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Bundesministerium für Umwelt, Naturschutz,
nukleare Sicherheit und Verbraucherschutz

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Stellungnahme zum Entwurf der Nationalen Kreislaufwirtschaftsstrategie (NKWS) vom 17.06. zum Kapitel 3.5 "Ökonomische Instrumente und Finanzierung: Anreizsystem zur Verbesserung der Kreislaufführung“, S33.
Zertifikatehandel für werkstoffliches Recycling

Sehr geehrte Damen und Herren,

wir begrüßen ausdrücklich, dass die Bundesregierung einen Prüfauftrag für die Einführung eines Zertifikatehandelssystems für mechanisch erzeugte Rezyklate in obiges Dokument Wir befürworten ein solches System nicht nur, sondern haben dazu bereits ein ausformuliertes Konzept entwickelt, das wir bei der EU-Kommission eingereicht haben und **welches wir hier beifügen**.

Das Konzept zeichnet sich durch folgende Eigenschaften aus:

1. Es ist **qualitätsgetrieben**: Käufer und Verkäufer von Zertifikaten müssen hochwertig agieren
2. Es ist **betrugs- und fälschungssicher** (Block-Chain-Programmierte Handelsplattform ohne Doppelzählung; unabhängige Auditierung aller Mengen- und Qualitätsvorgaben)
3. Es ist **marktgetrieben,** d.h. Zertifikate werden nicht zugeteilt, sondern erworben
4. Es bietet **keine Möglichkeit zum „Freikaufen“**; vielmehr werden Zertifikatspreise so hoch angesetzt, dass der Anreiz, doch Rezyklat einzusetzen, bestehen bleibt
5. Es enthält strikte Kommunikationsvorgaben zur **Verhinderung von Verbrauchertäuschung**
6. Es ist unbürokratisch, da es vorhandene oder ohnehin zu schaffende Strukturen und Daten nutzt

Wir regen an, dieses Konzept in die geforderte Prüfung einzubeziehen, und stehen für Rückfragen gerne zur Verfügung.

Mit freundlichen Grüßen

(nach Diktat verreist)
Dr. Michael Scriba Ansgar Schonlau

Dossier on

Certified Recycled Content Token-Trading

1. The problem:

e. It is becoming increasingly clear that once the new 10% recycling requirements for food packaging come into force by 2030, there will be a gap between availability and demand for food and contact-sensitive plastic packaging. The assumptions in this report by Conversio: Recyclate gap Forecast_Model_2030_Europe have already aggravated since its first publication: the time plan for the PPWR was delayed, and the discussion about chemical recycling and its viability is ongoing. The fall-back or safeguard clauses contained in the PPWR also seem to be keeping the chemical industry from investing in the capacities required for closing the gap.

f. At the same time, according to (all) experts it is highly unlikely that EFSA and the Commission will be able to recognize recycled *polyolefin* materials for food grade packaging applications before 2030 at all, apart from these then having to be produced in time and in sufficient quantities. As far as physically present recycled content is concerned chemically recycled polyolefins seem to be the only way out of the dilemma of a recycled content obligation on the one hand and the legal and practical impossibility of using mechanically recycled polyolefins on the other hand.

g. Untraceable imports will threaten all European recycling pathways if there is no other way of closing the above gap. It already has become a trend on the polymer markets to claim (chemically) recycled content without any proof whatsoever. E.g., one popular trick seems to be that the claims are based on (chemically) recycling of by-products or industrial waste, which according to European law would not be legitimate. It must be assumed that imports of recycled content plastics from outside the EU will not solve the problem because of the risk of fraud, and a lack of transparency no serious packaging producer wants to be associated with. But without the additional measures proposed in this dossier that is going to happen, at the cost of the European (mechanical and chemical) recycling industry.

h. The recycling of plastic packaging in Europe is already closely monitored and audited to prevent fraud and ensure reliable data reporting. The same applies to the packaging industry, as the placed-on-market-figures are also monitored by the authorities. If the proposed remedies in this dossier are correctly integrated into this existing network of PPWR audits and reports, additional bureaucracy can be minimised.

f. Without countermeasures the above gap will lead to the disappearance of sustainable plastic packaging. According to the PPWR packaging without the required recycled content must be taken off the market. As the supply chain cannot work without contact sensitive packaging in 99% of the cases, they will be substituted by other materials. These, because of the need for barrier functions, will be not or less easy to recycle and cause additional burdens to

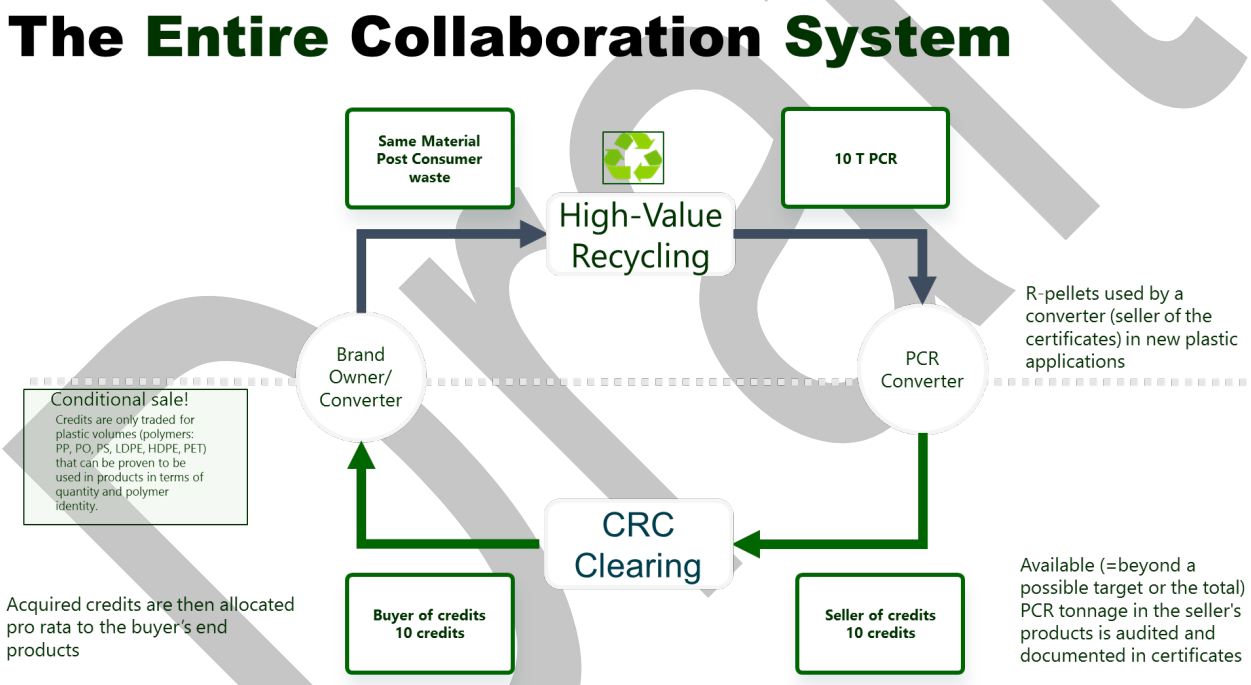
the environment (GVM-Study: Recyclingfaehige-Kunststoffverpackungen.pdf). The trend has already been taking its toll since 2023. This evident threat is mitigated by additional measures as proposed in this dossier.

