these procedures.

Because the procedures performed do not constitute either an audit or a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not express any assurance on the cost statement.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with International Standards on Auditing or International Standards on Review Engagements other matters might have come to our attention that would have been reported to you.

Sources of Information

This report sets out information provided to us by the management of VinylPlus in response to specific questions or as obtained and extracted from VinylPlus information and accounting systems.

Procedures and Factual Findings

a. Obtain the breakdown of costs declared in the table presenting the supported charges for the different projects of VinylPlus, as included in the VinylPlus Progress Report related to the activities of the year 2020 and verify the mathematical accuracy of this.

The total expenses amount to KEUR 5,764.

We found no exceptions as a result of applying this procedure.

b. Verify that these costs are recorded in the financial statements 2020 of VinylPlus AISBL.

We found no exceptions as a result of applying this procedure.

c. For project not covered by the above procedures, obtain confirmation of costs from legal entity managing or contributing to the project or from external advisor.

We found no exceptions as a result of applying this procedure, which represents 29.86% of total expenses.

Note that financial statements of VinylPlus AISBL, TEPPFA AISBL and Recovinyl AISBL are certified by KPMG.

Use of this Report

This report is intended solely for the information and use of the management of VinylPlus board, and is not intended to be and should not be used by anyone other than this specified party.

KPMG Bedrijfsrevisoren – Réviseurs d'Entreprises
Statutory Auditor represented by

Dominic Rousselle,
Bedrijfsrevisor / Réviseur d'Entreprises

Mont-Saint-Guibert, April 1st, 2021

KPMG REPORT OF FACTUAL FINDINGS

REGARDING THE AGREED-UPON PROCEDURES ("AUP") ENGAGEMENT: TONNAGES OF PVC RECYCLED IN THE EU-28 (PLUS NORWAY AND/OR SWITZERLAND) IN 2020, WITHIN THE DIFFERENT PROJECTS OF VINYLPLUS

To the General Manager of VinylPlus AISBL (hereafter "VinylPlus")

We have performed the procedures agreed with you and enumerated below with respect to the tonnages of recycled PVC (within the following projects of VinylPlus) in 2020:

- in the EU-28 by the sector association The European Plastic Pipes and Fittings Association (hereafter "TEPPFA");
- in the EU-28 (plus Norway and Switzerland) within the ROOFCOLLECT system by the members of the sector association European Single ply Waterproofing Association (hereafter "ESWA") and by the sector association European PVC window Profile and related building Products Association (hereafter "EPPA");
- in the EU-28 (plus Norway and Switzerland) by the (members of the) Arbeitsgemeinschaft PVC-Bodenbelag Recycling (hereafter "AgPR") and Revinylfloor;
- in the EU-28 (plus Norway and Switzerland) within the IVK Europe project; and
- in the EU-28 (plus Switzerland) within the operations of Recovinyl;

as set forth in the accompanying engagement letter dated March 3, 2021. Our engagement was undertaken in accordance with the International Standard on Related Services (ISRS 4400) applicable to Agreed-Upon Procedures Engagements. The procedures were performed solely to assist you in evaluating the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2020 and are summarised as follows:

With regard to the MS Excelspreadsheet "KPMG calculation_consoTrecycled_VinylPlus (2020)" for the accounting period January 1, 2020 to December 31, 2020, prepared by management of VinylPlus, regarding the tonnages of recycled PVC (within the above-mentioned projects of VinylPlus) in 2020, we performed the following procedures:

1. Verify, in sheet "VinylPlus 2020" (which contains detailed calculations for the management of VinylPlus), whether the quantities mentioned in the columns H, L, M and N, regarding the quantities of PVC that have been recycled in 2020 by the different projects of VinylPlus, agree with quantities that are mentioned in the:
   - Reports of Factual Findings regarding the Agreed-Upon Procedures ("AUP") Engagements performed by KPMG Bedrijfsrevisoren – KPMG Réviseurs d'Entreprises BV/SRL concerning the tonnages of PVC recycled in the EU-28 plus Switzerland in 2020, within the operations of Recovinyl;
   - Recycling confirmations regarding PVC flooring;
   - Extracts of Recovinyl internal audit tracking system on audit status for relevant companies;
   - Communication from the concerned projects of VinylPlus;

   obtained by management of VinylPlus and/or the Senior Project Controller, Mr Geoffroy Tillieux.
2. Verify, in sheet "VinylPlus 2020" the mathematical accuracy of the calculations (to avoid double counting), regarding the quantities of recycled PVC in 2020.
3. Verify, in sheet "Table for progress report" (which contains the table for publication in the VinylPlus Progress Report 2021), the mathematical accuracy of the calculations in column F regarding the tonnages recycled in 2020, based on the concerned tonnages mentioned in sheet "VinylPlus 2020".

