

DSDA 310 SENIOR SEMINAR



GreenFuture BioChem Business Insights

FROM OVERRUNS TO OPTIMIZATION

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The Challenge & Our Analysis

COMPANY & OBJECTIVE

- GLOBAL MANUFACTURER OF SUSTAINABLE, BIO-BASED CHEMICALS
- ANALYZE OPERATIONS TO ENHANCE PROFITABILITY & UPHOLD SUSTAINABILITY MISSION

THE CRITICAL HOOK

- 5.1% MANUFACTURING COST OVERRUN
- \$372,000+ ANNUAL LOSS FROM FLAWED COST MODELS

ANALYSIS SCOPE

- CROSS-FUNCTIONAL REVIEW OF MANUFACTURING, SUPPLY CHAIN, R&D, & SALES
- COMPREHENSIVE DATA FROM 5 GLOBAL PLANTS & 750 SKUS

KEY LIMITATION

- NO MAPPING BETWEEN RAW MATERIALS & FINISHED GOODS
- CANNOT CALCULATE TRUE MARGINS OR ALLOCATE CO₂ EMISSIONS BY PRODUCT

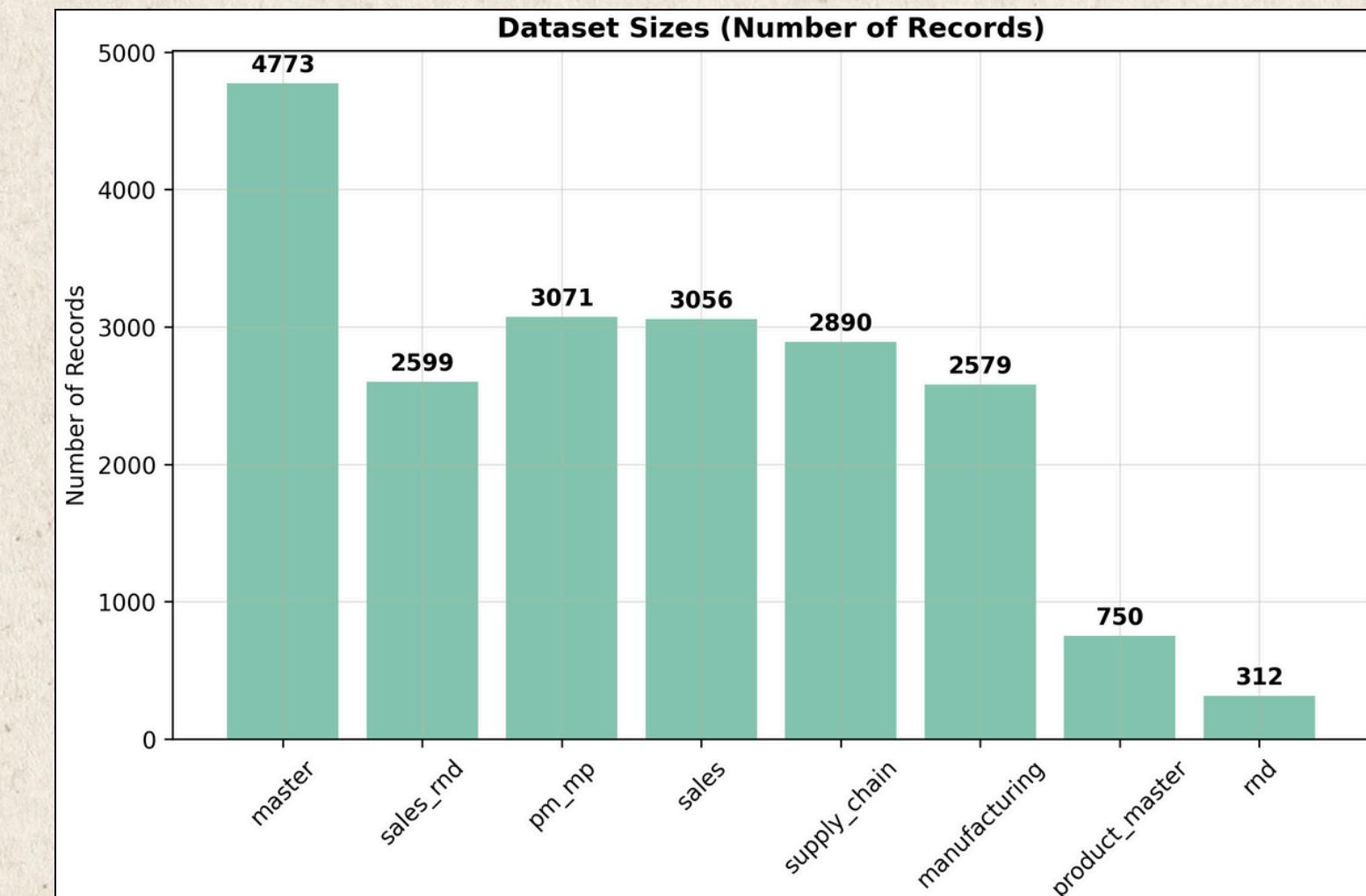
Data and Integration

FIVE DATASETS WERE USED IN THIS ANALYSIS:

- RD PIPELINE (CRM) (312 ROWS): RESEARCH AND DEVELOPMENT DATA.
- SALES PIPELINE (CRM) (3056 ROWS): SALES DATASET.
- MANUFACTURING PRODUCTION (ERP) (2579 ROWS): MANUFACTURING DATA.
- SUPPLY CHAIN PROCUREMENT DATA (ERP) (2890 ROWS): RAW MATERIAL SOURCING DATASET.
- PRODUCT MASTER (750 ROWS): REFERENCE DATASET

MERGES:

- ALL BUT PROCUREMENT DATA MERGED
- SALES PIPELINE AND RD PIPELINE LEFT JOIN ALONG SALESOPP ID
- JOINED WITH MANUFACTURING PRODUCTION THROUGH PRODUCT MASTER



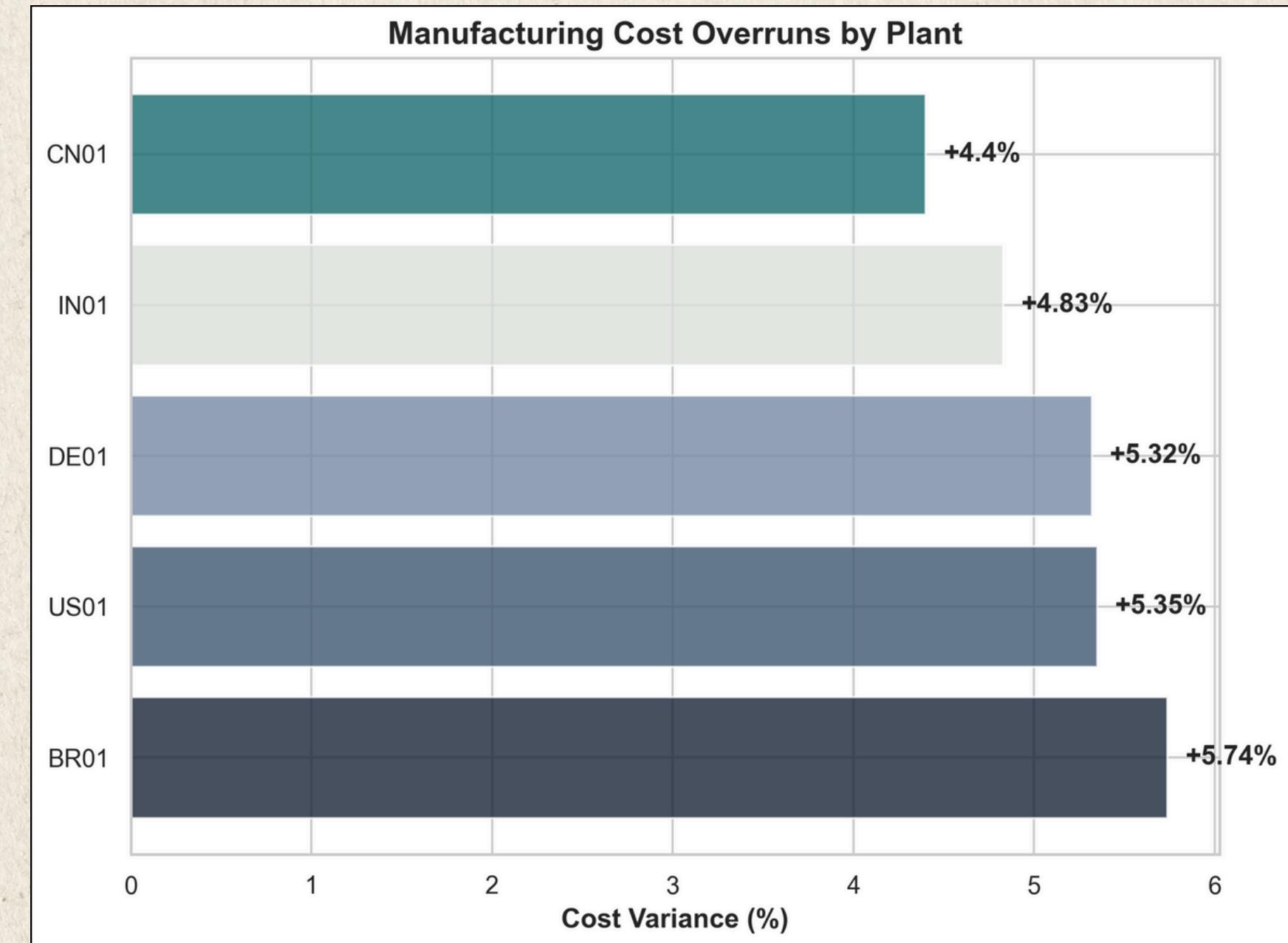
The Flawed Blueprint: Systematic Cost Overruns

PROBLEM: DEFECTIVE COST MODELS

- 5.1% COST OVERRUN (\$78/MT) ACROSS ALL PLANTS
- STRONG CORRELATION (R=0.91) PROVES MODELS ARE SYSTEMATICALLY WRONG, NOT OPERATIONS
- MODELS CONSISTENTLY UNDERESTIMATE ACTUAL COSTS, CAUSING \$372K+ ANNUAL LOSS

