

Deloitte.

Data-driven Sustainability



A new competitive advantage



The time to start your sustainability transformation is now, more than ever



Consumers are increasingly **consciously choosing** sustainable & healthy products

While this started as a niche market, there is expected **mass adoption** for sustainable products



Sustainability **regulations & reporting requirements** are tightening

Adhering to upcoming regulations (e.g. CSRD) is challenging, but can give **first mover advantages**



More companies are setting **ambitious sustainability targets**

Differentiation opportunities can be found through improved **transparency & certification**

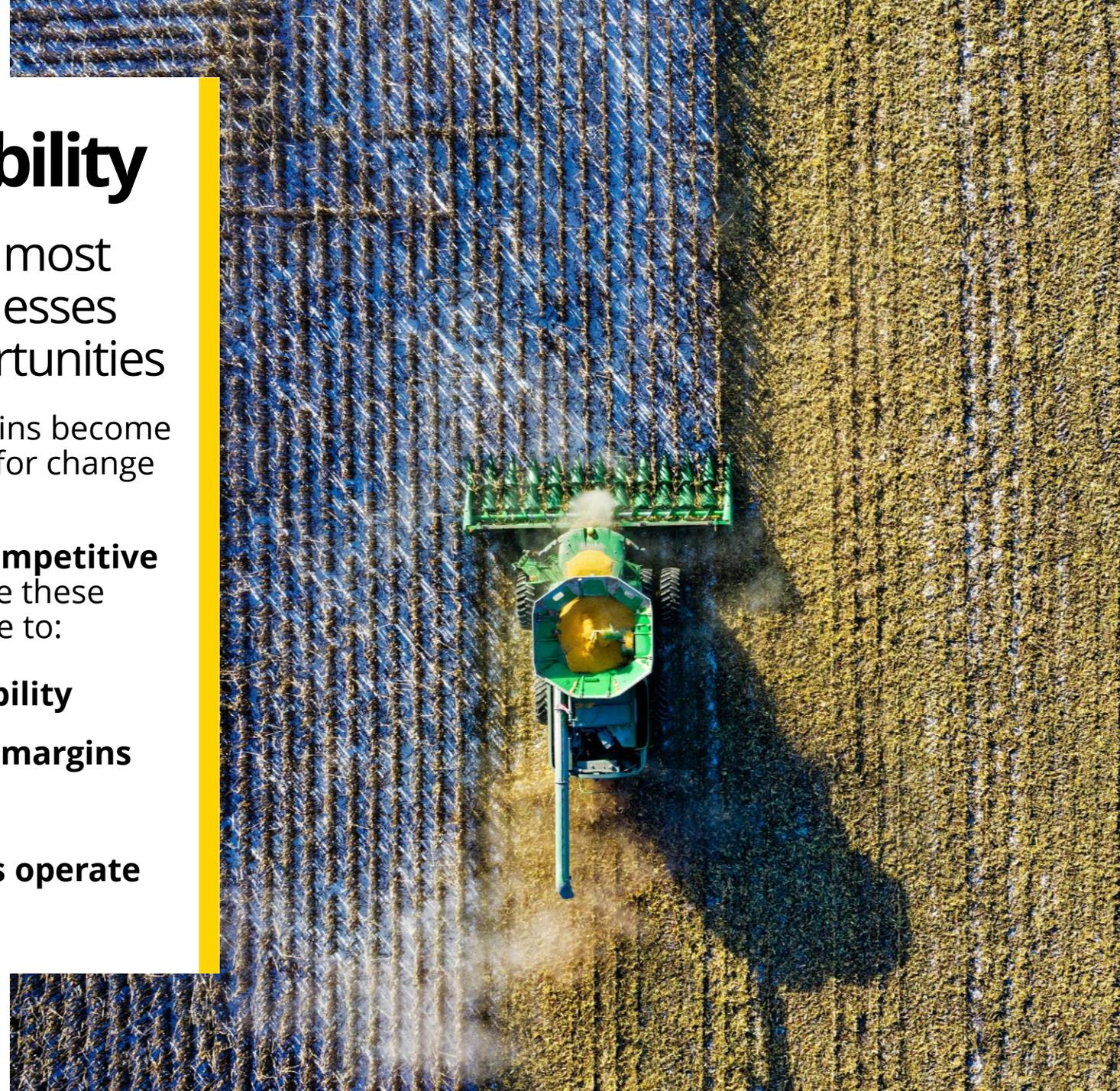
Data Driven Sustainability

Sustainability challenges are the most disruptive forces that food businesses face, but they also provide opportunities