   The table mentioned above is reproduced in the VinylPlus Progress Report 2021, on page 41 with a total recycled tonnage for 2020 of 731,461 tons.

We report our findings below:

- with respect to the procedures 1, 2 and 3, we found no exceptions.

Because the above procedures do not constitute either an audit or a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not express any assurance on the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2020.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with International Standards on Auditing or International Standards on Review Engagements, other matters might have come to our attention that would have been reported to you.

Our report is solely for the purpose set forth in the first paragraph of this report and for your information and is not to be used for any other purpose or be distributed to any other parties, except for publication for informational purposes in the VinylPlus Progress Report 2021. Should any third party wish to rely on the report for any purpose they will do so entirely at their own risk. This report relates only to the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2020 and items specified above and does not extend to any financial statements of VinylPlus, taken as a whole.

KPMG Bedrijfsrevisoren – Réviseurs d'Entreprises
Statutory Auditor represented by

Dominic Rousselle,
Bedrijfsrevisor / Réviseur d'Entreprises

Mont-Saint-Guibert, April 7, 2021

SGS INDEPENDENT VERIFICATION STATEMENT ABOUT THIS VINYLPLUS PROGRESS REPORT 2021

SGS is the world's leading inspection, verification, testing and certification company. We are recognized as the global benchmark for quality and integrity. With more than 89,000 employees, we operate a network of more than 2,600 offices and laboratories around the world.

SGS was commissioned by VinylPlus to provide an independent verification of the "Progress Report 2021". This report presents the commitments and achievements made by the VinylPlus project in 2020.

The purpose of the verification was to check the statements made in the report. SGS was not involved in the preparation of any part of this report or the collection of information on which it is based. This verification statement represents our independent opinion.

Verification Process

The verification consisted of checking whether the statements in this report give a true and fair representation of VinylPlus' performance and achievements. This included a critical review of the scope of the Progress Report and the balance and the unambiguity of the statements presented.

The verification process included the following activities:

- Desktop review of project-related material and documentation made available by VinylPlus such as plans, agreements, minutes of meetings, presentations, technical reports and more;
- Communication with VinylPlus personnel responsible or collecting data and writing various parts of the report, in order to discuss and substantiate selected statements;
- Communication with some members of the Monitoring Committee.

The verification did not cover the following:

- The underlying data and information on which the desk-top review documentation is based;
- The Financial Report;
- The PVC Tonnages;
- The KPMG Certification of Expenditure;
- The KPMG Report of Factual Findings.

Verification Results

Within the scope of our verification, VinylPlus has provided objective evidence of its performance in relation with its commitments in the VinylPlus programme.

It is our opinion that this "Progress Report 2021" represents VinylPlus' performance in 2020 in a reliable way; this report reflects the effort of VinylPlus to comply with its new Voluntary Commitments of June 2011.

ir Pieter Weterings
SGS Belgium NV
Certification Manager

30 March 2021

The Natural Step's Commentary

on VinylPlus Progress Report for 2020

The Natural Step (TNS) supports VinylPlus by providing sustainability expertise, building capacity and supporting stakeholder engagement. It is with a sense of pride and achievement that we can reflect on the progress VinylPlus has made in the last 10 years. Now it is time to set sights on the new decade, one with new challenges and higher expectations.

Reflections on 10 Years of Partnering with Industry

Since 2010, The Natural Step has advised VinylPlus to follow a set of working principles, aim toward alignment with a scientific definition of sustainability and innovate in 5 key areas.

In this period, we have witnessed some of the changes in the industry as it has shifted from a somewhat defensive to more confident commitment to sustainability. There have been struggles and setbacks, but also many wins and much learning. We wish to extend our congratulations to VinylPlus for staying the course and sticking to its plan, which is now seen as a model for other value chains.