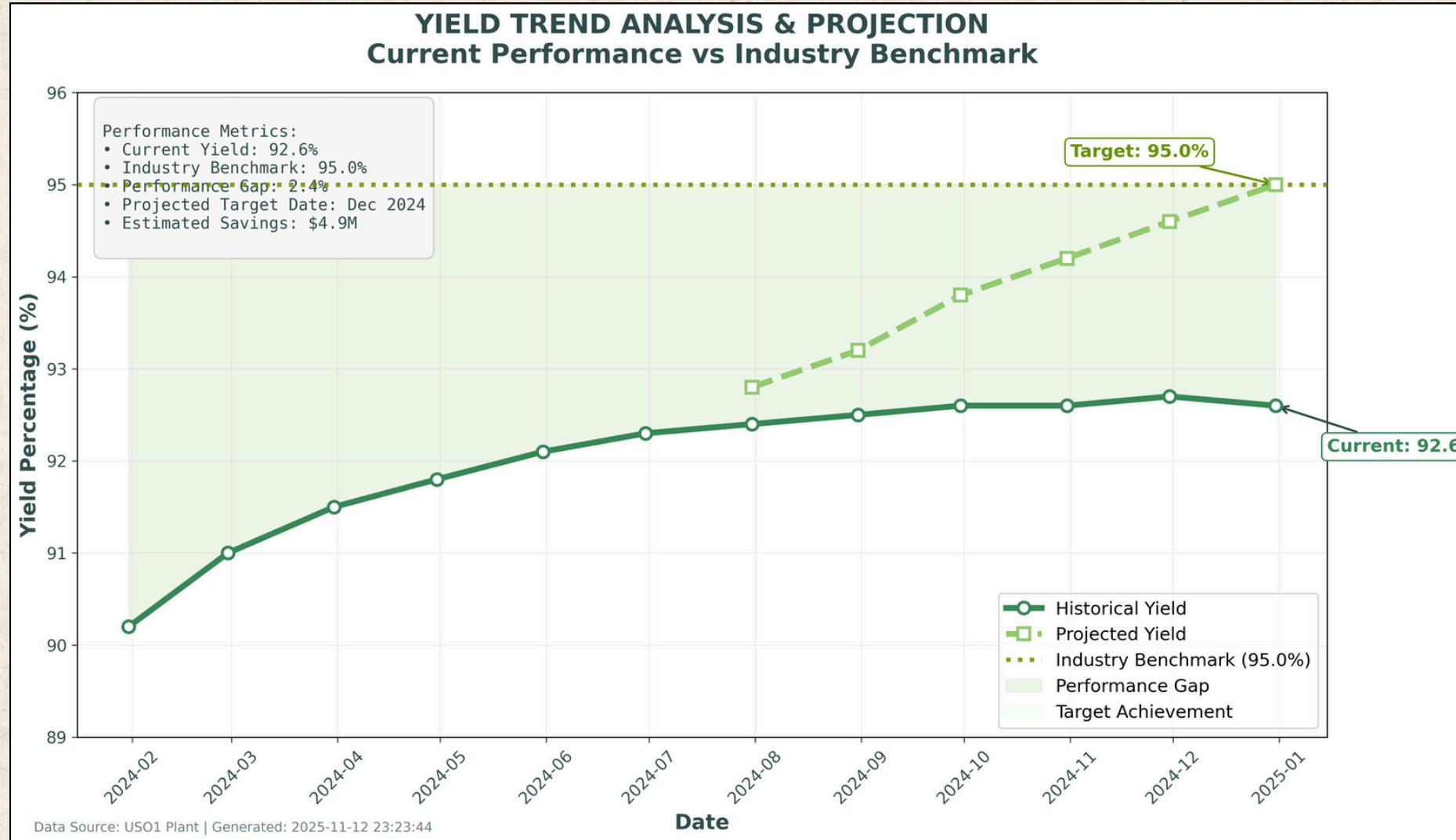
SOLUTION: REVISE STANDARD COST MODELS

- INTEGRATE REAL-TIME PROCUREMENT DATA
- ESTABLISH CROSS-FUNCTIONAL COST REVIEW TEAM
- DEVELOP DYNAMIC, PLANT-SPECIFIC BENCHMARKS



IMPACT: \$259.1M ANNUAL SAVINGS

The Hidden Waste: Yield Inefficiency



PROBLEM: SUB-OPTIMAL PRODUCTION YIELD

- 92.6% YIELD VS. 95% INDUSTRY BENCHMARK
- 7.4% MATERIAL WASTAGE
- COUNTER-INTUITIVE FINDING: YIELD SHOWS NO CORRELATION ($R=-0.002$) WITH COST OVERRUNS – A SEPARATE ISSUE.

