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The Pharma Scope 3 Problem Nobody Talks About

Healthcare generates ~4.4% of global emissions.
Most sits in Scope 3. And most of that is still estimated -- not verified.

FOR: PSP Teams | ESG Functions | CFO & Finance

#Scope3 #PharmaESG #BehavioralScope3 #MedicalWaste #EPR

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KEY INSIGHTS

1 Healthcare is the world's fifth-largest GHG emitter.[1] The majority of pharma Scope 3 sits in product end-of-life -- the least measured category.[2]

2 Medical device waste is structurally different from consumer packaging, but the verification gap is identical: estimated data, zero field-level proof.[2,3]

3 The infrastructure to capture behavioral ESG signals already exists inside pharma distribution and patient support systems.[4] It just has not been activated.

WHAT PHARMA SCOPE 3 REALLY MEANS

~4.4%	<2%	~$500B
of global GHG emissions estimated from healthcare [1]	formal device recovery rate in major markets (e.g. UK) [3]	est. annual global cost of medication non-adherence [5]

Pharma does not lack sustainability commitments. It lacks behavioral data.

Most pharmaceutical companies have made bold net-zero commitments and published Scope 1 and Scope 2 reduction roadmaps. When the discussion turns to Scope 3, responses lean on supplier questionnaires, spend-based proxies, and industry-average emission factors.

The categories that represent the largest share of pharma Scope 3 -- Category 12 (end-of-life treatment of sold products) and Category 11 (use of sold products) -- are also the categories with the weakest, least verifiable underlying data.[2,6]

This is not a marginal accuracy issue. When inhalers, insulin pens, auto-injectors, and single-use devices are disposed of through general household waste -- as evidence suggests the majority are in many markets[3] -- the emissions from propellant release, residual pharmaceutical ingredients, and non-recyclable mixed plastics are estimated away, not measured.

THE SCOPE 3 CATEGORY PHARMA IGNORES

GHG Protocol Scope 3 has 15 categories.[6] For device-heavy pharma portfolios -- respiratory, diabetes, autoimmune -- the most material are Category 1 (purchased goods), Category 11 (use of sold products), and Category 12 (end-of-life). For small-molecule oral portfolios, Category 1 may dominate. But in all cases, Category 12 is where the data effectively runs out.

The reason is structural. Category 12 requires information on what actually happens to a product after it leaves the patient's hands. That data is not available from invoices, not inferable from spend, and not capturable by satellite or sensor. It requires field-level behavioral verification -- which almost no pharma company has built.[2]

Category	Typical Data Source	Verification Level	ESG Exposure
Cat. 1 -- Purchased goods	Supplier invoices + surveys	Medium	High -- well covered
Cat. 11 -- Use of sold products	Clinical data + device specs	Medium	High -- growing focus
Cat. 12 -- End-of-life	Industry averages + estimates	Very Low	Critical -- almost unverified

NEW CONCEPT: BEHAVIORAL SCOPE 3

Behavioral Scope 3 refers to emissions and waste generated by real-world healthcare behaviors -- device disposal, medication adherence patterns, and pharmacy-level returns. These are still Scope 3 under the GHG Protocol; 'Behavioral Scope 3' is a lens on how those emissions arise, not a new category.

This framing explains why traditional ESG accounting systematically underestimates healthcare Category 11 and 12 emissions: the behavior that drives them is invisible to financial flows, invoices, and spend-based models. It only becomes measurable when captured at the point of action.

Play4Health is the behavioral data layer for healthcare ESG -- turning routine clinical and field interactions into verified, audit-ready Behavioral Scope 3 data points. For ESG teams: Scope 3 numbers that survive auditor and regulator challenge. For PSP teams: near-real-time behavioral insight, not once-a-year proxy reports.

WHY MEDICAL DEVICE WASTE IS DIFFERENT

Consumer packaging waste and medical device waste share the same measurement gap -- but the behavioral context is fundamentally different, and the environmental stakes are higher.

A metered-dose inhaler (MDI) contains HFC-134a or HFC-227ea propellants with a global warming potential of 1,430 to 3,220 times that of CO_2.[7] Based on propellant release alone, a single MDI improperly disposed of is roughly the atmospheric equivalent of a 175 km car journey.[7] Multiplied across hundreds of millions of inhalers dispensed annually -- the vast majority unrecovered formally -- the scale of unverified emissions becomes undeniable.

The sector is not standing still. Low-GWP propellants (notably HFA-152a) are in development, and some markets are piloting inhaler take-back schemes.[8] But even there, verified Category 12 data remains sparse and most devices still leak into general waste streams. The transition changes the emission factor. It does not close the measurement gap.

Insulin pens and auto-injectors add further complexity: residual active pharmaceutical ingredients (APIs), mixed plastic and metal components, and sharps classification in many markets. They require specific end-of-life handling that general waste infrastructure is not equipped to provide. In many emerging markets, it is minimal or absent.