It is fair to say that at this point The Natural Step's views on what the PVC industry must do to secure a place in a sustainable future are well documented. Each year we have provided commentary on progress and it has been a balance to respect the industry's focus on targets up to 2020 while keeping in mind the bigger transformation journey and increased sense of urgency needed.[61]

While the surrounding context has changed dramatically and much progress has been made, we believe our initial analysis of the industry's sustainability gap remains current[62] and we encourage the industry to remember the endgame is much more critical than specific targets.

2020 in Review

Turning to the progress in the last year, we acknowledge that the Coronavirus created setbacks. On the positive side, it stimulated new ways of collaborating with less travel and emissions.

Challenge 1 – Controlled-Loop Management

The growth of recycling volumes is a clear success for VinylPlus. In this year's report we appreciate increased clarity on communicating recycling in percentage terms, the work to explain recovery options and their underlying analysis. We also welcome Recovinyl work on traceability, which is much needed.

Without diminishing the achievements on recycling, we emphasize that more attention still needs to be placed on design i.e., design of circular chemistry formulations, of products with recycled materials and for applications where PVC has the greatest circularity potential.

Challenge 2 – Organochlorine Emissions

VinylPlus reports that its key targets in this area have been achieved. It is unclear if this signals the job is done or that sights could have been set higher. In any case, monitoring should continue even if greater stakeholder focus is on climate and circular economy topics.

Challenge 3 – Sustainable Use of Additives

Regarding additives, we have mixed views about progress in the context of increased scrutiny on chemicals. For example, the new EU Chemicals Strategy for Sustainability (CSS) and work by the United Nations Environment Programme on sustainable chemistry.

VinylPlus reports an ongoing investment in shifting away from Substances of Very High Concern (SVCHs), and this is very much welcomed. Nevertheless, we see a disconnect between the definition of sustainable use of additives developed by VinylPlus and its communication in advocacy and towards member companies.

The Natural Step has worked with VinylPlus on developing the Additive Sustainability Footprint as a tool to assess performance against this definition. After piloting in 2020, it is now time for individual companies to make commitments to use this approach. We look forward to this in 2021.

Challenge 4 – Sustainable Use of Energy and Raw Materials

Progress on energy efficiency appears to have hit barriers but it is important to acknowledge the more relevant goal is to eliminate the industry's contribution to systematically increasing greenhouse gas emissions i.e., carbon neutrality. Future targets in this area will have to be much more ambitious given the EU Green Deal and commitment to decarbonization.

Regarding feedstocks, there is now commercially available bio-attributed and circular-attributed PVC with what looks like a 90-95% lower carbon footprint than conventional PVC. Surely this is an underplayed success story even if the scale is currently limited. Also, we note that the 70% of PVC waste arising that is not being recycled provides an enormous opportunity for more circular feedstocks.

Challenge 5 – Sustainability Awareness

In 2020, The Natural Step facilitated industry workshops to gather views on new targets for 2030. There has been a distinct change in sustainability awareness since we ran similar workshops 10 years prior. This is certainly an outcome of the ongoing efforts by VinylPlus to promote sustainability across the industry and beyond, through events, tools, forums, media and stakeholder engagement.

The Path Ahead

VinylPlus has clearly been ahead of the game with its voluntary commitment, but as the sustainability movement grows, we see others advocating systems thinking, sustainable innovation and bold end-game targets. It is vital that the industry does not rest on its laurels now. To keep up with an accelerating pace of change we encourage VinylPlus to pursue a new cycle of continued leadership, one that leverages technology and sustainability knowledge.

As a final note, we wish to acknowledge the enormous effort that goes into coordinating an entire industry to work toward shared objectives. We also want to thank VinylPlus for being open to input from The Natural Step acting as a 'critical friend'.