SOLUTION: TARGETED YIELD IMPROVEMENT PROGRAM

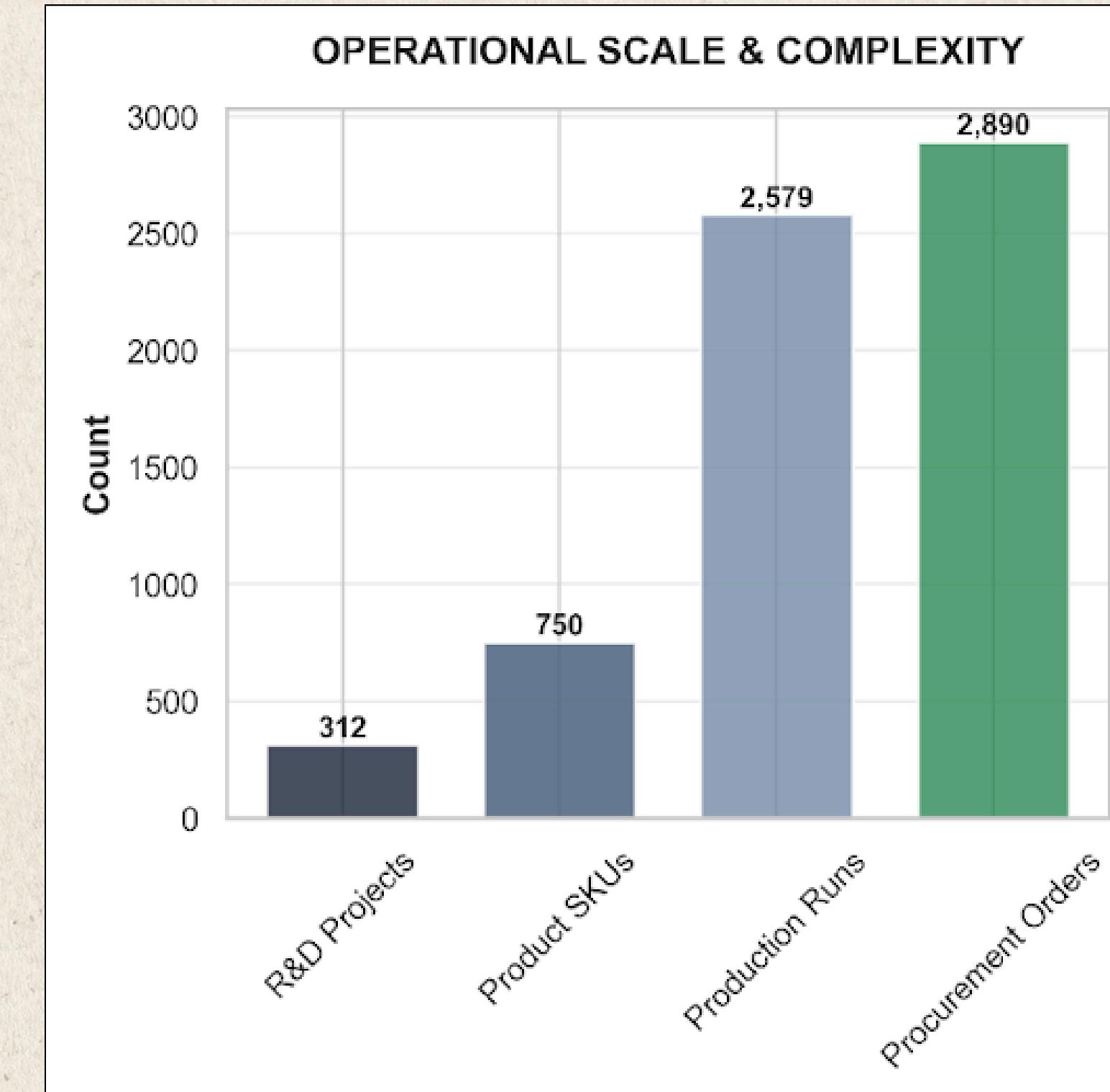
- SET PROGRESSIVE TARGETS (92.6% → 95%)
- REAL-TIME YIELD MONITORING & OPERATOR TRAINING

IMPACT: \$4.9M+ SAVINGS & 55,000 MT RAW MATERIAL REDUCTION

The Complexity Tax: Bloated Product Portfolio

PROBLEM: OPERATIONAL COMPLEXITY

- 750 SKUS CREATE MANUFACTURING INEFFICIENCIES
 - NEGATIVE CORRELATION BETWEEN SKU COUNT AND PERFORMANCE METRICS
 - HIGH COMPLEXITY DRIVES HIDDEN COSTS