g. The unchecked economic pressure exerted on market participants by the threat of disappearing from the market will make false claims more likely and lead to more greenwashing. This dossier proposes a way to prevent this.
h. The chemical industry has applied for certain far-reaching mass balance and allocation privileges over mechanical recycling as a prerequisite for its investments in chemical recycling capacities. These privileges (mass balance calculations and crediting of non-polymers as recycled content in polymer production) have been or are being granted to this industry, although it is undisputed that chemical recycling is not only not complementary to mechanical recycling but is an ecologically inferior route that merely outperforms landfilling or incineration. There is no level playing field with mechanical recycling, despite its significant advantages in terms of cost and environmental impact, unless additional measures such as those proposed in this dossier are put in place to level the playing field.
i. Combined with the facts that plastic producers in Europe will form an oligopoly for the foreseeable future when it comes to supplying all converters with recycled content, and that these converters are legally obliged to use chemically recycled content materials for touch-sensitive packaging (including food packaging), the recycled content targets will lead to an unfair competitive advantage of chemical recycling over the mechanical route, which will need to be offset by additional measures as proposed in this dossier.
j. Multinational packaging manufacturers have already secured their access to chemically recycled material through LOIs or even contracts. SME packaging manufacturers did not have this option. They have reason to fear that they will be cut off from this supply by the multinational converters and thus lose all or at least a large part of their market share in the production of packaging for touch-sensitive applications if this is not offset by additional measures such as those proposed in this dossier.
k. The overall downward trend in plastic packaging caused by refill, reuse, reduce targets and rising packaging costs specially related to plastic will further put the existence of SME packaging producers in jeopardy. This trend can be mitigated by the additional measures as proposed in this dossier.
l. Another easy way out of the above dilemmas could be the safeguard clause, allowing the Commission to adopt targets and or time frames to newer market developments. This of course would again delay the necessary investments and create additional political uncertainty for the industry and the markets.

2. The solution:

The principle is simple: a manufacturer who uses more post-consumer recyclates (PCR) than required by law receives credits for this. He can sell these to manufacturers who cannot (yet) meet the legal target. Together they thus achieve the use targets for post-consumer recyclates set by the legislator.

The objective of this credit trading proposal is to **mitigate the aforementioned risks and threats** and, at the same time, promote the **circularity** of plastic packaging in the sense of UN SDG No. 17 - "Partnership to Accomplish the Goals" - through cooperation between partners along the entire value chain. Participants can contribute significantly to **decarbonisation despite the fact that one side cannot use recycled content in their packaging.**



Due to the coupling of the use of mechanically produced post-consumer recyclates (hereafter: **m-PCR**) on the part of the **seller** with the placing on the market of high-quality recyclable plastic packaging by the **purchaser**, credit trading will promote the following goals and thus additionally enhance the good intentions and measures introduced by the new PPWR:

e. Continuous quantity and quality increase of the m-PCR in circulation

Credit trading is a market-based, quality and quantity-driven instrument for improving the ecology of packaging recycling. The quantities available for credit trading are doubly limited:

- On the one hand, credits may only be issued by the **seller**
  - for recyclates of **specific polymer types (PE-HD, PE-LD, PP, PET, PO)**,
  - which have been produced in a **high-quality recycling process** and
  - which **replace virgin material in typical plastic applications** for the **purchaser**.
- On the other hand, they may only be bought by the **purchaser** if they
  - replace recyclate contents in high-quality recyclable packaging
  - of the same polymer type (PE-HD, PE-LD, PP, PET, PE/PP combinations)
  - that are required by legally stipulated recycled content requirements
  - which cannot be met for economic, technical and/or legal reasons.

These double qualitative constraints on the part of the **seller** and the **purchaser will** lead to a **continuous increase in quantity and quality** improvement of recyclates of the respective polymer type. This is because the increased demand will lead to a bottleneck of credits and subsequently higher prices, until they reach a cap. To keep the **incentive to use recyclates** wherever possible, invest in R&D and build additional capacities, the cap will be well above recyclate prices The bottleneck can only be resolved with **additional** m-PCR quantities, suitable for demanding applications. Since the acquisition of credits is only possible for packaging that is demonstrably recycled in a high-quality manner as a **substitute for virgin (fossil) material**, a change in the design of packaging that was previously not recyclable towards much better recyclability will be incentivised. Otherwise, according to the law, the unchanged, hard to recycle packaging would have to be taken off the markets. Accordingly, a continuous increase in the high-quality m-PCR in circulation is to be expected.

f. The **recyclability of primary packaging is increased** and continuously improved:
The **purchaser** of credits must be placing packaging on the market which can demonstrably be fed into a specified sorting fraction and subsequently into high-quality recycling, i.e., be used in applications typical of the material. The party placing the packaging on the market, i.e., the **purchaser** of credits, must provide this proof of recyclability, e.g., by ensuring that its respective packaging achieves at least level "A" in the "Recyclass Certification" or a comparable classification (e.g., at least 90% recyclable material components)

in other testing procedures. CRC reserves the right to have this evidence, esp. the comparability of different testing tools and their results, verified by an expert. A packaging that only (just) meets the requirements of the German Minimum Standard of the ZSVR, or a comparable foreign minimum standard is expressly not entitled to be linked to credits. In other words: It must be better recyclable (as defined by the classification) and not just be considered an acceptable contamination (as defined by the Minimum Standard).