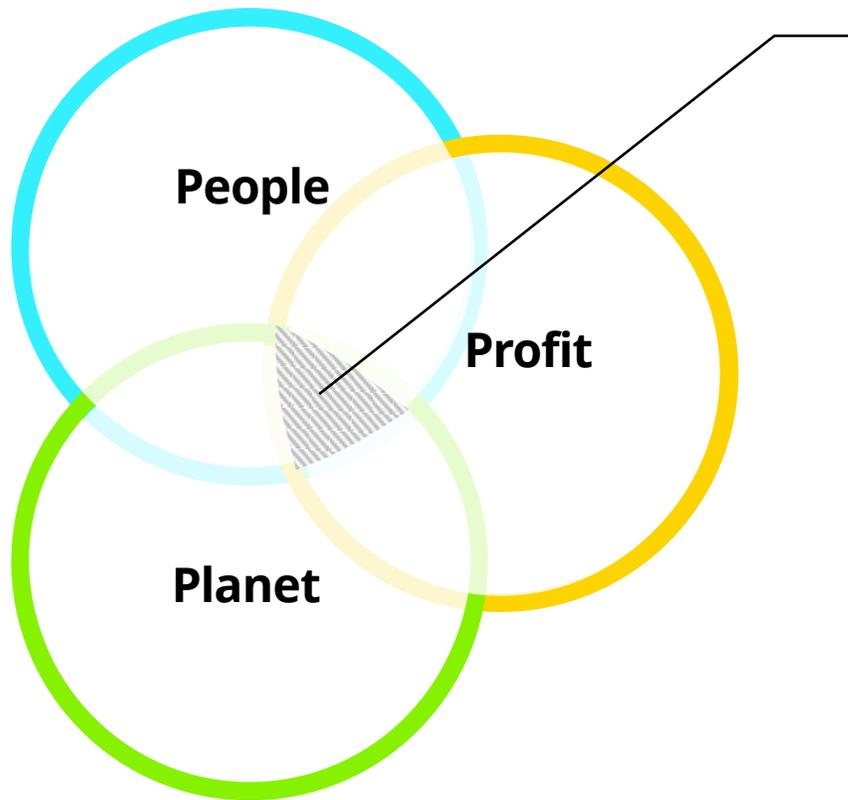
As stakeholders within global food value chains become more demanding on sustainability, the case for change is becoming more pressing.

This brings about **opportunities to build competitive advantage**. But not everyone is ready to face these challenges head on, as organizations struggle to:

- **Easily access reliable data on sustainability**
- **Make improvements without harming margins**
- **Anticipate instead of react**
- **Understand how supply chain partners operate**



To make the competitive advantage work, you need to balance people, planet and profit



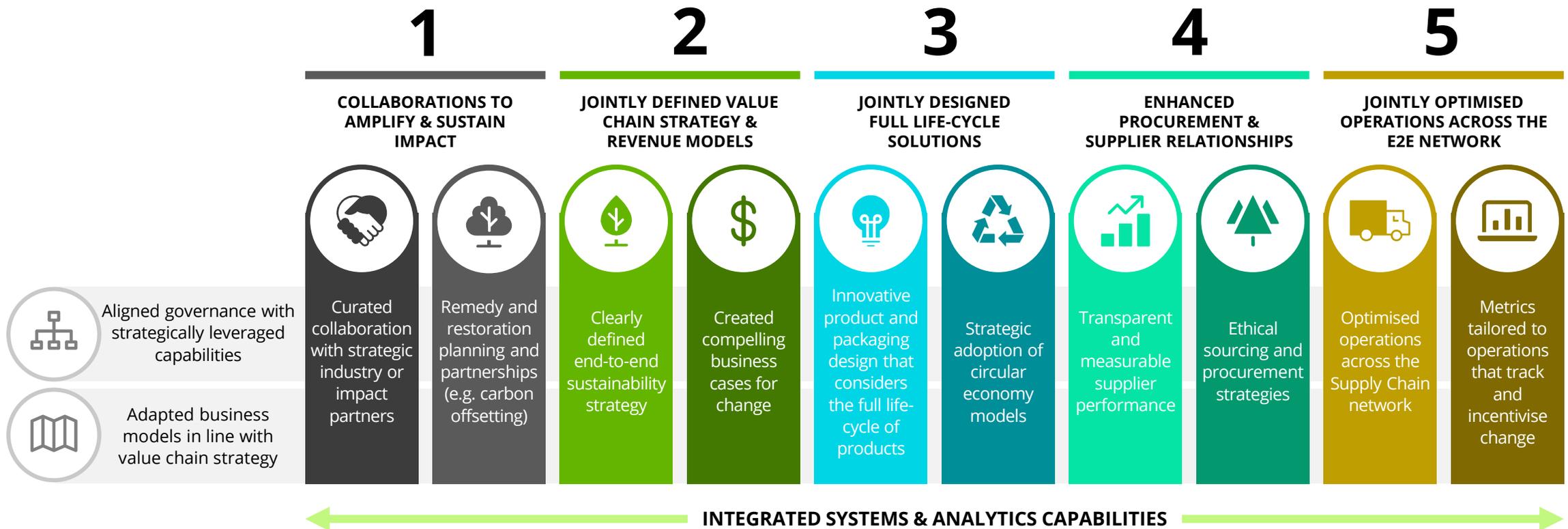
“More and more businesses are seeing the **potential of a more sustainable business model**, driven both by the firm belief that business can be a **force for good** and by the realization that the **cost of inaction often exceeds the cost of action**”