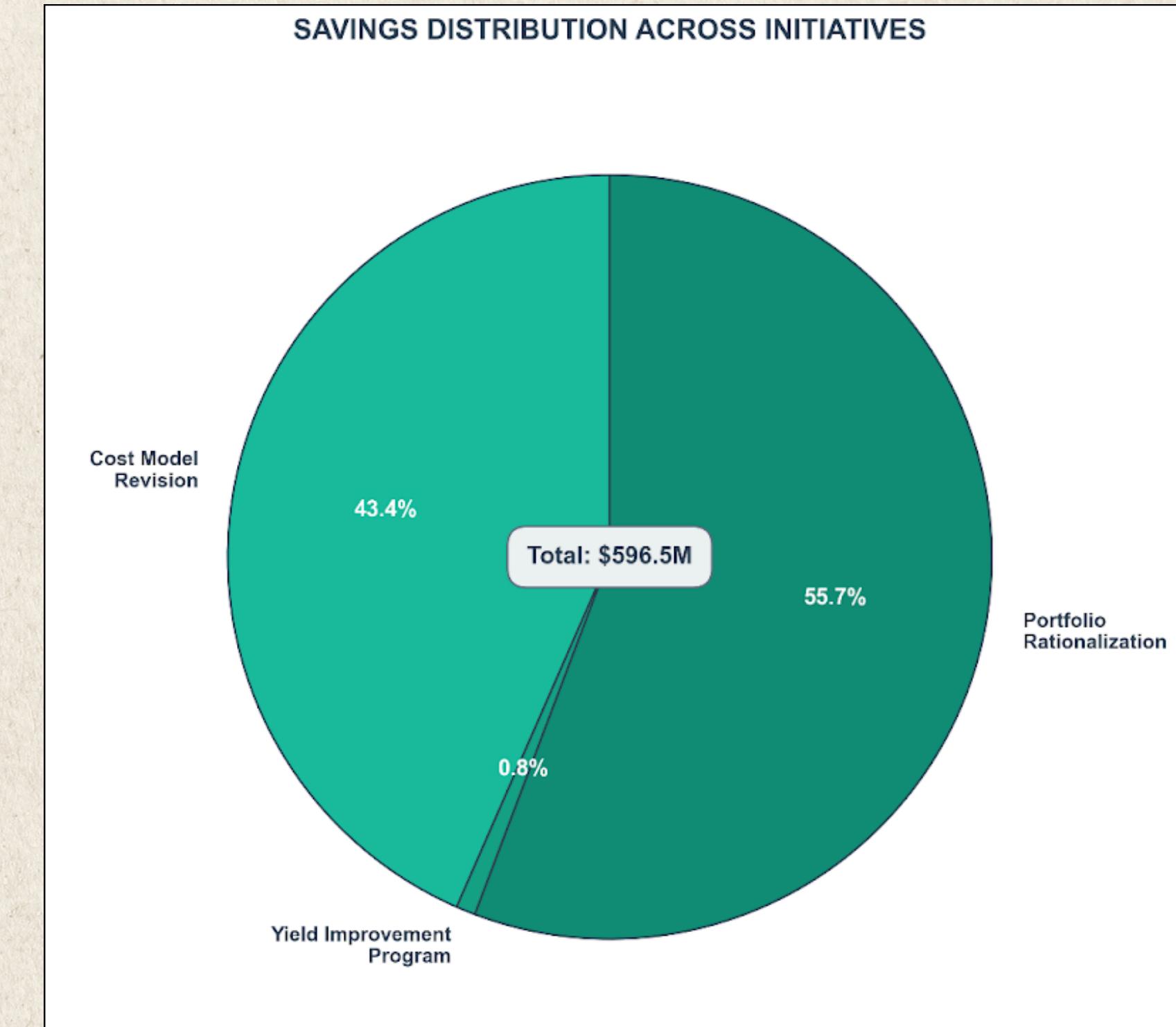


The Complexity Tax: Bloated Product Portfolio

