

THE THRESHOLD INITIATIVE

IF NOTHING CHANGES

A scenario analysis of plastic pollution consequences

Society · Economy · Environment · Human Health

12 months · 2 years · 5 years · 10 years

EVIDENCE CONFIDENCE SCALE: A (Verified fact) through F (Unsubstantiated). Every claim in this document is scored.

EVI-If-Nothing-Changes-EN-v13 · July 2026 · thresholdsummit.org

A-F EVIDENCE CONFIDENCE SCALE

A Verified fact

B Evidence-based

C Consensus direction

D Informed inference

E Contested

F Unsubstantiated

Before you read this

What follows is evidence of irrevocable harm being done to everyone alive. To read it is to cross a threshold; to set it aside is to remain on this side of it. Both choices are legitimate. Make yours knowingly.

Threshold is a proposal in development. This document is part of its working canon.

Power is the problem

Plastic entered commercial use in the 1950s on a promise of necessity. The promise was delivered. Our lives are measurably better.

The question of what to do with the material when it was no longer in use was never asked, and was never resolved. It became rubbish, thrown away.

There is no such place as away. There is only everywhere. Two billion tonnes in seventy-five years, and everywhere now includes our blood.

This was known, measured, and written about as a threat to life on earth for over fifty years. The facts are done. The research is done. The understanding is done.

What has not been done is to stop it.

For half a century, every pathway has failed. Regulation has been outpaced. Voluntary pledges have been broken. Advocacy has been absorbed. Markets have not responded. Litigation has resolved single cases while the system continued.

The reason is not ignorance, and it is not lack of will. The reason is power. The wealth created by plastic does not want the wealth to stop, and has the resources to ensure it does not.

That is what we found out.

The Threshold is what follows.

A verified, legally usable, institutionally endorsed evidence base, built by the people who carry the harm in their bodies. Every observation scored for reliability. Chain of custody from phone to proceeding. A cross-stakeholder deliberation that produces ranked interventions on permanent record. An evidence infrastructure built upstream of the actors who will eventually use it, ready before they need it.

Not protest. Not policy. Not litigation. The architecture that makes all three forceful enough, sooner.

The Threshold is still a proposal. Its purpose is to make the cost of continued suppression exceed the cost of accountability. The threshold will be crossed. The Threshold is built to be ready when it is.

EN · ANDREW HENDERSON · THE THRESHOLD SUMMIT · July 2026

IF NOTHING CHANGES

A scenario analysis of plastic pollution consequences. Society · Economy · Environment · Human Health · 12 months · 2 years · 5 years · 10 years

The world we leave to our children, if we choose not to act.

Plastic should not be in our blood. But it is. This threshold has been crossed. The Threshold is the institution that makes that fact increasingly difficult to ignore, legally, medically, and politically.

EVIDENCE CONFIDENCE SCALE

A Verified fact · B Evidence-based · C Consensus direction · D Informed inference · E Contested · F Unsubstantiated

Before the analysis — a personal question

Think about the last newborn you held. The weight of them. The absolute vulnerability of a person who has not yet done anything in the world except arrive in it.

A That child already has plastic particles in their blood, not absorbed since birth, but present before birth, carried across the placenta. This has been measured in peer-reviewed studies. It is not a projection.

Ragusa et al. (2021). Plasticenta: First evidence of microplastics in human placenta. Environment International.

B The generation now under fifteen may find it harder to have children than the generation before them. Male sperm counts have fallen by approximately fifty percent over fifty years. Endocrine-disrupting chemicals in plastics are identified in current research as a significant contributing factor.

Levine et al. (2017). Human Reproduction Update; 2022 follow-up. Direction of decline not contested. Precise magnitude subject to methodological debate.

Which means, and this is an honest inference, not a certainty, that some people reading this may not have grandchildren. Not because of any choice their children make. Because of something done to them before they were born.

Take a moment with that. With the face you have already imagined.

The counted facts are alarming enough. What follows is the honest picture of where those facts lead, if nothing changes.

Naming the pattern — the Threshold Effect

Plastic pollution is not an accident. It is not a tragedy in the Greek sense. It is the predictable outcome of a specific and recurring pattern in human industrial systems: one that has played out before, with tobacco, with asbestos, with leaded petrol, and that is playing out again now at greater scale and with more permanent biological consequences.