Participation in credit trading requires an update of these credits after twelve months. This considers legislative/standardisation changes so that continuous optimisation is achieved in the Design for Recyclability (DfR). As long as the **purchaser** still produces packaging for which credits have been acquired as proof of recyclability, the credits remain valid, but at most until the end of the calendar year of acquisition. However, should the packaging be out of stock, changed or taken completely out of production, the respective credits become invalid (no exchange, no refund).

Certificate trading is a fast-moving, short-term business that requires no hoarding or storage of certificates.

This should ensure a certain degree of planning and foresight on the purchaser's side.

g. Mechanical **recycling is promoted through price mechanisms.**
Scarce credits fetch higher prices, which the **purchaser** pays. The price of a credit is formed on the trading platform operated by CRC and depends on the factors credit market volume and demand.

The minimum price per ton of credit to be paid to CRC shall be around € 1,000 equivalent, i.e. the system head will only open trading procedures if this minimum price is reached. In any case the price should be at least € 100 or 10% higher than the respective price for recyclates to keep up the **incentive to use physically present recyclates** instead of credits.

The above price pressure will incentivise the **purchaser** to optimise his packaging as much as possible to avoid the high costs for credits. This will contribute to an increase in the available high-quality recyclate quantities. This in turn will cause credit prices to fall. More and better recyclate quantities will appear on the markets, over all segments.

The **seller** can use the sales proceeds generated in the CRC trading to finance the purchase of more and better recyclates, even if they are more expensive than virgin plastics. This will enhance recyclate production in all market segments and lead to more and better recyclate materials.

The increased amount of m-PCR in the cycle substitutes a corresponding amount of fossil raw materials. The quantity that is fed into low quality recycling or even energy use is reduced by the same amount. In combination, considerable CO_2 savings are achieved and further increased. **Ideally, credit trading will become superfluous once the value chain has been fully optimised and EFSA approvals have been granted.**

3. Definition of recyclate credits:

Recyclate credits can be issued by a plastic converter who uses mechanical post-consumer recyclate (m-PCR) to produce high-quality plastic products (e.g., injection moulded parts). The maximum quantity of certificates is limited to the quantities that the processor does not need in order to fulfil its own legal obligations regarding the use of recyclates.

The credits embody recyclate quantity equivalents. The processor (hereinafter: **seller**) may offer them to other distributors of packaging (hereinafter: **purchasers**). Their packaging must be exclusively and demonstrably recyclable to a high standard. The **purchasers** can acquire the credits in a trading process on an IT-platform operated by CRC. By means of the credits, the **purchasers** prove to the authorities that they fulfil legal obligations to use recyclates in their packaging not by physically processing them, but by purchasing quantity equivalents of recyclates. In this way, they can also achieve savings on any plastic tax that may be passed on to the distributors, if this is permitted by law.

4. Definition of a credit seller?

Post-consumer plastic waste (m-PCR) passes industrially available mechanical recovery processes (re-sorting, shredding, washing, separating, melting, degassing, filtering, granulating, homogenising) at recycling companies after pre-sorting at waste management companies (MRFs). It is thereby converted into high-quality re-pellets (m-PCR). These re-pellets are purchased by a converter (plastics processor, **seller**) from the recycling company and reused as substitute for virgin polymers in new, material-typical applications ("high-quality recycling"), because it is legally permitted, technically possible and economically interesting for the **seller**.

This m-PCR content in the seller's articles/products will be determined by a registered expert using publicly recognised audition methods and already existing data (recyclers

certificates etc.). The m-PCR content serves as the basis for calculating the quantities of recyclate credits that can be permissibly issued because of this m-PCR use. This is one of the “new” auditing requirements proposed in this dossier.

From the actual quantities of recyclate used, any shares required by the seller to fulfil his own legal requirements are always deducted. Only the difference is available for credit trading.

5. Definition of “high-quality” recycling?

High quality recycling should at least involve a washing step and create a recyclate which will replace virgin polymers one to one in a typical plastic application.

6. Definition of “high-quality application”

“High-quality applications” are products (articles and substances like compounds) that can “afford” the use of high-quality recyclates. However, there is an exception: Where a convertor or compounder needs high-quality recyclates to improve his otherwise unsellable products, the respective application (made from a blend of low-quality and high-quality materials) es excluded from credit trading as it will not contribute to an overall increase of the quality of circulating polymers.

7. Definition of “high-quality recyclable”

“High quality recyclable” is any packaging that can be recycled to a very high percentage. This is usually either measured or qualified in percent (<90 or 95%) or in grades (as in the PPWR; grades A and B in this case).

8. Definition of a credit purchaser?

Credit **purchasers** can be all brand owners/marketers of plastic packaging who cannot/are not allowed to physically use m-PCR in their packaging due to the characteristics of their packaging, their packaging machines and/or legal regulations. For credit **purchasers**, the physical use of m-PCR is therefore technically, economically and/or legally impossible.

By buying the credits, a **purchaser** can replace the corresponding amount of physical recyclate in his own legal obligations to use recyclate in the packaging products.