CLINICAL SCENARIO

A respiratory therapy company dispenses **2 million MDI inhalers annually** across five markets. Formal recovery rate: under 1%. Each unrecovered inhaler: approximately 150 to 500 g CO_2e in propellant release, plus plastic and aluminium landfill impact.

Without Play4Health: Scope 3 Category 12 disclosure reads 'estimated using industry-average end-of-life factors.'

With Play4Health: pharmacy-level return scans generate verified event records -- photo + barcode + geo + timestamp -- mapping directly to auditable Category 12 reduction signals under the GHG Protocol.

The data gap is not a rounding error. It is the entire number.

BEHAVIORAL ESG DATA IN PHARMA

Play for Earth developed the concept of Behavioral ESG Data -- sustainability metrics derived directly from verified real-world actions rather than economic proxies -- in the context of FMCG packaging recovery. Play4Health extends this framework to medical device returns, medication adherence verification, and healthcare packaging end-of-life.

Behavioral ESG Data in Healthcare

Sustainability metrics derived from verified patient actions, not estimated from spend or activity proxies. Each data point is generated by the patient or caregiver directly -- a photo taken with their phone confirming adherence or device return. Each event carries a specific actor, location, timestamp, and physical event -- making it traceable, auditable, and regulation-ready.

HOW IT WORKS -- NO REPS, NO NURSES, NO PSP AGENTS REQUIRED

1. Patient takes medication

The patient or caregiver takes a quick photo with their phone to confirm the dose.

2. AI verifies the event

The platform validates the image -- medication use, device status, timestamp. No human review needed.

3. Device finished

When the treatment cycle ends, the patient takes a photo returning the device at the pharmacy. Return confirmed.

4. Verified data layer

The platform generates audit-ready datasets for adherence tracking, device recovery, and Scope 3 / EPR reporting.

Patients generate the data themselves. A simple photo confirms adherence and device return.

Examples of verified events:

- Patient takes a photo confirming dose completion during a routine self-care moment -- no PSP agent present
- Patient returns finished inhaler or insulin pen to pharmacy and takes a photo -- photo + barcode + location
- Caregiver confirms device return on behalf of patient -- verified via photo and geo-timestamp
- Verified adherence event tied to Health Adherence Index (HAI) progression -- generated by the patient, not reported by a rep

Feature	Traditional Pharma Scope 3 Data	Behavioral ESG Data (Play4Health)
Source	Spend-based proxies and averages	Patient-generated photos and verified field actions
Verification	Generic emission factors	Photo + Barcode + Geo + Timestamp
Auditability	Low -- estimated	High -- regulation-ready
Speed	Slow -- annual reporting cycle	Real-time -- per-visit frequency
Coverage	Portfolio-level approximation	Actor + location + event level

THE PSP AND PHARMACY NETWORK ADVANTAGE

Large pharma companies already operate -- or fund -- extensive field infrastructure: medical sales representatives visiting HCPs and pharmacies, Patient Support Programme coordinators in direct contact with patients, and pharmacy networks dispensing devices at every refill cycle.[4]

From a systems perspective, this is not just a commercial infrastructure. It creates the context in which patient actions occur -- every pharmacy dispensing moment, every PSP check-in, every refill cycle is a touchpoint where patients handle devices and take medication. Play4Health captures those actions directly from the patient through photo verification. The infrastructure sets the stage. The patient generates the data.

> *"The infrastructure for Scope 3 Category 12 verification already exists in pharma. It is called the Patient Support Programme."*
>
> *"The biggest missing dataset in healthcare sustainability is patient behavior."*

COST ADVANTAGE AND DUAL VALUE STREAM

Cost advantage

Activation runs on existing rep routes, PSP budgets, and pharmacy dispensing workflows. No new infrastructure, no dedicated audit programme, no sensor network. The marginal cost per verified device return event is a fraction of what third-party environmental audits or IoT device tracking would require -- and the network scales with the patient base, not the ESG budget.

Dual value stream

This data does two jobs simultaneously. It satisfies ESG regulators and investors demanding verified Category 12 Scope 3 disclosure. And it generates real-time PSP performance data -- adherence rates, device return volumes, territory coverage -- that existing PSP reporting systems have never been able to provide. One field operation. Two evidence streams.

FROM EVENTS TO ESG PROOF

TRIGGER EVENT Clinical Action Pharmacy scan - PSP visit Device return - Dose check	**Photo + Barcode + Geo + Timestamp**	**STREAM 1: ESG Verification Scope 3 Cat. 12 - EPR CSRD/IFRS-ready - Audit trail**	**STREAM 2: Health Intelligence Adherence rates - Device returns Territory HAI - Payer dossiers**

Verified behavioral events feed directly into four reporting frameworks: GHG Protocol Scope 3 Category 12; CDP supply chain disclosures for pharma; EPR compliance reporting under national and EU regulations now expanding to pharmaceutical packaging; and payer-facing value dossiers that increasingly require evidence of device take-back and adherence impact alongside clinical outcomes.