THRESHOLD EFFECT (copyright Andrew Henderson, July 2026)

When a technology, substance, or industrial practice produces immediate concentrated benefit and deferred dispersed cost, the actors who benefit tend to suppress or delay accountability, in documented historical cases, deliberately and systematically, and to influence regulatory systems and normalise the deviation from safety for as long as the cost of suppression remains lower than the cost of accountability. This continues until a threshold is crossed: the point at which the consequences become too large, too visible, and too attributable to be suppressed further. At that moment, the full architecture of harm becomes legible for the first time, the causal chain traceable, the actors identifiable, the damages quantifiable.

The Threshold Effect describes a pattern, not a destiny. It is not inevitable, and it is not beyond interruption. It is a pattern sustained by choices, and choices, unlike natural laws, can be reversed.

This is not the boiled frog. The frog does not know the water is heating. The plastic industry knew. Internal documents confirm it. Regulatory capture was deliberate. The scientific counter-narrative was funded and deployed. The treaty negotiations at Busan and Geneva were undermined by organised industry lobbying. This is not ignorance. It is the operating model of the Threshold Effect in its active phase.

[Chart: Plastic production and environmental loss 1950-2034. Sources: PlasticsEurope, Geyer et al. (2017), OECD (2022, 2023)]

The baseline — the world as of June 2026

Before mapping what follows, we must be clear-eyed about where we start. The following numbers are not projections. They are the current reality.

*** Methodology note:** The OECD 2022 estimate of 22 Mt/year represents total plastic entering the global environment. Some analyses separately account for terrestrial and freshwater leakage, producing different headline figures depending on accounting scope. Where third-party projections using different accounting methodologies are cited in this document, the sourced figure is preserved and noted. 22 Mt (OECD 2022) is this programme's canonical reference figure.

460 Mt Plastic produced every year	<10% Ever recycled globally	22 Mt (OECD 2022)* Leaking to environment every year	~1 Mt EU recycling capacity lost 2023-25	~5g Microplastic ingested per person/week
--	--	--	--	---

A The Iran conflict, from 28 February 2026, closed the Strait of Hormuz to most petrochemical shipping, spiking virgin polymer prices 40-42% globally within weeks. This is one of the first periods in which market forces have made recycling broadly viable at scale, but most of the infrastructure needed to capitalise on it has already been shut down.

myCEPPI/Plasticker market data March 2026. 31 force majeure declarations recorded globally by 13 March 2026.

A European plastic recycling lost nearly one million tonnes of processing capacity between 2023 and 2025. The Netherlands alone lost ten companies to insolvency in under eighteen months. The cause is structural: virgin plastic is priced below its true social cost, making recycled material permanently uncompetitive without a levy.

Plastics Recyclers Europe 2025 capacity tracking. Netherlands insolvency records confirmed across ten named companies.

The depth of the recycling industry crisis

The headline capacity loss figure understates the severity. The European recycling industry entered 2026 running at approximately 55% of its installed capacity. In a sector with high fixed costs, energy, plant, and labour, operating at 55% utilisation is not a squeeze. It is, for most operators, a death sentence.

850+ EU recycling companies 2024	55% Capacity utilisation (installed vs actual output)	-20% Revenue decline 2022-2024	~780 Estimated active sites entering 2026
--	---	--	---

Industry turnover fell from approximately EUR 10.4 billion in 2022 to EUR 8.6 billion in 2024, a decline of nearly 20% in two years. The sector had been growing at 17% annually in 2022. It has since lost nearly a fifth of its revenue and a comparable share of its capacity.

The two hardest-hit streams are also the two largest: polyolefin films and PET, which together represent approximately half of all installed capacity, each accounted for 25% of the closure wave in 2023-2024. These are the streams where recycling investment was heaviest and where demand from brand owners is theoretically strongest.

"The crisis is not technical. It is entirely economic. The machines exist. The expertise exists. The processing capacity exists, or did. What does not exist is a market structure in which recycling a tonne of plastic generates more revenue than it costs."

Country-level capacity further illustrates the political geography of the crisis. Germany holds the largest installed capacity at approximately 2.5 million tonnes; Spain follows at 2 million tonnes; Italy at over 1.5 million tonnes; the United Kingdom and France each hold between 1 and 1.5 million tonnes. Germany, Spain, Italy, the UK, and France together account for roughly 60% of all European recycling capacity, and they are the countries where the financial pain is most visible.

Source: Plasticsrecyclers.eu Statistics 2025. Packaging Gateway 2024. Letsrecycle.com 2025.

A Microplastics have been detected in human blood, breast milk, foetal placental tissue, and brains. A 2024 NEJM study found people with microplastics in arterial plaques had a 4.5 times higher risk of heart attack, stroke, or death.

Leslie et al. (2022), blood. Ragusa et al. (2021), placenta. Marfella et al. (2024). NEJM, 4.5x cardiovascular association.