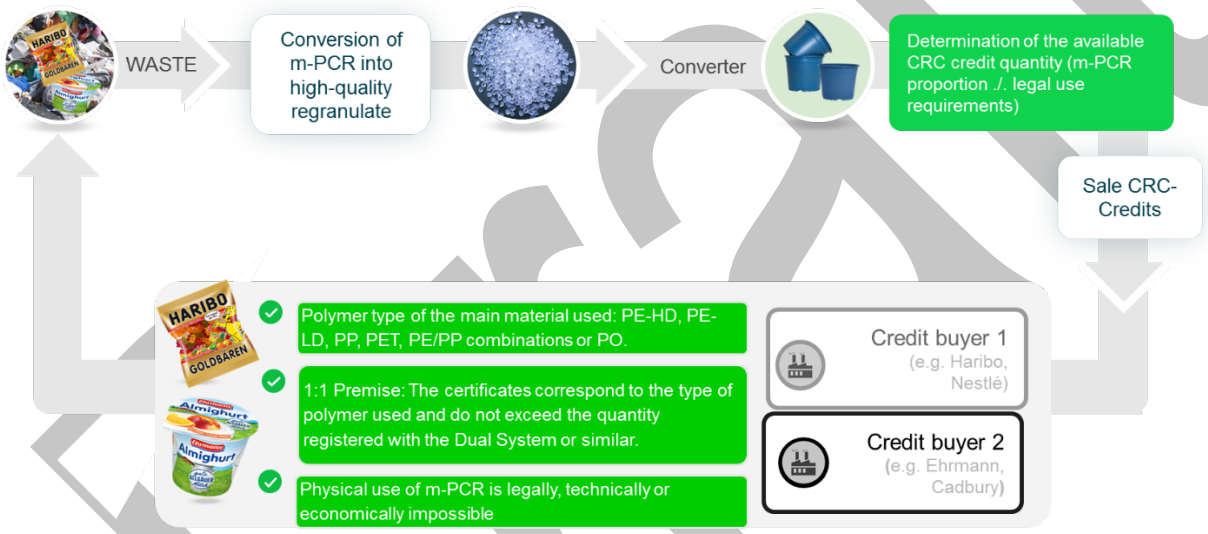
The **purchaser** can only acquire CRC credits for specific polymer types (PE-HD, PE-LD, PP, PET, PE/PP combinations or PO[polyolefin], i.e., compounds of PP and PE) which he has verifiably used as the main material in his packaging. The upper limit for this quantity is at most the packaging amount registered with the ZSVR (“Zentrale

Stelle", or with comparable, international registration bodies) via an EPR-scheme in accordance with the already existing "Current Declarations of Completeness", issued by the buyer's tax advisor or CPA.

A manufacturer / **purchaser** can only buy as many credits as he also puts packaging (TVP; commercial, repackaging and sales packaging) of the same main polymer type into circulation (no quantity bunkering).

The "1:1 premise" therefore applies: The maximum number of credits that can be acquired in a calendar year can at most correspond to the maximum quantities registered with the EPR-schemes for this calendar year and must concern polymer-identical quantities.

The verification of these requirements is the second additional auditing program introduced by this dossier.



9. Content of the recyclate credit

The following data are specified in the recyclate credit:

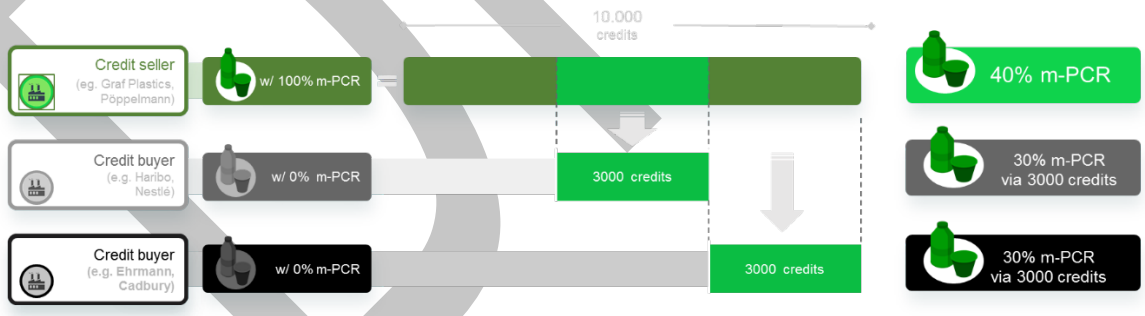
- Issuing body: System Head (CRC)
- One unique credit number assigned to the seller and its test audit, which enables an assignment of seller to **purchaser. This** can only be evaluated by auditors. An x-digit check digit is used in the system for this purpose. The auditor adds up the packaging quantities of the specific polymer type accruing at the **purchasers**. In the next audit the use of existing credits must be verified if, since the last audit, a packaging design has been changed and thus fallen out of the high-value recyclability classification or the originally assigned main polymer type in the individual case.

- Designation of the recyclate according to polymer type (PP, PE-LD, PE-HD, PO, PET)
- Responsible auditor(s) who has/have verified the origin, production and re-use of the credit equivalents at the seller's premises.

10. Role of the System Head

The System Head warrants to the purchaser of the Credits that

- by purchasing the credits via the System Head, the purchaser enters a partnership with the System Head which enables him to allocate the seller's m-PCR use to his own packaging (restricted polymer specific allocation).
- there is current evidence, verified by the System Head, that the purchaser (brand owner) is using packaging that is recycled to a high-quality m-PCR after use through sorting and mechanical recycling,
- the acquired m-PCR volumes are validated by publicly appointed and sworn experts to the effect that behind the acquired credit volumes there are corresponding volumes of high-quality recycling.
- certified m-PCR quantities are not used (twice) by the seller for crediting elsewhere and/or against any statutory m-PCR crediting quotas. The corresponding quantity is set aside in crediting targets so that there are no arithmetical conflicts in the case of statutory regulation of PCR targets. (see the example below, the seller may then only credit 40% m-PCR use instead of e.g. 100% m-PCR in the example).



Together with a Registered Verification Company (like REVISA CycleProof GmbH www.cycleproof.com), the System Head is developing a verification guideline (by verification field, methodology and result) to audit and certify the above verification items, making extensive use of already existing data in the interest of efficiency.