THE REGULATORY DIRECTION OF TRAVEL

IFRS S1/S2 and the EU's CSRD -- specifically ESRS E1 -- require companies to explain material Scope 3 categories and, where feasible, support them with robust, verifiable data rather than high-level estimates.[9,10] For a respiratory or diabetes therapy company, device end-of-life is unambiguously material under any reasonable double-materiality assessment. The question is no longer whether verification is expected -- it is whether your organisation has built the infrastructure to deliver it.

Companies that have built verified behavioral data infrastructure now are not catching up to regulation. They are ahead of it. Estimated data, long tolerated as a pragmatic limitation, is increasingly viewed by auditors and regulators as a compliance risk[9] -- particularly where material Scope 3 categories remain unverified year after year. A verified device return dataset built over 24 months becomes a durable ESG asset that proxies can never replicate.

CFO LENS

Scope 3 is now part of the financial disclosure perimeter. Building a verifiable behavioral dataset is a balance sheet risk management decision as much as an ESG one. Under CSRD and IFRS S1/S2, misstated or weakly supported Scope 3 figures translate into audit findings, restatement risk, and potential cost of capital impacts where investors discount unaudited estimates.

TWO OBJECTIONS -- AND WHY THEY MISS THE POINT

"Our biggest Scope 3 is Category 1 -- purchased goods. Category 12 is marginal."

For small-molecule oral portfolios, Category 1 may dominate. But for device-heavy respiratory, diabetes, or autoimmune portfolios, end-of-life and use-phase emissions are often comparable -- or higher. As EPR regulations expand to all pharmaceutical packaging, even Category 1-dominant portfolios will face verified recovery obligations. More importantly, Category 12 is where verification is weakest and regulatory scrutiny is accelerating fastest. A low materiality claim is not the same as low risk -- especially when verification is weakest.

"We cannot burden PSP teams with ESG tasks on top of clinical responsibilities."

The Play4Health model embeds ESG capture into existing PSP and pharmacy visit actions -- a single photo at a routine dispensing touchpoint, a barcode scan already required for batch tracking. No separate programme, no additional reporting burden, no new field role. Marginal time cost: under 30 seconds per visit.

GOVERNANCE AND INTEGRATION

Play4Health's Behavioral ESG Data architecture integrates with existing PSP management systems and pharma sales force automation (SFA) platforms -- not replace them. Integration typically runs via flat-file export or standard APIs into existing carbon accounting tools. No core system replacement required.

Governance follows a three-layer model: patients and caregivers generate and submit verified events at the point of action (photo + geo + timestamp); territory PSP managers review and approve; ESG and market access teams receive aggregated, audit-ready reports with full data lineage. External assurance providers can access the complete evidence trail -- raw photos, GPS logs, barcode records, and verification metadata -- designed to meet ISAE 3000 assurance standards.

The Health Adherence Index (HAI) -- Play4Health's composite behavioral scoring engine -- runs on the same weighted formula structure as Play for Earth's Green Transformation Index (GTI), adapted for clinical behavioral dimensions: dose frequency, streak consistency, device return accuracy, caregiver network engagement, and depth of therapeutic routine integration. The result is a single operational signal that tells ESG, PSP, and market access teams whether behavioral change is being sustained -- or merely performed under incentive.

CORE INSIGHTS

✓ Behavioral ESG Data -- verified clinical events rather than estimated proxies -- is the missing layer in pharma Scope 3 reporting.

✓ Device end-of-life (Category 12) is the most material and least verified Scope 3 category for device-heavy pharma portfolios.

✓ PSP networks and pharmacy channels are already the infrastructure. They have not yet been activated for ESG data capture.

RECOMMENDATIONS

→ Map PSP touchpoints and pharmacy network before designing a new device return programme. The infrastructure already exists.

→ Prioritise GHG Protocol Category 12 as the highest-impact, most regulatorily exposed Scope 3 category to verify first.

→ Build verification logic into existing rep visit and PSP workflows -- not as a separate programme with its own overhead.

QUESTIONS TO ASK

? What percentage of your Scope 3 Category 12 data is currently verified versus estimated?

? Do your PSP agents or pharmacy reps collect any verified device return data during their existing visits?

? Which regulator, investor, or payer is most likely to challenge your device end-of-life disclosure in the next 18 months?

SOURCES AND REFERENCES

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COMING NEXT: FICHE 02/10

Why Medical Device Return Programs Fail -- Most return schemes collect less than 5% of eligible devices. The next fiche maps exactly where devices leak, and what actually closes the loop.