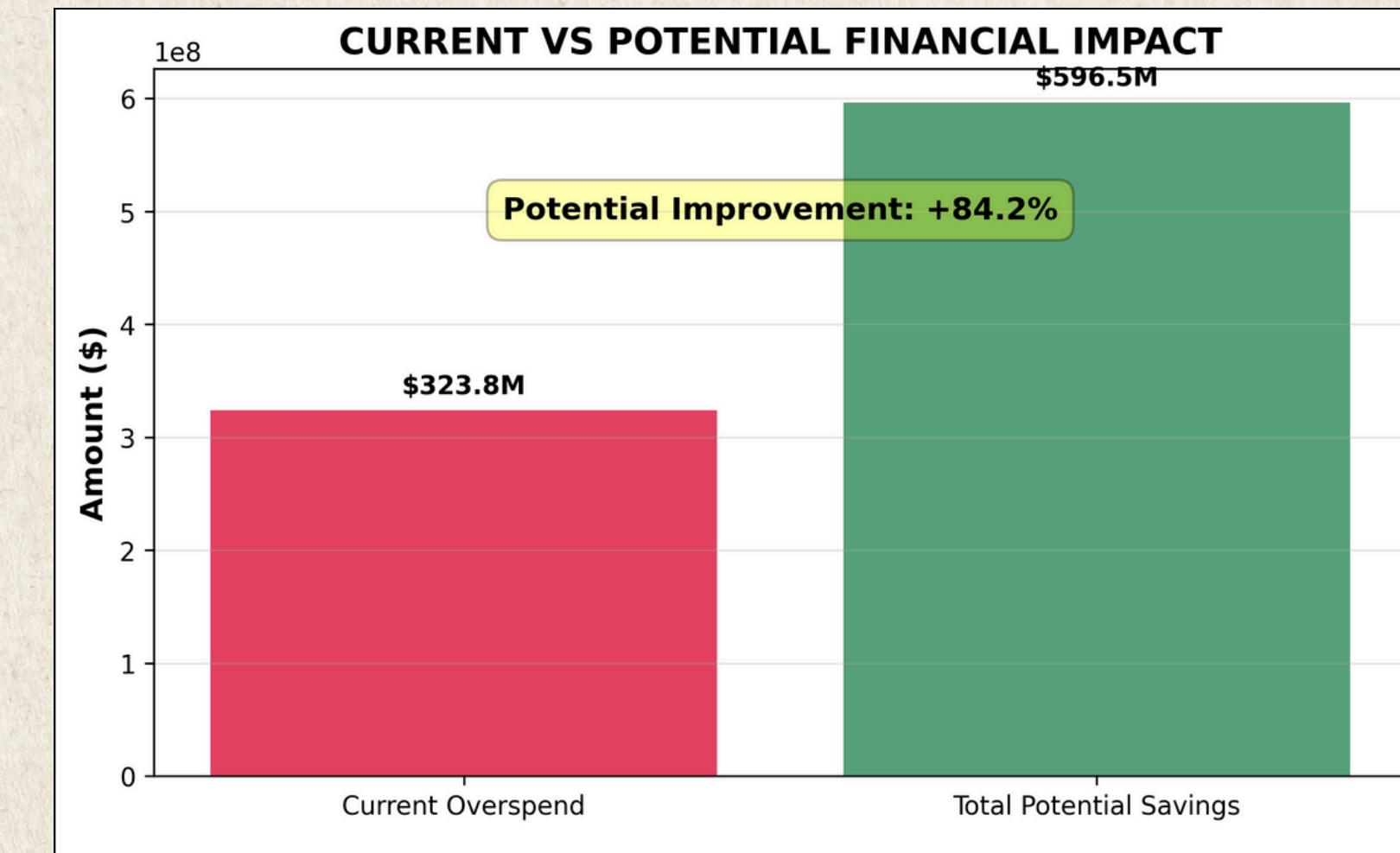
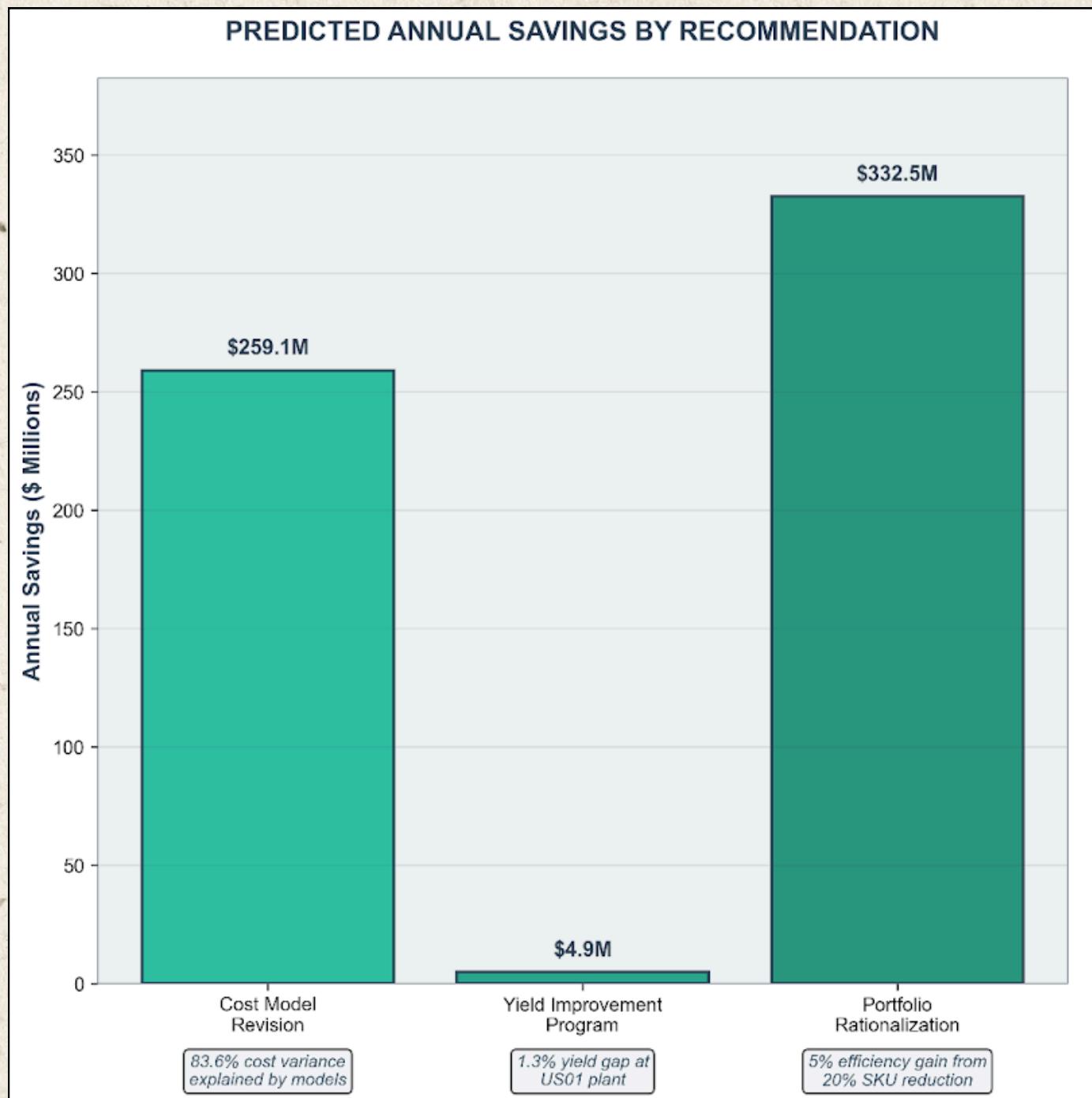
SOLUTION: PRODUCT PORTFOLIO RATIONALIZATION