The auditing of the System Head is the third and last additional verification step

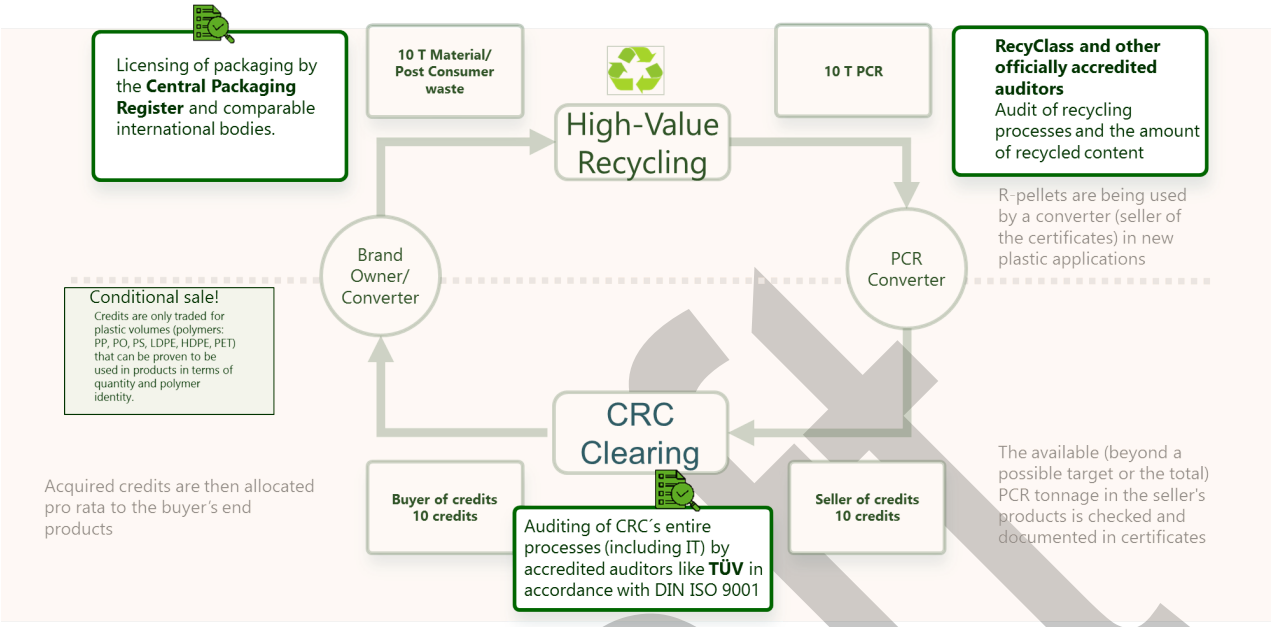
introduced by this dossier.

11. Conditions for the purchase of credits

1. The **purchaser** must identify himself as the distributor/brand-owner of plastic packaging with the polymer types of PET, PS, PP, LDPE, PP/PE combinations or HDPE as the main materials when registering with the System Head.

2. After identification, the buyer proves the recyclability of its packaging by:
    - Presentation of a current certificate/testing report officially confirming the high-quality recyclability (at least 90% recoverable material content, Recyclass grade “A” or comparable classifications).
        - non-exhaustive list of recognised auditors:
            - RecyClass/EUCERTPLAST
            - HTP-Cyclos
            - Interzero
            - Alternative testing institutes recognised by the German ZSVR or internationally comparable institutions.
    - Proof of a data sheet including a picture and sample of the packaging, if no credit from a registered auditor is available. In that case the System Head will have the recyclability determined (for example by applying the minimum standard of the ZSVR) at the purchaser's expense.
3. The tonnage relevant for certification, i.e., the tonnage required to fulfil the **purchaser’s** legal obligations regarding the recycled content, is determined annually for each polymer type by a publicly appointed and sworn expert (e.g., via an invoice audit).
4. The **purchaser** is then admitted to the trading platform and has the possibility to purchase credits up to this tonnage/quantity, provided that sufficient polymer type credits are on offer.
5. The acquired credits are attributed to a specific **purchaser**. Resale to "third parties" is not permitted and leads to the invalidity of the credits. If a group company wants to purchase centrally, it must do so in the name and for the account of the individual buyer.
6. The **purchaser** may only buy as many credits as he places packaging of the relevant polymer type on the market.

The auditing steps:



12. Conditions for the sale of credits

1. The **seller** must provide evidence of the production of **m-PCR material at his** supplier by means of a certificate issued by a recognised auditing system (e.g. Eucertplast) which must be updated every twelve months.
2. The use of **m-PCR material in the seller's production** is checked annually by a publicly appointed and sworn expert, per polymer type, and must be updated in case of changes in the product range (volume, composition).
3. CRC GmbH generates credits based only on the PCR material used in production at the credit **seller** per polymer type.

13. Validity of the credit:

The credits are valid for a specific calendar year unless the purchaser's related packaging has changed to a recyclability rating below "Recyclass A" in the meantime. The System Head shall request an update of the credits in good time before their expiry.

14. Communication/Consumer protection

The system is accompanied by two plain and simple claiming rules, always related to audited physically present recycled content:

e. The credit **seller** is allowed to advertise that his products have the physically

present recycled content (as in his respective audit report), even if he has sold credits as recycled content equivalents.

f. The credit **purchaser** may advertise to his customers and the public that his credit backed packaging placed on the market is “high value recyclable”, with the advertised quantity being limited to the amount of equivalents he has purchased in the form of credits. He may, however, not advertise the physically absent recyclate content which is represented by credits to avoid double counting and consumer deception.

The CO_2 credits/savings remain with the physical products of the **sellers**, are not sold virtually with them, and must not be advertised by the **purchaser** as such in relation to traded credits.

Participation in credit trading should have a beneficial impact in the sustainability reports (CSRD) of the companies (buyers).

15. Frequently Asked Questions (FAQ)

a. What is the projected demand for recycled material in the packaging market in 2030?

