Plastic Sustainability Options

Criteria	Virgin plastic	Plastic-neutral	Bioplastic	Paper	Glass	Aluminium
What it is	Fossil fuel based plastic	Offsetting scheme that funds plastic recovery from nature, equal to use	Bio based plastic	Wood-fiber - substitute	Silica-based - substitute	Bauxite-derived metal - substitute
Key Advantages	- Very light - Highly versatile - Low CO_2	- Funds plastic recovery from nature - Independent 3rd party verification - Compatible with current packaging	- Biobased content - Industrial-compostable - Lowers fossil dependence	- Inert high barrier - Endlessly recyclable - Suited to premium	- Inert high barrier - Endlessly recyclable - Suited to premium	- Excellent barrier - Infinitely recyclable - High value drives recycling
Key Disadvantages	- Persistence & microplastics - Rising policy/consumer pressure - Real-world recycling constraints	- Does not change your pack's impacts - Greenwash risk if not audited - Short/medium term application"	- Limited curbside end-of-life - High heat to compost - Can contaminate recycling streams	- Heavy - Breakage risk - Higher unit cost	- Heavy - Breakage risk - Higher unit cost	- Energy-intensive if virgin - Bauxite mining impacts - Laminates/foil-paper hard to recycle
Typical use cases	Films, pouches, bottles, lids	When alternatives to virgin plastic limited	Cutlery, cups, liners, films	Boxes, cups, wraps, trays	Jars, bottles	Cans, trays, foil, tubes, lidding
Speed to market	You're there already	Fast, short/medium term	Slow, medium/long term	Slow, medium/long term	Slow, medium/long term	Slow, medium/long term
Cost band (relative to virgin plastic)	£ (low)	$ (low)	$$$ (high)	$$ (moderate)	$$$ (high)	$$$ (high)
Customer perception	Negative without a story	Very positive as consumers sensitive to plastic pollution in nature, especially ocean plastic	Positive if certified; disposal confusion common	Positive if uncoated/recyclable	Premium, sustainable feel	Strong for beverages (not foil); 'infinitely recyclable' resonates
Best-fit scenarios	Lightweight, high-barrier, mass scale	When you must use plastic but also fund removal	Controlled disposal to composting or niche recycling	Dry goods, takeaway boxes, sleeves	Reusable/refillable, premium, acidic foods	Closed-loop can systems; long shelf-life SKUs; high recovery markets
Weight (transport)	Very light	N/A (not a material)	Light-to-medium	Light	Heavy	Light
Barrier performance	Excellent (moisture/grease/oxygen varies by resin)	n/a	Mixed; PLA fair moisture, weak heat/ oxygen unless coated	Moderate; needs coatings/liners	Excellent, inert	Excellent (light, oxygen, moisture)
Reuse durability	Low–medium (format-dependent)	n/a	Low–medium	Low (degrades with moisture)	High (ideal for reuse)	Medium (robust but dents)
Recyclability (real-world)	Widely theoretically recyclable; actual rates vary by resin & locale	Does not change recyclability	Limited: PLA/PHA rarely curbside; needs dedicated streams	Good for uncoated fiber; PE-lined items need specialty streams	Widely recyclable where glass bins exist	Widely recycled; high can capture; trays/laminates vary by market
Compostability	No	n/a	Some are industrially compostable; home-compostable is rarer	No (unless certified items)	No	No
Litter & leakage risk	High persistence; fragments (microplastics)	Offsets remove plastic elsewhere; does not change leakage of your pack	Some biodegrade in composting; not marine/ambient by default	Breaks down faster; coatings persist	Breaks but inert; heavier so less windblown	Persists as metal; high scrap value lowers leakage/litter
Energy & carbon (per pack)	Low weight → often lower per-pack emissions	Claim-based reduction on paper; doesn't reduce the pack's own emissions	Biogenic feedstock; processing energy varies; benefit depends on end-of-life	Heavier than plastic for same function → higher per-pack in many cases	High melt energy; heavy transport	High if virgin; very low with recycled content
Food safety	Mature compliance frameworks	n/a	Food-contact grades exist; heat limits (PLA softens ~55–60 °C)	OK; coatings/inks need care	Excellent inertness	Food-contact grades common; lacquer linings standard
Cost & availability	Usually lowest cost, stable supply	Program cost on top of pack cost	Often higher cost; supply constraints	Moderate; coated formats cost more	Higher unit + transport cost	Moderate; linked to metal markets; can/foil capacity widespread