Richard Blume
TNS Project Leader & Senior Advisor

Antonio Vasconcelos
Chair of The Natural Step International

Stockholm, March 2021

61 A summary of our annual commentaries since 2011 and more details about how The Natural Step has partnered with VinylPlus are available at: ***https://thenaturalstep.org/pvc/***

62 Everard, Mark. (2019). Twenty Years of the Polyvinyl Chloride Sustainability Challenges. Journal of Vinyl and Additive Technology. 26. 10.1002/vnl.21754

VinylPlus Partners

IN 2020, THE CONTRIBUTORS WERE:

CONVERTERS:

A. Kolckmann GmbH (Germany)
Alfatherm SpA (Italy)
alfer® Aluminium GmbH (Germany)
Aliaxis Group (Belgium)
Alkor Draka SAS (France)
Altro (UK)
Altro Debolon Dessauer Bodenbeläge GmbH & Co. KG (Germany)
aluplast Austria GmbH (Austria)
aluplast GmbH (Germany)
alwitra GmbH & Co (Germany)
AMS Kunststofftechnik GmbH & Co. KG (Germany)
Amtico International (UK)
APA SpA (Italy)*
Beaulieu International Group (Belgium)
Berry Plastics (Germany)
Bilcare Research (Germany)
BM S.L. (Spain)
BMI Group, former Icopal Kunststoffverarbeitungs GmbH (Germany)
BT Bautechnik Impex GmbH & Co. KG (Germany)
BTH Fitting Kft. (Hungary)
CF Kunststofprofielen (Netherlands)
Chieftain Fabrics (Ireland)
CIFRA (France)
Danosa (Spain)
Deceuninck Germany GmbH (Germany)*
Deceuninck Ltd (UK)
Deceuninck NV (Belgium)
Deceuninck SAS (France)
Dekura GmbH (Germany)
DHM (UK)
Dickson Coating (France)
Dow Europe GmbH (Switzerland)*
Dyka BV (Netherlands)
Dyka Plastics NV (Belgium)
Dyka Polska Sp. z o.o. (Poland)
Dyka SAS (France)
Elbtal Plastics GmbH & Co. KG (Germany)
Epwin Window Systems (UK)
Ergis SA (Poland)
Eurocompound Srl (Italy)*
Fatra a.s. (Czech Republic)
FDT FlachdachTechnologie GmbH & Co. KG (Germany)
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Forbo Novilon BV (Netherlands)*
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Forbo-Giubiasco SA (Switzerland)*
Funzionano AS (Norway)*
Gealan Fenster-Systeme GmbH (Germany)
Georg Fischer Deka GmbH (Germany)
Gerflor Mipolam GmbH (Germany)
Gerflor SAS (France)
Gerflor Tarare (France)
Gernord Ltd (Ireland)
Girpi (France)
Griffine Enduction (France)
Gruppo Fabbri (Svizzera) S.A. (Switzerland)
Gruppo Fabbri Vignola SpA (Italy)
H Producter AS (Norway)
Holland Colours NV (Netherlands)
Hundhausen Kunststofftechnik GmbH (Germany)
IKA Innovative Kunststoffaufbereitung GmbH & Co. KG (Germany)
Imerys Talc Europe (France)
Imperbel NV (Belgium)
Industrias REHAU SA (Spain)
Inoutic/Deceuninck GmbH (Germany)
Inoutic/Deceuninck Sp. z o.o. (Poland)
Internorm Bauelemente GmbH (Austria)
IVC BVBA (Belgium)
Jimten (Spain)
Kalan (France)
Konrad Hornschuch AG (Germany)
Low & Bonar GmbH (Germany)
Lubrizol Advanced Materials Europe BVBA (Belgium)*
Manufacturas JBA (Spain)
Marley Deutschland (Germany)
Marley Hungária (Hungary)
MKF-Ergis GmbH (Germany)
MKF-Ergis Sp. z o.o. (Poland)
Molecor (Spain)
Mondoplastico SpA (Italy)
Nicoll (France)
Nicoll Italy (Italy)
Nordisk Wavin AS (Denmark)
Norsk Wavin AS (Norway)
Novafloor (France)
NYLOPLAST EUROPE BV (Netherlands)
Omya International AG (Switzerland)
PACCOR Hungary Kft. (Hungary)
Palram DPL Ltd (UK)*
Perlen Packaging (Switzerland)
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Pipelife Belgium NV (Belgium)
Pipelife Czech s.r.o (Czech Republic)
Pipelife Deutschland GmbH (Germany)
Pipelife Eesti AS (Estonia)
Pipelife Finland Oy (Finland)
Pipelife France (France)
Pipelife Hungária Kft. (Hungary)
Pipelife Nederland BV (Netherlands)
Pipelife Norge AS (Norway)
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Pipelife Sverige AB (Sweden)
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profine GmbH – International Profile Group (Germany)*
Protan AS (Norway)
Redi (Italy)
REHAU AG & Co (Germany)
REHAU GmbH (Austria)
REHAU Ltd (UK)
REHAU SA (France)
REHAU Sp. z o.o. (Poland)
RENOLIT Belgium NV (Belgium)
RENOLIT Cramlington Ltd (UK)
RENOLIT Hispania SA (Spain)
RENOLIT Ibérica SA (Spain)
RENOLIT Milano Srl (Italy)
RENOLIT Nederland BV (Netherlands)
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Salamander Industrie Produkte GmbH (Germany)
Sattler PRO-TEX GmbH (Austria)
Schüco Polymer Technologies KG (Germany)
Serge Ferrari SAS (France)
Sika Services AG (Switzerland)
Sika Trocal GmbH (Germany)
SIMONA AG (Germany)
SKZ-Testing GmbH (Germany)
Solvay SA – Foaming Solutions (Belgium)
Soprema Srl (Italy)
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Tarkett AB (Sweden)
Tarkett France (France)
Tarkett GDL SA (Luxembourg)
Tarkett Holding GmbH (Germany)
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Teraplast SA (Romania)
Thomson Research Associates Inc. (UK)
TMG Automotive (Portugal)
Veka AG (Germany)
Veka Ibérica (Spain)
Veka Plc (UK)
Veka Polska (Poland)
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Verseidag-Indutex GmbH (Germany)
Vescom BV (Netherlands)
Vinilchimica Srl (Italy)*
Vulcaflex SpA (Italy)
Wavin Baltic (Lithuania)
Wavin Belgium BV (Belgium)
Wavin BV (Netherlands)
Wavin France SAS (France)
Wavin GmbH (Germany)
Wavin Hungary (Hungary)
Wavin Ireland Ltd (Ireland)
Wavin Metalplast (Poland)
Wavin Nederland BV (Netherlands)
Wavin Plastics Ltd (UK)