The Commission proposes mandatory recycled content targets of between 10 and 35% for plastics in packaging from 2030. This corresponds to a Europe-wide demand of approx. 6 million tonnes of PCR. Currently, about 1.6 million tonnes of PCR are used in packaging production, mainly PET. To achieve the 2030 targets proposed by the Commission, the reuse of PCR in packaging made of PP and PE in particular, which are the most important packaging polymers with approx. 70%, would have to be increased at least fivefold - an extreme challenge that is unrealistic in view of the developments to date. See also the study by Conversio Forecast Model "Use of recyclates in Europe 2020 to 2030", commissioned by IK e.V..

Major hurdles are:

- There is still too little plastic waste being collected and recycled separately across Europe - 19 EU countries are in danger of failing to meet the packaging plastics recycling targets for 2025 (see also Cutting plastics pollution, 2 Mar 2023; eib.org/attachments_cutting_plastics_pollution_en.pdf), which is explicitly calling for financial support for the plastics recycling business. In our case, such funding will not come from member states or banks, but from the industry itself, thus reducing the risk of additional bureaucracy.

- The challengingly high-quality requirements in the packaging market are unrealistic to meet for the time being, as shown in particular by the lack of approvals for the use of PCR in food and other contact-sensitive packaging by EFSA.
- The danger of an undersupply of PCR is exacerbated by the fact that other sectors will also be given legal obligations to use recyclates. Already today, the vast majority of PCR from used packaging is reused in other sectors such as construction, agriculture and automotive.
- It is unclear whether PCR from chemical recycling will be available in sufficient quantities from 2030 onwards, because the legal requirements for this have not yet been established, because the processes are not yet fully developed and tested on a large scale, and because the necessary investments have not yet been made.

From 2030 onwards, large parts of the packaging market are therefore threatened by a shortage of recyclates, and in need of a mitigation tool.

b. What are the risks related to the recycled content gap?

It can be assumed that from 2030 onwards there will not be enough recyclates available in the required qualities to meet demand in the packaging market. This gives rise to various risks:

Risks to supply chain security: Lack of PCR quantities and qualities for the packaging market pose a significant risk to supply chains and the secure supply of consumers in Europe, because packaging that does not meet the legal requirements would be banned from 2030.

Risks for SMEs: Small and medium-sized manufacturers would be particularly affected by a shortage of supply, as they would not be able to obtain recyclates in the required qualities on the open market, or only at significantly worse conditions.

Ecological risks: A diversion of recycled plastics from other sectors to meet PCR targets in the packaging market entails the risk that, due to the higher quality requirements, a far greater amount of energy has to be used for recycling (e.g. for chemical recycling), while more virgin plastic is used again in the previous application markets for the recyclate. In addition, there are fears of evasive movements towards laminated paper packaging, especially if these are exempted from PCR use quotas and do not have to be highly recyclable.

g. How does credit trading for recyclates work?

The principle is simple: a manufacturer who uses more post-consumer recyclates (PCR) than required by law receives credits for this. He can sell these to manufacturers who cannot (yet) meet the legal target. Together they thus achieve the use targets for post-consumer recyclates set by the legislator.

Both sides benefit: Manufacturer A receives a financial incentive to use more recyclates through the proceeds from the sale of the credits. Manufacturer B can meet the legal PCR target by purchasing the credits and remain on the market with its products, even if there are not yet enough recyclates on the market for these in the required qualities (e.g., for food contact).

How the system works in detail, including the verification and audit obligations of the companies involved, should be worked out by the EU Commission in a delegated act based on Article 7(7) PPWR. We make it a condition that both sides, seller and buyer, must use plastics of the same polymer type (e.g., PE, PP, PET) in their products and produce highly recyclable products and packaging.

d. What are the advantages of credit trading?

- **Credit trading acts as a catalyst for transformation** by increasing economic efficiency and mitigating economic and environmental risks.
- **Credit trading protects supply chains, SMEs and consumers:** The risk of marketing bans for certain packaging due to a lack of suitable recyclates is significantly reduced by credit trading, as manufacturers can compensate for a lack of recyclates by purchasing credits. This protects supply chains, especially of small and medium-sized enterprises, and the secure supply of consumers in Europe.
- **Credit trading reduces energy demand and transformation costs:** Credit trading ensures that PCR is preferentially used where it is most economically and energetically efficient, and consumer prices do not rise unnecessarily. Food packaging does not necessarily have to become food packaging again if the replacement of virgin plastic in other segments is possible with lower energy and cost expenditure.
- **Credit trading promotes recyclability:** A supply of credits can be expected above all for those polymer types that are recycled on a large scale *(at scale)* and are in demand on the market. Packaging manufacturers (distributors) who use these types of polymers are likely to benefit from a larger and cheaper supply of credits than users of polymer types the recycling of which is less economical. This increases the economic efficiency of the transformation without having to ban rarer polymer types, which have their justification in certain functions. In addition, the products in which the recyclates are used and receive the credits must also fulfil the requirements for high-value recyclability.

- **Credit trading ensures a *level playing field* between mechanical and chemical recycling processes**. Even though the EU's deliberations on mass balance procedures in chemical recycling have not yet been completed, it is likely that some form of allocation of PCR shares *(credits)* will have to be allowed for chemically recycled polymers to enable a higher recycle share to be shown than physically present. The chemical recycling industry has stated that this is required to create a business case for chemical recycling in the first place, besides the recycled content targets in contact sensitive packaging applications. Credit trading extends this possibility of allocating PCR shares between different products to mechanically produced recyclates. It is roughly equivalent to the "proportional" mass balance procedure, in which an allocation of credits within a polymer type will most likely be made possible, though it only concerns physically existing “polymer-only” recyclates.
- **Credit trading enhances demand for high-quality plastic recyclates and makes exemptions unnecessary:** All packaging producers can contribute to increasing the use of recyclates via credit trading by putting highly recyclable packaging on the market and guaranteeing the reuse of recyclates from packaging recycling. Even if no or only little PCR can (yet) be used in certain packaging, no exceptions are necessary. This is a significant step forward in extended producer responsibility.
- **Credit trading can also be used to take advantage of plastic tax exemptions.**
- **Credit trading can ensure continuity for the framework of the PPWR:** Amending targets, timeframes and other requirements related to recycled content rules will not be needed. The economic pressure caused by the requirement together with Credit Trading will push the industry towards the technical and ecological optimal solutions.

n. How can high-quality recycling be ensured and so called “downcycling” avoided?