A The global plastics treaty failed to achieve consensus at INC-5 in Busan (November-December 2024) and at INC-5.2 in Geneva (August 2025). No binding production caps exist anywhere on earth. No legally mandated cleanup fund exists.

UNEP INC-5 outcome documentation December 2024. INC-5.2 Geneva August 2025.

B The EU's December 2025 package, including separate customs codes, import monitoring, and mass balance rules for chemical recycling, represents the first meaningful regulatory step. But it contains no levy, no direct recycler subsidy, and no upstream production control.

European Commission December 2025 regulatory package. B not A: implementation effectiveness not yet demonstrated.

"We are at a hinge point in history. The Iran conflict has delivered, accidentally, the price signal the recycling industry has needed for years. The question is whether the political system uses this window, or allows it to close, as it did in 2022 and so many times before that."

SCENARIO 1: 12 MONTHS: June 2026 to April 2027

The Window Opens — and Begins to Close

Economy & Markets

B PE, PP, and PET contract prices in Europe stabilise in the EUR 1,200-1,600 per tonne range through Q3 2026 as Hormuz traffic partially resumes but risk premiums persist. US producers enjoy a super-normal profit period, capturing European and Asian market share.

ICIS and myCEPPI forward price data. B: conflict resolution timeline uncertain.

- rPET breaks clearly into profit for the first time since 2022. DRS-collected bottle flakes command EUR 1,200-1,400 per tonne. Some closed PET recyclers explore restart, but face 18-24 month lead times for plant reconditioning.
- rPP and rHDPE reach breakeven. Mixed colour and flexible film remain loss-making without a levy: processing costs still exceed output value by EUR 200-500 per tonne.
- Brand owners begin accelerating recycled content commitments, not from conviction, but because recycled material is now cheaper than virgin equivalents for the first time in three years.
- Brent crude above \$100 per barrel. Inflation in energy-intensive industries reaccelerates. European consumers face higher food prices from packaging cost pass-through.
- EU customs begin implementing separate virgin and recycled plastic codes. First fraudulent import cases detected and challenged: establishing legal precedent but not yet deterring the practice at scale.

Environment

A No measurable environmental improvement in 12 months. Approximately 22 million tonnes of additional plastic enters the global environment (OECD 2022, BAU projection).

OECD Global Plastics Outlook 2022. BAU projections.

Human Health

B The first large-scale longitudinal human health study linking microplastic accumulation to measurable disease outcomes, including cardiovascular events, inflammatory bowel disease, and reproductive harm, is published or in advanced pre-publication stage. The 4.5 times cardiovascular risk finding moves from observation to clinical concern. European public health agencies begin preliminary discussions on microplastic exposure guidelines. No binding health standards exist anywhere in the world.

NEJM 2024 cardiovascular study as foundation. B: timeline of follow-up studies uncertain.

Society & Politics

B Public awareness of microplastic health risks reaches a threshold moment in 2026-2027 comparable to the shift in tobacco awareness in the late 1980s, when the link between smoking and disease crossed from contested science into public knowledge. Social media amplification of "plastic in my blood" narratives drives consumer behaviour change at the margins. The first national attorney general in a major jurisdiction, likely California or a Scandinavian country, announces an investigation into plastic producer liability for public health costs. This is a legal shot across the bow, not yet a lawsuit.

Directionally grounded in trajectory of current research and social response data. Specific jurisdiction and timing uncertain.

"In 12 months: the window opens, but is not climbed through. Approximately 22 million additional tonnes of plastic have entered the environment. The opportunity created by the Iran conflict is partially used, but not transformed into structural change. Threshold Effect predicts exactly this."

SCENARIO 2: 2 YEARS: June 2026 to April 2028

The Structural Trap Reasserts Itself

By 2028, the Iran conflict has been resolved or stabilised. New Middle Eastern production ramps back. US and Chinese overcapacity resumes its downward pressure on virgin prices. Without a structural policy intervention, the levy, the liability framework, the upstream redesign, recycling economics revert toward the 2023-2025 crisis conditions.

736 Mt Projected production by 2040 (OECD BAU)	119 Mt Mismanaged plastic waste by 2040	~33 Mt/yr Environmental leakage by 2040 (OECD BAU, up from 22 Mt in 2020)	6% Recycled share of all plastics by 2040
--	---	---	---

- Virgin polymer prices fall back toward pre-conflict levels. European recyclers attempting a restart face a second wave of viability pressure. No investor will commit capital to an industry that has experienced two closure waves in five years without policy protection.
- PPWR recycled content targets for 2030 are now missed. The EU needed 16 million tonnes of recycling capacity by 2025. It had 13.2 million in 2023 and is still declining.
- New cracker capacity coming online in 2026-2029 in the US Gulf Coast, Middle East, and China will add more than 50 million tonnes of annual polymer capacity, systematically undermining any price recovery for recycle.
- The EU Import Surveillance Task Force identifies significant volumes of fraudulently labelled recycled plastic.