PVC RESIN PRODUCERS:

Ercros (Spain)
INOVYN (Belgium, France, Germany, Italy, Norway, Spain, Sweden, UK)
Shin-Etsu PVC (Netherlands, Portugal)
VESTOLIT GmbH (Germany)
Vinnolit GmbH & Co. KG (Germany, UK)
Vynova Group (Belgium, France, Germany, Netherlands, UK)

PVC STABILISER PRODUCERS:

Akdeniz Chemson Kimya San. ve Tic. A.Ş.
Asúa Products S.A.
Baerlocher GmbH
Galata Chemicals GmbH
IKA GmbH & Co. KG
PMC Group Inc.
Reagens SpA
Valtris Specialty Chemicals Ltd

PVC PLASTICISER PRODUCERS:

BASF SE
DEZA a.s.
Evonik Performance Materials GmbH
ExxonMobil Chemical Europe Inc.
Grupa Azoty ZAK SA
LANXESS Deutschland GmbH
Perstorp Oxo AB
Proviron

ASSOCIATE MEMBERS:

British Plastics Federation (BPF) VinylPlus UK
PVC Forum Italia (Italy)
VinylPlus Deutschland e.V., former AGPU (Germany)

* Companies that joined VinylPlus in 2020

The VinylPlus Sustainability Forum 2020 went virtual

The global COVID-19 pandemic radically changed lifestyles, human relationships and ways of working around the world. VinylPlus, too, had to adapt to the new situation flexibly, digitising its activities as far as possible, while maintaining a high level of professionalism and commitment from everyone who participated in its events and activities.

Each year, the VinylPlus Sustainability Forum provides a pivotal moment for the PVC industry to come together to discuss progress on sustainability and exchange points of view with partners and stakeholders. Since the Forum could not be held in 2020 as a traditional gathering, it was instead turned into a hybrid event. This was held in Brussels and livestreamed to allow the widest possible worldwide participation.

The live part of the event took place in a television studio, ensuring that the presentation and transmission was highly professional. Thanks to the technical direction, the online parts were coordinated in a lively manner, with a mix of presentations, speeches, panel discussions, videos and online polls.

Even if the direct human contact and networking of a gathering of people cannot be completely replaced, this formula for the Forum received very positive feedback, and VinylPlus is considering organising other events in the future in a similar format.

vinyl plus®
COMMITTED TO
SUSTAINABLE DEVELOPMENT

10 YEARS

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