Which sectors may participate in credit trading can be determined by the EU Commission in the delegated act according to Article 7(7) PPWR. Only manufacturers of high-quality recyclable plastic products - such as packaging, construction, or automotive parts - should be entitled to receive and sell credits. It is crucial that more recyclates are used voluntarily or through market-based financial incentives than required by law and that the use of recyclates replaces fossil-based new plastic. Applications in which the recyclate does not replace virgin plastic should be excluded by law. A mere "intrusion moulding" of PCR in products with low market value, only to gain credits from it, can thus be ruled out. In addition, the products themselves should fulfil DfR-requirements so that they in turn are high-value recyclable.

In the future, chemical recycling can close a gap in the circular economy of plastics by processing waste that cannot be mechanically recycled into secondary raw materials to

produce new plastics. This opens new fields of application for recyclates, especially in food packaging. Together with the use of biomass and CO_2 as well as the conversion to renewable energies, it forms a key technology to be able to completely do without fossil raw materials in the plastics sector by 2050 and to achieve climate neutrality. However, these processes do not offer an alternative to energy- and cost-efficient mechanical recycling.

o. Does the purchase of credits entitle the holder to declare a recycled content to consumers?

No. The purchase of credits is merely a means to be able to compensate for the legal requirements on recyclate quotas, to cushion economic and ecological risks and to increase the overall economic efficiency of the transformation. To avoid misleading the consumer, the buyer of credits should not be entitled to advertise the compensated recycled content as recycled material contained in the product. Only recycled material physically used should be indicated on the packaging or in consumer communication. The EU Commission should lay down the rules for advertising statements on the recycled content in the delegated act pursuant to Article 7(7) PPWR.

Only an advertising reference may be used to the effect that the packaging in question is recyclable to a high standard.

p. May the seller of credits continue to advertise the recycled content in its products?

Yes, because the recyclate is physically contained in its products and this has been tested and audited. Double counting is excluded, because the buyer of the credits is not allowed to advertise the quantity equivalents he has purchased. The allocation of CO2 credits or debits must be considered separately from this.

q. How can credit trading be controlled and fraud risks reduced?

The trade in credits must be monitored just as strictly as the trade in post-consumer recyclates itself. However, the monitoring effort in both cases does not differ significantly. Since the recyclate content in the packaging cannot be analytically determined via laboratory methods, auditing methods such as purchase receipts etc. are required anyway to provide secure evidence of the material flows. Complete traceability of recycling back to the source of the waste is essential in order to ensure that the recyclate was produced from waste after use and that recycled quantities were not charged more than once. In the value chain, the necessary data is already available in audited form at various points (e.g. declarations of completeness, EUCERTPLAST

credits for recycling companies). In the case of credit trading, this audit also extends to the production of the manufacturer who sells the credits. The Commission has announced that it will lay down the rules for the calculation and verification of the recycled content in a delegated act in accordance with Article 7(7).

r. How will greenwashing be avoided in this system?

Double counting vis-à-vis the consumer is prevented, esp. by a block-chain programmed IT-trading platform. All credit-relevant tonnages and qualities are made transparent, checked, and audited. All participants in this trading system undertake to contribute to high-quality recycling: The seller of the credits by making his products with recyclate content recyclable to a high quality, the buyer of the credits by bringing only packaging that can be recycled to a high quality onto the market. The overall result is that the recyclability of packaging brought into the cycle increases. Moreover, trading in credits does not lead to undesirable evasive behaviour because credit prices will be high from the outset: The incentive to physically use recycled material is thus maintained. Credits will only be bought by those who objectively cannot fulfil their legal obligations otherwise.

s. Does credit trading promote low value recycling (“downcycling”)?

The opposite is the case: only the manufacturer of high-quality recyclable packaging (Recyclass "A", at least 90% recyclable packaging components) may buy credits at all. And only the user of high-quality recyclates that replace virgin material 1:1 may sell credits. This initiates a continuous improvement process driven by market mechanisms: Those who have so far put less recyclable packaging on the market will try to improve their Design for Recyclability (DfR) to be able to use credits as well. Those who still use inferior recyclates can gain the opportunity of additional revenues of selling credits by improving their quality.

t. **Will this system not be lobbied against by NGOs because of the negative image associated with “credit trading” in other fields?**

This proposal has been tested and (controversially) discussed with

industry partners like Pöppelmann, Kuchenmeister, Jockey Group, Graf, Procter and Gamble, dm-drogerie markt

Industry associations and consortiums like Ceflex, IK Industrievereinigung Kunststoffverpackungen e.V., BDS, BVSE, PRE, EUPC

NGOs like BUND, DUH, WWF, NABU

Ecological experts from ÖkoInstitut, Wuppertal Institut

Government bodies like DGs Growth and Environment, UBA (Federal Environmental Agengy), Federal State Ministries in Germany, Zentrale Stelle (Central Body Packaging Register), Federal Ministry of the Environment

MEPs, MDBs

It was mostly endorsed by all our discussion partners. Concerns raised by them were respected when designing the system.

u. Will credit trading cement the status quo?

No, unlike to chemical recycling, continuous improvements are immediately triggered by price mechanisms and these lead to a broad-based increase in the recyclability of PET, PP and PE plastic waste, and to a reduction in the quantities of plastics that are difficult to recycle and could otherwise only be recycled chemically. This pressure does not apply to chemical recycling, because it propagates that it can also take on waste streams that are difficult to recycle. But it will encourage chemical recyclers to look for feedstock that today is not yet collected, sorted, and recycled in areas outside packaging, and thus further a broad movement towards more recycling and less landfilling and incineration.

m. Can idle packaging manufacturers buy their way out of legal obligations?