- Paul Polman



The Opportunity & Challenges

Truly responsible businesses strive to drive sustainability across their E2E value chains...



... in order to drive lasting enterprise value

Enterprise Value

REVENUE GROWTH

Volume

Price Realization

- Acquisition of **new customers** and growth of **current customers**, through brand strength & improved transparency
- Leveraging of **income-generating assets**, e.g. through better valorization of **waste & by-products**
- **Strengthened pricing** and differentiation through responsible practices & sustainable attributes
- **Higher value consumer products** through End-to-End supply chain & product design
- Improved **product and service availability**
- **Joint-ventures & partnerships**, targeting synergies, efficiencies and risk mitigations

OPERATING MARGIN

SG&A¹

COGS²

Income Taxes

- Improved **customer interaction** efficiency and corporate/shared service efficiency
- Improved development & production efficiency through cost synergies and **operational integration**
- Improved **waste and by-product management** through re-use of product and service components
- Reduced **procurement costs** due to longer-term and preferential contracts
- Reduced **supply chain disruptions** due to better supplier risk mitigation
- Improved logistics & service provision efficiency, through reduced **transportation & fulfilment costs**
- Maximized **tax credits** for expenditure on sustainability initiatives and product offerings

ASSET EFFICIENCY

PP&E³

Inventory

Receivables & Payables

- Improved **PP&E efficiency** through increased environmental & social performance of real estate and related infrastructure
- Better **inventory management** leading to improved working capital
- Better **utilization of logistical & warehouse infrastructure** due to joint inventory mgmt
- Improved recovery, re-use and recycling of **waste streams**
- Better **capacity utilization** due to more accurate supply & demand planning
- Improved **receivables & payables** efficiency by ensuring transparency of purchase-to-pay process & alignment with suppliers/customers on sustainability policies

EXPECTATIONS

Company Strengths

External Factors

- Improved management and use of **land & ecology, water, chemicals & fertilizers, energy and fleet fuel**
- Successful **compliance with environmental and social standards & regulations** (e.g. food safety / animal welfare standards)
- Reduced **environmental and social sourcing risks** (e.g. bribery & corruption)
- Aligned **responsible procurement** standards, **code of conduct & ethics** through coalitions and partnerships
- Improved customer/3rd party interaction to prove & **communicate performance** and **claim rewards**

The road to sustainability-driven competitive advantage typically has many obstacles



Out of tune, overly generic and needlessly complex data standards and measuring methods **constrain end-to-end visibility and understanding**



Siloed and sub-optimal sustainability solutions, which do not consider inter-dependencies across the supply chain and don't make best use of E2E resources



Fragmented and disconnected systems and tools to measure impact and to claim and communicate sustainability improvements to customers