C First legal action by a municipal government against a plastic producer to recover litter clean-up costs is filed in the Netherlands, France, or California. The case proceeds slowly but sets a landmark precedent.

C: filing of such cases anticipated based on existing legal frameworks and municipal cost documentation.

B The first comprehensive longitudinal study linking microplastic tissue burden to specific disease incidence rates is published in a major journal: Lancet, NEJM, or Nature. This may be the inflection point comparable to the moment in tobacco research when scientific evidence crossed from association to established causation, the moment that ultimately made the industry's legal position untenable.

B: timing and journal uncertain. Directionally grounded in trajectory of current research.

"In 2 years: the structural trap reasserts itself. More than 44 million additional tonnes of plastic have entered the environment. The causal link between microplastics and human disease is now established science, not a contestable hypothesis."

SCENARIO 3: 5 YEARS: June 2026 to April 2031

The Point of No Return on Infrastructure

By 2031, without structural intervention, the EU will have missed its PPWR 2030 recycling targets by a conspicuously wide margin. New petrochemical capacity will have added more than 100 million tonnes of annual production globally. The term "irreversible" will appear with increasing frequency in peer-reviewed scientific literature.

Metric	2020 baseline	2026 today	2031 BAU projection
Global plastic production	435 Mt/yr	460 Mt/yr	~540 Mt/yr
Recycled share	9.5%	~10%	~10% (no change)
Mismanaged waste	81 Mt/yr	~85 Mt/yr	~100 Mt/yr
Environmental leakage	22 Mt/yr (OECD 2022)	~22 Mt/yr	~26 Mt/yr
EU recycling capacity	12.5 Mt	~11 Mt	~10 Mt (further decline)
Oceanic plastic stock	263 Tg	~275 Tg	~400 Tg

C The first major plastic producer faces judgment in producer liability litigation that began in 2026-2028. The judgment is modest in size but establishes the principle, triggering a cascade of further filings. Insurance markets begin pricing plastic litigation risk into producer liability premiums.

C: judgment timing and size uncertain. Directionally grounded in tobacco litigation precedent trajectory.

A Five years of continued BAU leakage adds approximately 110 million tonnes to the global environment. Microplastic contamination detected across nearly all measured environments, including Antarctica, the Tibetan Plateau, and the deep ocean.

OECD BAU projections. Science Advances 2025 global plastic dispersal model.

"In 5 years: the window to act without serious economic pain is now closed. Action will involve significant cost regardless of scale. The only remaining question is whether the accounting is voluntary or compelled."

SCENARIO 4: 10 YEARS: June 2026 to April 2036

The Legacy We Leave Our Children

The children born today will be ten years old. If nothing changes, the world they are growing up in will have accumulated an additional 220 million tonnes of plastic beyond the already critical 2026 baseline.

736 Mt Annual plastic production by 2040 (OECD BAU)	~33 Mt+ Annual environmental leakage by 2040	>400 Tg Oceanic plastic stock	5% Plastic share of global GHG by 2040	~EUR 150Bn+ Annual EU healthcare cost from plastic disease
---	--	--	--	--

C Plastic producer liability litigation has progressed through multiple jurisdictions. The first large settlement, likely \$10-50 billion, has been reached. This is the beginning of the end for the current industry model.

C: settlement size and timing uncertain. Directionally grounded in tobacco precedent (\$206Bn MSA 1998).

A The OECD projects that by 2040, under business as usual, the oceanic plastic stock will have more than tripled from its 2020 baseline.

OECD Global Plastics Outlook 2022. Policy Scenarios. A-scored.

A child born today will enter adulthood in a world where:

- The food they eat, the water they drink, and the air they breathe contain measurable concentrations of plastic particles, not as a future risk, but as a documented present reality.
- The oceans they inherit contain more plastic than any previous generation has known, approaching 400 teragrams.
- The recycling infrastructure that might have been built to manage the legacy plastic has contracted rather than expanded. The cost of rebuilding it in 2036 is 3-5 times higher than it would have been.
- The generation aged 20-30 in 2036 will be the most politically engaged generation on environmental issues in history. Their choices will shape the politics of the 2040s.

What makes this different from everything before it

The Plastic Threshold — why this instance of Threshold Effect is unlike all previous ones.