Inaction on the part of packaging manufacturers does not pay off, because if they put poorly recyclable packaging on the market, they are not allowed to buy credits. This means they face sanctions for failing to meet recyclate content targets (fines, marketing bans). Or they must use particularly expensive and ecologically disadvantageous recyclates from chemical recycling.

n. Isn’t credit trading just another kind of fraudulent trading of weighing bills as we had it in the 1990s?

In the 1990s, when weighing bills were traded between parties obliged to prove recycled quantities to the authorities this was a clandestine double and triple counting scheme. It was a. against the law, and b. violating contracts between waste-management companies, sorters, and EPR-schemes. Once discovered it was quickly and explicitly outlawed by German authorities. Any comparison to the Credit Trading System in question here is misleading, inadmissible and defamatory as in our case we are talking about an audited system that excludes double counting, with a legal basis and

transparent rules.

o. Does credit trading undermine efforts to improve collection, sorting and recycling?

Through the Design for Recyclability (DfR) improvement processes triggered by price mechanisms, the collectability, sortability and recyclability of PET, PE and PP waste streams will be increasing continuously.

p. Can the content of recyclates, e.g., in food packaging, be ensured in another way instead of through credit trading?

As long as there will be no EFSA approval for the use of rPP and rPE in food contact, there is no other way. Only when chemical recycling capacities produce the virgin-like recyclates would there be an alternative. This will create price competition between the credits and the prices for chemically produced recyclates, which in turn will lead to market-driven improvements in both mechanical and chemical recycling.

q. Can the credit purchaser buy credits in stock, resell, cancel or exchange them?

Credits are not fungible securities; the respective laws do not apply. They only embody concretely processed recyclate quantities in concrete products of a concrete credit seller. The credit platform brings the latter together with a concrete buyer. Both parties must fulfil certain conditions, which can be transparently controlled and are individual. The credit therefore expires if it is not used or after the end of a calendar year. Since the credit is only assigned virtually on the platform, passing it on outside the platform is ruled out from the outset.

r. Do the seller and the buyer of the credits know each other on the platform?

For reasons of data protection, the seller's data are not passed on to the buyers, just as all information about the parties remains strictly confidential. Confidentiality is ensured by the necessary precautions in the programming and operation of the platform, which is supervised by the auditors of the system head in coordination for example with the Stiftung Zentrale Stelle Verpackungsregister (ZSVR) or any other trustworthy official (European) body assigned by the legislator.

s. What is the relationship between credit trading and chemical recycling?

Chemical recycling should provide the industry with approved virgin material-like recyclates that can be used in food applications and other contact-sensitive packaging. According to a new study by Conversio (Forecast Model "Use of recyclates in Europe 2020 to 2030", commissioned by IK e.V.), the volume potentials for these demanding applications are very high, while the volume potentials for credit trading are significantly smaller due to the qualitative restrictions. There are only so many credits available because they may only be sold by convertors using high quality recycled pellets in ambitious applications. In purely quantitative terms, there remains a great deal of demand for chemical recycling products that cannot be covered by credit trading.

t. Will credit trading lead to unfair windfall profits for those convertors who have been using recyclates in the past?

This concern is unjustified. If credit trading is enabled already before 2030, all the effects described in this dossier can already begin to work even before the legal recycled content obligation enters into force. This would be completely in line with the intention of the PPWR. Avoiding windfall profits would require setting a deadline as of which previous use of recycled content would be excluded from credit issuance. That would create a once-only effect which could easily be circumvented by reducing the use of recyclate during the period in question, e.g., by replacing recyclate with by-products or virgin. That effect would be more damaging to the environment and to mechanical recycling than possible once-only windfall profits. Also, it seems unfair to punish first movers by not recognising them as such and not allowing them to benefit right from the start.

u. Will credit trading really lead to additional recyclate consumption in the converting industry or will it not rather freeze the existing situation?

Through the double quality ambition credit trading will lead to more high-quality recycling and less ambitious, less quality recyclates (often referred to as “downcycling” with no clear definition), which directly benefits the environment. More high-quality recycling will lead to more recyclate usage in all the converting industries and therefore boost recyclate consumption in general. Chemical recycling seemingly leads to more recyclate usage in the contact sensitive packaging applications field only, but it has no quality effect on packaging in general, neither regarding design for recyclability nor collection or sorting. It will most likely and already visible damage existing recycling pathways by either using up their feedstock or by taking quality pressure away from design for recyclability and from collection and/or sorting.

v. What is the purpose and role of CRC GmbH

CRC GmbH was founded in Germany in 2022 with the objective of offering an industry run, competitive, and state supervised building block for the circular economy of plastic packaging that supports several ecological goals:

- Incentives for more recycling-friendly design (DfR) to compensate for the weaknesses of the German eco-modulation rule in § 21 VerpackG.
- Incentives to produce larger quantities of ecologically high-quality recyclates.
- Ecologically high-quality response to obstacles to the use (legal, physical, economical) of recyclates in contact-sensitive applications (food, cosmetics, medicine, ...)

The corporate purpose of CRC is to organize trading in new, physical quantity backed types of recycled content credits. CRC offers to act as System Head for that trade by providing the trading platform. As system head for credit trading CRC will be using independent auditors (registered with the ZSVR or comparable institutions) and publicly secured, generally accepted auditing procedures. Thus, we will ensure that the requirements for the purchase and sale of credits as defined in this paper will be met by the participants *(reliable and trustworthy*). An additional professional requirement for any CRC-registered auditor is that he is examined according to Recyclass (modules 1-3) or a comparable system.
The trading platform (system head) CRC itself will also be audited in its entirety by independent auditors (or operate on a block-chain-basis) to ensure that the functionality of the trading platform is sustainably guaranteed and publicly trustworthy (system head audit / volume clearing / IT-security).
CRC intends to introduce the trading system initially in Germany and later in the EU. Both depend on the legislator creating the necessary legal basis.