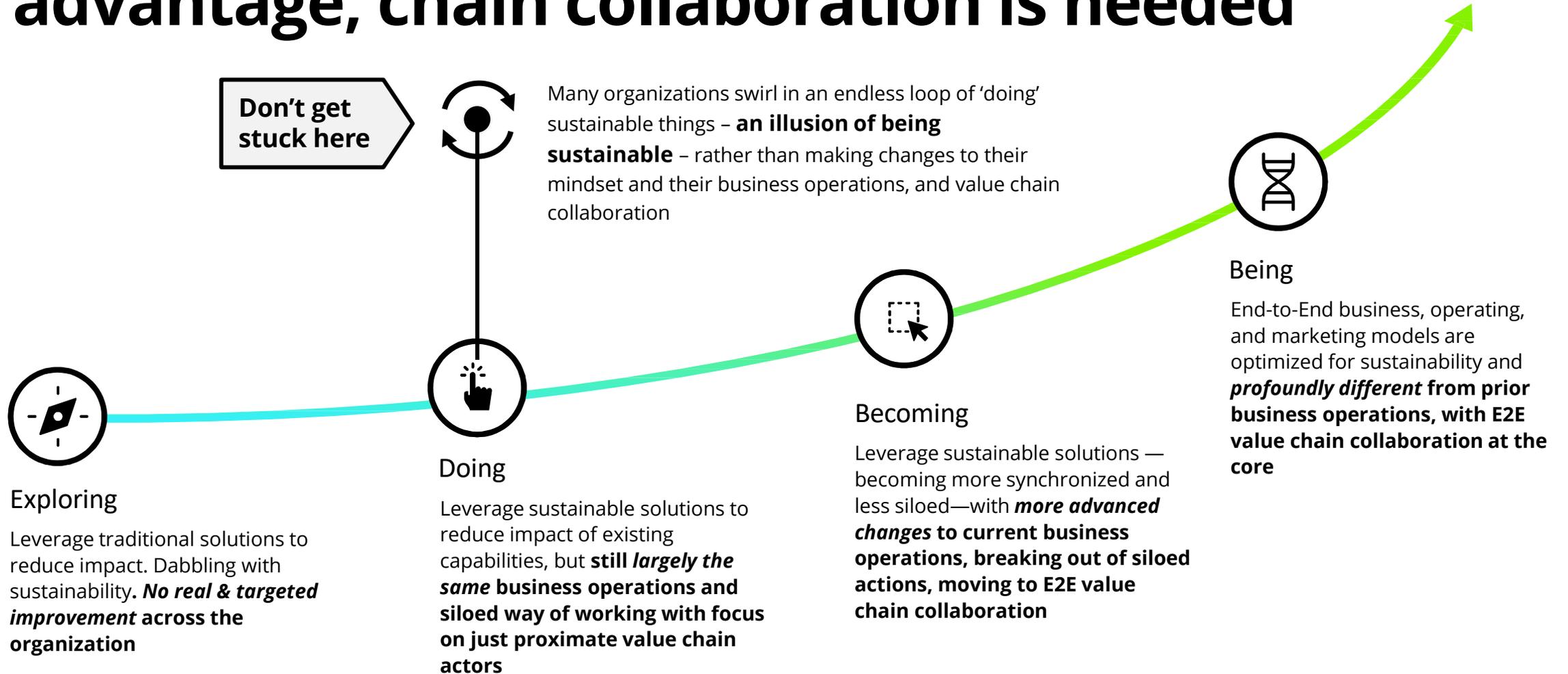


Lack of governance mechanisms and incentives that lead to **isolation and distrust among supply chain partners** on sustainability topics



Absence of dedicated roles and organization models with the built-in freedom to experiment and the mandate to catalyze change

To unlock data-driven sustainable competitive advantage, chain collaboration is needed



Don't get stuck "Doing"...

E.g. **Global food processor** with the ambition to fulfill commitments towards Sustainable Development goals by tackling deforestation and child labor and delivering insights to Consumers on sustainability initiatives



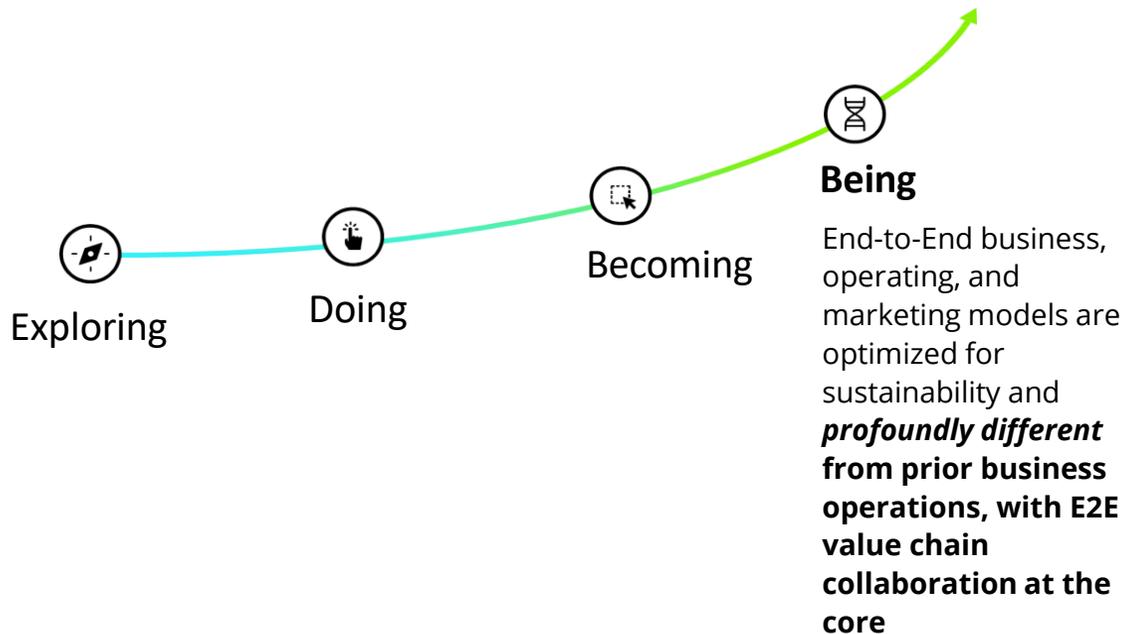
“ Currently, we go for basic traceability solutions but they are **not accommodating** for all value chain stakeholders who are in **different stages of their sustainability journeys**