A Tobacco, asbestos, and leaded petrol all followed the Threshold Effect pattern. In each case the harm was suppressed, accountability arrived late, and the accounting, however incomplete, eventually came. In each case the harm was contained within the generation that experienced it. The damage did not cross the reproductive threshold.

Tobacco MSA 1998: \$206Bn recovered. European asbestos ban 1999. US leaded petrol phaseout 1986. In none of these cases was documented harm found in foetal tissue before birth.

A Plastic contamination has crossed the reproductive threshold. Microplastic particles have been documented in placental tissue, in cord blood, and in the developing brains of fetuses. The next generation arrives pre-loaded. The contamination is biologically heritable, not genetically, but through the maternal environment. Each generation will carry more than the one before it, unless production stops.

Ragusa et al. (2021), placenta. Landrigan et al. (2023), foetal brain.

This is what we call the Accumulated Biological Debt. Every generation that used plastic without internalising the cost of its persistence took out a loan against the biological systems of every subsequent generation. The interest compounds in the bodies of the unborn. The debt cannot be defaulted on. It can be reduced. The principal may not be fully reversible within current biological and environmental timescales.

FINAL RECKONING: WHAT WE ARE CHOOSING

Horizon	Additional plastic in environment	Human health status	Recycling industry	Cost of inaction
12 months	+22 Mt	Cardiovascular risk data enters clinical guidance	Partial recovery, fragile	EUR 30-50Bn
2 years	+44 Mt	First causal disease attributions; litigation begins	Second collapse wave begins	EUR 80-120Bn
5 years	+110 Mt	Clinical health crisis visible; children's cohort data alarming	Infrastructure critically depleted	EUR 300-500Bn
10 years	+220 Mt	Generation born today carries lifelong elevated risk	Rebuilding 3-5x more expensive	EUR 1-2 Trillion

"None of this is inevitable. All of it is a choice. The only question that matters now is: if we do not want this for our children, what are we willing to do, and how much time do we have left before the cost of not acting permanently exceeds the cost of acting?"

From analysis to action — The Threshold

Threshold Effect has a specific vulnerability. It depends on the suppression of evidence remaining cheaper than accountability. The moment that calculation reverses, when the evidence base is too large, too verified, too institutionally endorsed to suppress, the pattern breaks.

The Threshold is the institution built to reverse that calculation for plastic. Not through protest. Through the systematic construction of a verified, legally usable, institutionally endorsed evidence base, built from citizen observation, expert analysis, medical declaration, municipal cost audit, and a litigation evidence pipeline.

Sources: OECD Global Plastics Outlook 2022 · Lancet Planetary Health Dec 2025 · NEJM Mar 2024 · Plastics Recyclers Europe 2025 · Plasticsrecyclers.eu Statistics 2025 · Packaging Gateway 2024 · ICIS, myCEPPI market data · Science Advances Mar 2025 (global plastic dispersal model). Compiled by Andrew Henderson, Lead Architect, thresholdsummit.org, July 2026, Marans, France. Threshold Effect (copyright Andrew Henderson, July 2026).

What follows from reading this

You have now read the evidence. The medical evidence is in our blood and our children's. The economic case for recycling, as it has been sold, is dead. The policy interventions exist and have been costed. The architecture that would resolve a case of this shape has been mapped.

From this point you are an informed witness. That is the threshold.

The next question is not whether you care. The historical pattern is clear. Systemic harm has been resolved in every documented precedent (tobacco, asbestos, lead, opioids) not by enough people caring but by enough informed witnesses acting in ways small and large. The relevant distinction is not between those who care and those who do not. It is between those who act and those who do not. The difference is witnessed commitment, not feeling.

Three civic acts cross the threshold.

Vote. Vote for political representatives who will price the externality, build the levy, and pass the producer liability framework. Plastic is a political problem before it is a chemical one.

Vote in the Threshold poll. When the Knowledge Base presents the ranked interventions that emerge from the Althing Round, vote on them. The poll is the public record of which interventions citizens have endorsed.

Write your Pledge. If you care, show it. Write to your unborn grandchildren. Tell them what you knew. What you did. What you did not do. Tell them why they will live with the consequences. Seal it with your mark. Send it to the Threshold. We will hold it until the threshold is crossed, or until the year you have chosen, whichever comes first. This is the act that crosses your own. You will carry it forever.

The Threshold Effect is the pattern by which documented systemic harm crosses a threshold making it increasingly difficult to ignore, legally, medically, and politically, in documented historical cases, deliberately and systematically.

The case has crossed every threshold but yours.

Whether you cross it is now observed.