- ABC ANALYSIS TO CUT BOTTOM 20% OF SKUS
- ALIGN R&D PIPELINE WITH PORTFOLIO STRATEGY
- IMPLEMENT SKU PROFITABILITY DASHBOARD

IMPACT: \$332.5M SAVINGS & 20% SKU REDUCTION



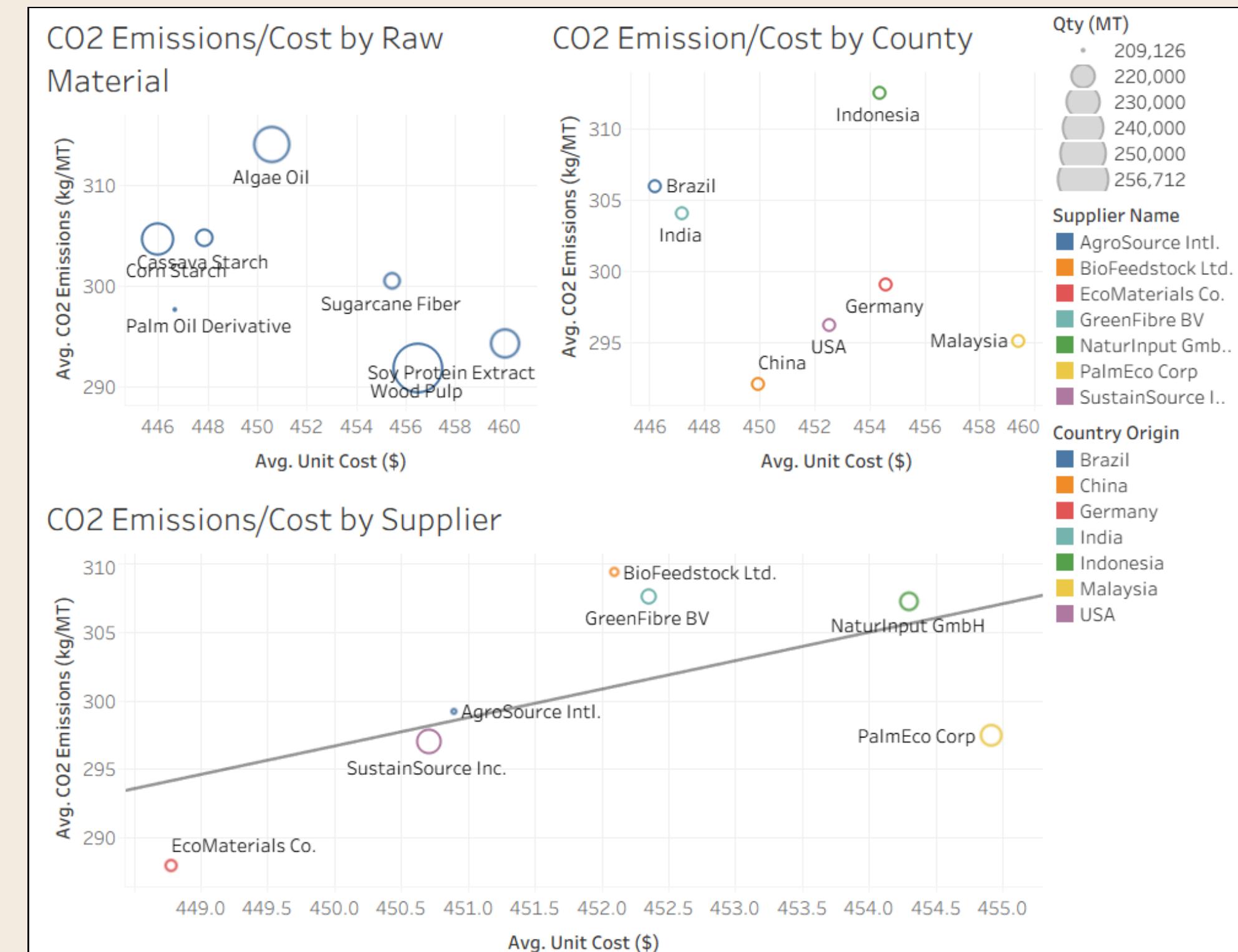
What does it translate to?



TOTAL PROJECTED ANNUAL SAVINGS: ~\$596.5M

Emission/Cost Analysis & Insights

- PALM OIL DERIVATIVE LOW COST, LOW EMISSIONS: INCREASE USAGE?
 - NATURINPUT GMBH AND GREENFIBRE BV HIGH COST AND HIGH EMISSION RELATIVE TO OTHER SUPPLIERS.
- REDUCE SUPPLY RELIANCE ON THESE SUPPLIERS— NATURINPUT IS THE MOST PREVALENT SUPPLIER.
 - INDONESIA HAS HIGH COST AND HIGH EMISSIONS RELATIVE TO OTHER COUNTRIES, WHILE CHINA HAS LOW COST AND LOW EMISSIONS RELATIVE TO OTHER COUNTRIES.
 - REDUCE SUPPLY FROM INDONESIA, PRIORITIZE CHINA.