“ Most of my time is spent on **grievance-related tasks**. This takes away from internal sustainability promotion and engagement.

“ We source from many suppliers. Some of them are developing their **own traceability solutions**

...Begin the journey towards “Being”

E.g. **Global food processor** with the ambition to fulfill commitments towards Sustainable Development goals by tackling deforestation and child labor and delivering insights to Consumers on sustainability initiatives

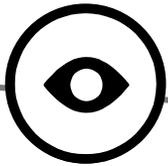


” The name of the game in our industry is **collaboration**. Clients want help from us in developing their sustainability efforts that will also lead to **improvements in the sector**.

” We can play an important role in supporting sustainability managers to create **internal awareness** about positive business drivers for sustainability.

” We realize we are only as good as our suppliers are, so the key is **coinvesting**. Value should be generated for all parties.

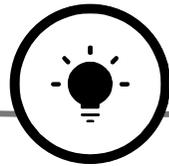
Building blocks to achieve data-driven sustainability competitive advantages



Understanding

How impact & value are distributed along chains

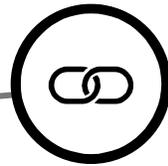
- Primary sustainability data sources connected with other data sources
- Harmonized sustainability data standards
- Aligned impact measuring methods
- Visualization of where sustainability impact can be reduced, and costs involved



Solutions

That reduce impact while considering dependencies

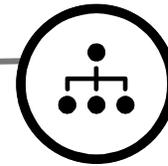
- Solution options across the supply chain
- Operational boundaries for solutions
- Solution impact vs. costs trade-off
- E2E decision support framework for selecting combination of solutions



Systems

To collaborate, analyze & claim improvements E2E

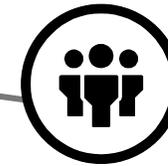
- Ingest sustainability data from multiple systems
- Algorithms to support sustainability-driven decisions
- Tooling to map & build E2E processes
- Built-in capabilities to connect to 3rd parties
- Visualization & dashboarding tools



Governance

Ensuring fair alignment of incentives & inducing trust

- Agreed principles for sustainability data ownership
- Value chain-wide sustainability strategy definition & alignment
- Mechanisms for fair compensation of costs for improvement, and distribution of value add



