Response to the Consultation on the CRMA Implementing Act

Article 26 – Inclusion of Wind Turbines in the List of High CRM Recovery Potential Products

Wind Energy in Europe: Delivering Sustainability at Scale

With **258 GW of installed capacity**, wind energy today covers **20% of the EU's electricity demand**. It is one of Europe's cleanest and most efficient energy technologies, with near-zero water consumption and a minimal environmental footprint across its lifecycle.

Wind turbines are largely composed of standard, inert materials such as steel, concrete and composites. The industry continues to improve sustainability by investing in low-carbon steel, recyclable blade materials, and design choices that extend turbine lifetime and reduce raw material intensity. Today, between **85–90% of a wind turbine's weight is recyclable**, using well-established practices.

CRMs in the Wind Sector: Low Recovery Potential, High Complexity

Wind turbines contain at least **12 of the critical or strategic raw materials (CRMs/SRMs)** listed in the CRMA. The highest-volume materials — **copper and aluminium** — are already recycled at scale through mature, commercially viable systems. However, **rare earth elements (REEs)** such as **neodymium, praseodymium and dysprosium** — primarily used in **permanent magnets** — are present in smaller volumes and pose far greater recovery challenges.

The expected return flow of permanent magnets from decommissioned turbines before 2030 is negligible. While the sector will require approximately **70,000 tonnes of magnets by 2030**, only around **80 tonnes** are expected to become available from end-of-life turbines in that timeframe. Recovery potential is therefore extremely **limited** — both in scale and feasibility — and does not support the case for circularity obligations in this decade.

WindEurope recommends that **wind turbines and their components not be listed in the Annex to the Implementing Act under Article 26** as a standalone product group. Blanket inclusion risks triggering disproportionate obligations that are not appropriate for infrastructure assets.

At the same time, the wind sector remains supportive of **targeted, enabling circularity measures** — such as refurbishment, reuse, R&I support, and improved waste traceability — where these are well-designed, proportionate, and aligned with functioning value chains.

To ensure European competitiveness, we ask the European Commission to:

- **Refrain from imposing recycled content obligations** on permanent magnets, where the supply and market conditions do not yet support such measures, and where blanket targets would be disproportionate to the volumes involved;
- **Exclude wind turbines and their components from Extended Producer Responsibility (EPR) schemes,** which are fundamentally unsuited to large, long-lived infrastructure and risk distorting functioning end-of-life processes;
- **Focus on enabling policies**, such as the development of dedicated waste codes for permanent magnets and composites, investment in CRM recycling technologies, and **incentives for circular practices** like refurbishment, resale, and reuse;
- **Promote CRM reduction, substitution, and supply chain diversification** as more effective long-term strategies for improving resource security than early-stage recycled content quotas.

Closed-loop recycled content criteria for wind turbines are unworkable, given the negligible volume of end-of-life magnets available before 2030. Even open-loop approaches, where recycled magnets could in theory be sourced from other sectors, are currently **not supported by a functioning secondary market**. Until sufficient

supply chains and market demand exist, such obligations would be detached from industrial reality and risk distorting both innovation and investment, as well as reducing European competitiveness.

EU capacity is limited, disassembly remains difficult, and global prices — especially for recycled materials — are suppressed due to market dominance by Chinese suppliers. In this context, the **secondary market for recycled permanent magnets is not yet mature enough to support policy-driven demand**. Premature obligations would create perverse incentives — enabling niche recyclers to charge high premiums for limited-yield processes, adding cost and complexity to a value chain that is still developing and not yet ready to support such requirements.

While recycled content obligations are unworkable for permanent magnets today, the picture is more nuanced for materials like **copper and aluminium**, particularly in cables, which are **already highly recyclable**. If the Commission intends to use recycled content criteria as a **market-building tool**, such approaches may work better for well-established, high-volume materials. But for **rare earth elements and low-volume specialised components**, these tools are not appropriate.

Risks of Including Wind Turbines in the CRMA Annex

The premature inclusion of wind turbines and related infrastructure in the CRMA Annex presents several risks:

1. **Minimal CRM recovery potential to supply demand.** The low volume of rare earth elements available from decommissioned turbines makes recycled content obligations infeasible — especially for permanent magnets, where projected recovery represents less than 0.2% of projected demand.
2. **Regulatory mismatch.** Wind turbines are not covered by WEEE or construction/demolition rules, and do not fit within existing classification schemes. Applying product-style rules to infrastructure creates legal uncertainty and risks misaligned policy outcomes.
3. **EPR not fit for purpose.** While EPR might be workable for specific components in some sectors, applying it to entire turbines — which are capital-intensive, long-lived infrastructure assets — would create disproportionate administrative and logistical burdens.
4. **Duplication of functioning systems.** Most turbine materials — especially metals — are already recovered and recycled efficiently through existing value chains. Imposing new circularity requirements on what already works would increase complexity without adding value.
5. **Fragmentation and implementation burden.** National-level programmes based on an undifferentiated Annex risk creating a fragmented regulatory environment. OEMs and operators could face diverging obligations across Member States, driving up compliance costs and reducing regulatory predictability.
6. **Risk of distorting investment and resale pathways.** Wind components are already often reused, refurbished, or resold into second-life markets — a key enabler of circularity. Burdensome requirements would unintentionally encourage offshoring or undermine these pathways, especially in lower-cost markets outside the EU.

Conclusion

The wind sector is already a **leader** in circularity, with **reuse, refurbishment, and material recovery embedded across its lifecycle**. The industry has made significant investments in developing effective, decentralised recycling supply chains — particularly for high-volume materials such as copper and aluminium.

However, imposing recycled content requirements on rare earths used in permanent magnets would risk disrupting these functioning systems. Current market and supply conditions **do not yet support** such obligations, and **premature** mandates could undermine rather than accelerate progress.

WindEurope and its members fully support the objectives of the Critical Raw Materials Act. But to succeed, policy must be **pragmatic**, **sequenced**, and **evidence-based**. Overly prescriptive or misaligned requirements could raise costs, fragment the internal market, and ultimately slow Europe's energy transition and industrial competitiveness.