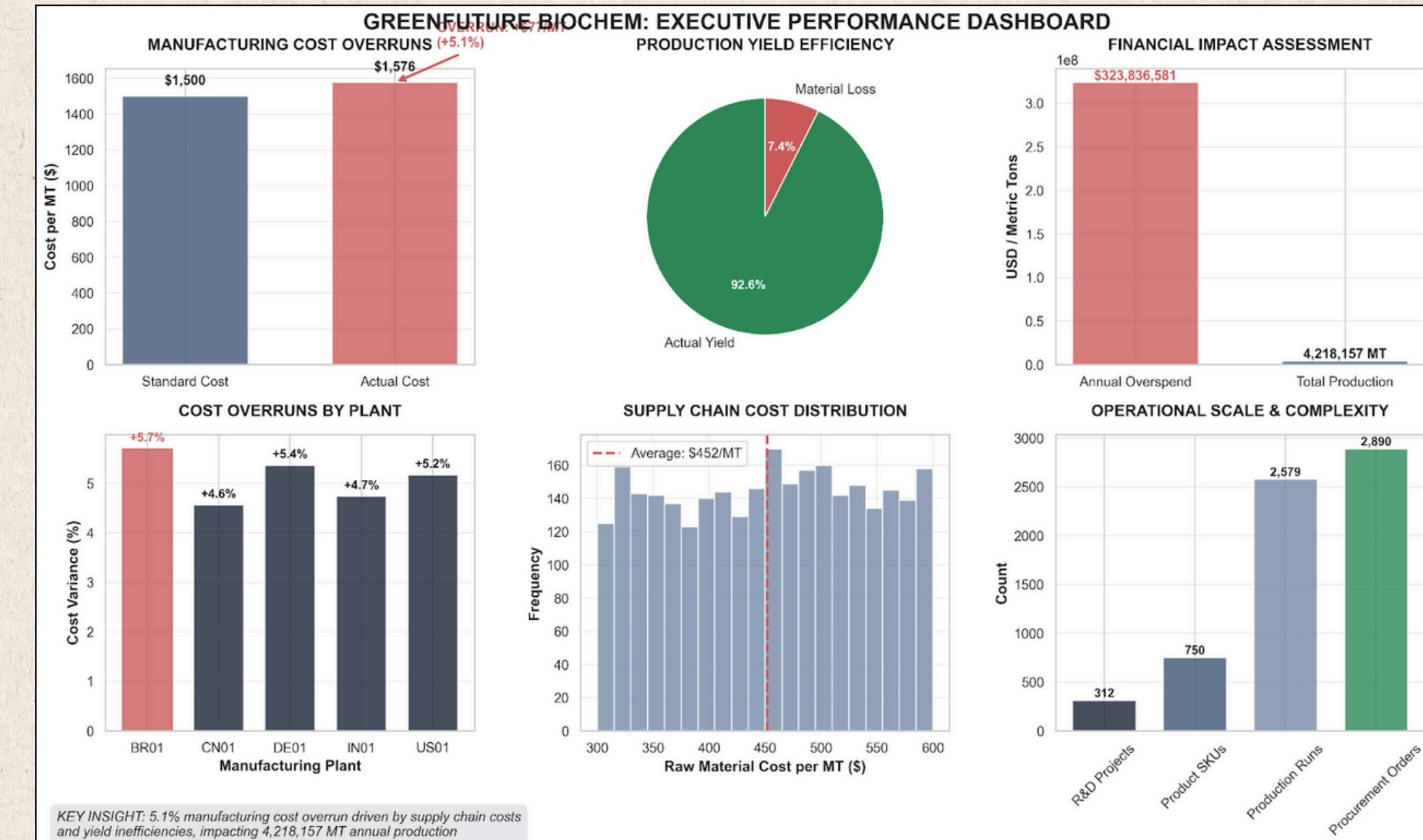


Data Collection Recommendations

- FORMALIZE DATA COLLECTION BETWEEN DEPARTMENTS.
- FULLY UTILIZE ERP SYSTEM TO PROVIDE MORE INTEGRATED AND DYNAMIC DATA FLOWS.
- ESTABLISH DIRECT MAPPING BETWEEN SALES DATA AND COST STRUCTURES TO PROPERLY ESTABLISH MARGINS

Conclusions

- COST OVERRUNS DUE TO POOR COST MODELS
- YIELD INEFFICIENCY
- HIGH COMPLEXITY
- UNSUSTAINABLE PROCUREMENT
- DATA COLLECTION INEFFICIENCIES



References

Data Sources

- GreenFuture BioChem. (2025). Manufacturing production data [Dataset].
- GreenFuture BioChem. (2025). Product master database [Dataset].
- GreenFuture BioChem. (2025). R&D pipeline records [Dataset].
- GreenFuture BioChem. (2025). Sales pipeline data [Dataset].
- GreenFuture BioChem. (2025). Supply chain procurement records [Dataset].
- GreenFuture BioChem. (2025). Product metadata documentation [Dataset].

Analytical Tools & Methods

- Tableau Prep. (2024). Data integration and cleaning [Software].
- Tableau Desktop. (2024). Visual analytics platform [Software].
- Python. (2023). Statistical analysis and modeling [Programming language].
- AI-assisted analysis. (2024). Pattern recognition and insights generation.

All data accessed and analyzed October 2025



Thank You!