Talent

To catalyze needed change and inspire the business

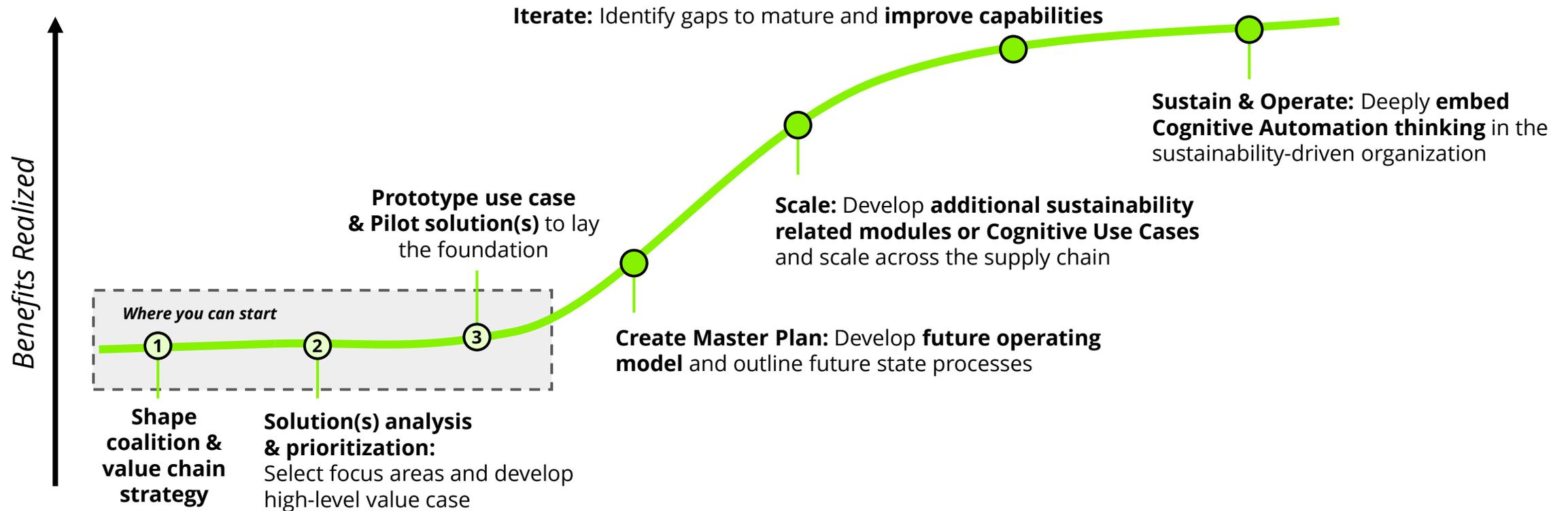
- Sustainability embedded in culture
- Organization model that stimulates sustainable innovation on the edge of the current business
- Dedicated cross-domain sustainability teams with analytical, technical and commercial skills
- Joint supply chain 'task force' to coordinate improvements



Getting started

Deloitte's Imagine, Deliver, Run philosophy

A pilot is the first recommended building block towards a **sustainability footprinting use case & decision-making support capability**



In order to get started with your journey, you will need to **isolate the Use Case** and start with a pilot to lay the path towards a data-driven & sustainable value chain

Shape the joint strategy & prioritize solutions

Step 1

Shape coalition & value chain strategy

1. Kick-off & align on objectives
2. Agree on way of working
3. Value chain-wide strategy
4. Create insight in value chain challenges & solutions
5. Select focus challenges
6. Agreed principles for data ownership
7. Agreed mechanisms for fair compensation & value distribution

Step 2

Solution(s) analysis & prioritization

1. Evaluate and prioritize solutions according to
 - Desirability
 - Feasibility
 - Viability
2. Detail out prioritized solutions
3. Estimate initial value case
4. Prepare for design phase

Step 3

Prototype use case & Pilot solution(s)

1. Define and design prioritized prototype.
2. Assess and test benefits and impact of select way forward
3. Create plan for scaling / further implementation

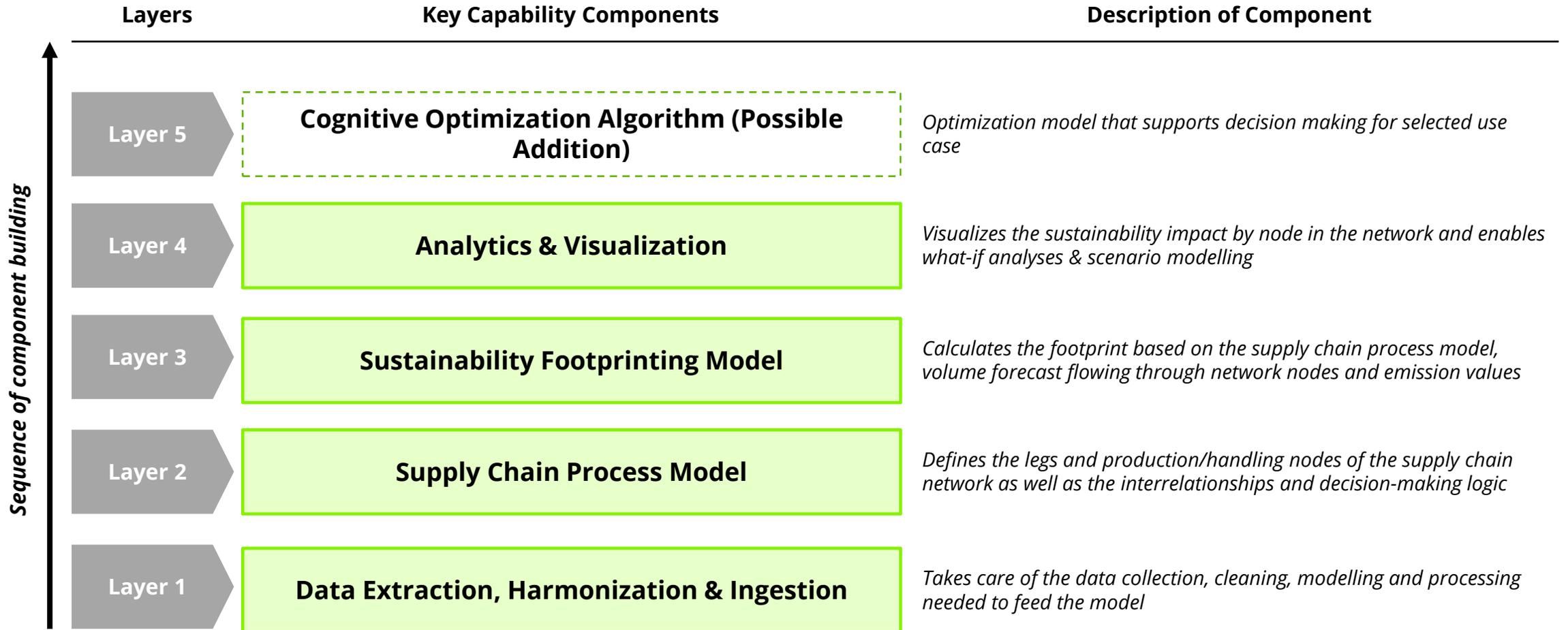
Step 4

Roll-out & enhance solution

1. Create plan for implementation of selected opportunities into business or across value chain
2. Execute implementation plan

Activities

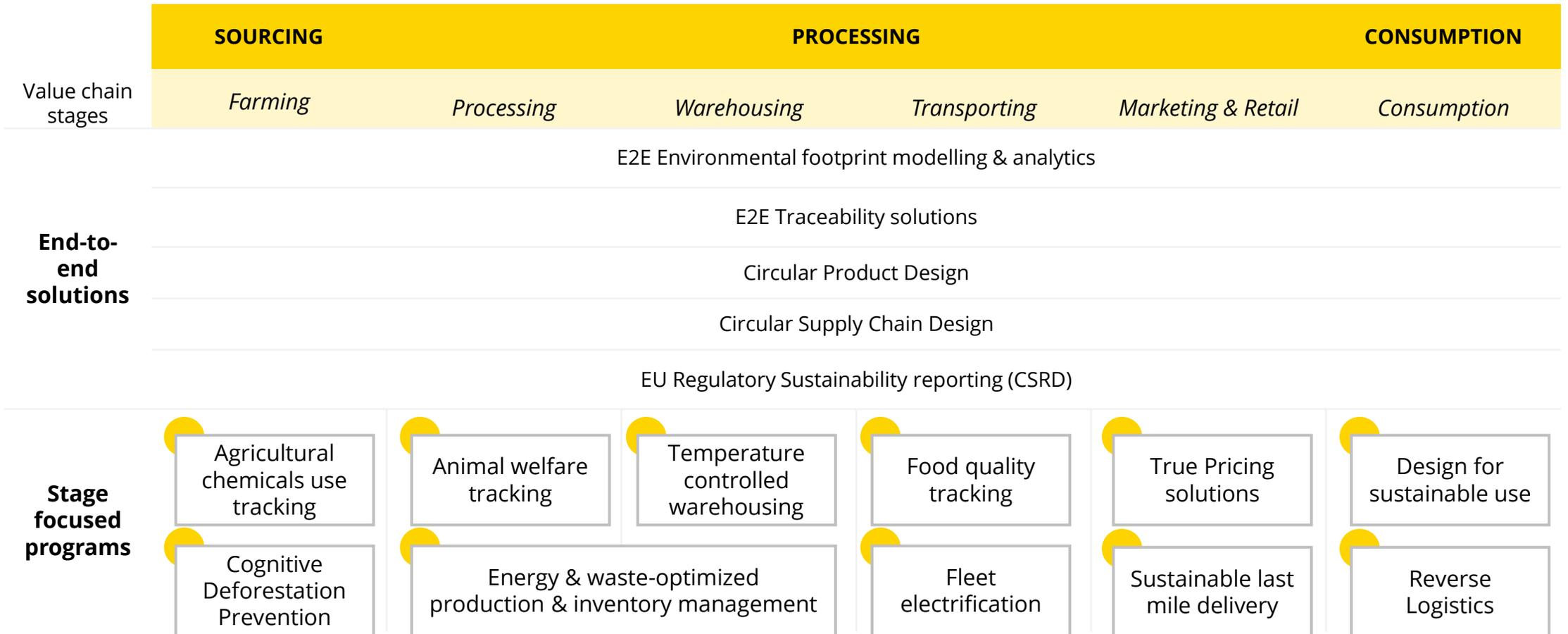
Key components of our pilot approach





Our expertise

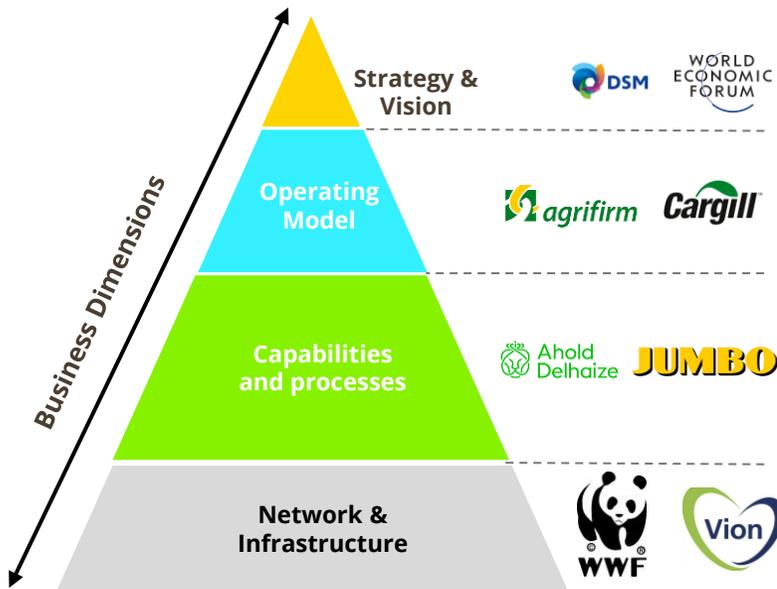
Sustainability support throughout the entire food value chain



Deloitte offers unique E2E capabilities & experts to enable your sustainable transformation

End-to-end Capabilities

Deloitte offers complete, seamless and resilient end-to-end go-to-market capabilities, thanks to its numerous client project experience across industries, regions and functional areas



Data Driven Sustainability expertise

Deloitte has developed a strong expertise in data driven supply chain over the years, thanks to client projects in sustainable design, responsible sourcing and sustainability analytics

Circular & Sustainable Design

- Circular product design
- Product-as-a-Service
- Circular supply chain & network design
- Sustainability-driven product portfolio mgmt.
- Recipe & configuration mgmt.
- Reverse logistics

Responsible Sourcing

- Responsible Procurement Framework
- Sustainable sourcing metrics
- Supplier sustainability rating & audit
- Supply chain risk tracking & mitigation

Sustainability Analytics

- Image recognition technologies for cognitive deforestation prevention
- End2End GHG emission methodology
- Video analytics for animal welfare

Strategy, experience and network

Deloitte leverages its past customer experiences, its global network of experts and its forefront research to improve its clients' businesses as well as its own

Client Projects

Deloitte has developed a **strong expertise** in **data driven sustainability** over the years, thanks to numerous client projects, e.g. **Cargill, CropLife, Jumbo, WWF, etc.**

SME & Expertise

Deloitte has a **large network of SMEs specialized in data driven sustainability across regions, functions and industries** supported with extensive thought-ware

Strategy and Engagement

Deloitte launched its **WorldClimate strategy** to drive **responsible** climate choices within its organization and beyond to address the world's urgent **climate crisis** with achievable, measurable and science-based actions

- **Ambition:** Stay within the 1.5°C decarbonization pathway (Paris agreement)
- **Cut emissions:** Net-zero by 2030 (NL by 2025)



PROPOSITION

CO2 Tracker

Provide transparency on your CO2 footprint

ISSUE

In a time where demands for transparency regarding environmental, social and corporate governance are increasing, the solutions to monitor sustainability across the supply chain still have an undiscovered potential. This has created a clear need for a tool that provides reliable, preventive and actionable insights.

SOLUTION

- The CO2 footprint integrates data from the entire product life cycle and can be tailored to your processes and products (provide a life cycle assessment of the CO2 footprint)
- Choose level of Granularity for analysis across your supply chain and product cycle
- Data sources and methods are evaluated based on ISO standards
- Handle missing data: Estimations are transparent and based on industry standards. Higher level of accuracy can be reached with access to company specific processes and model

IMPACT

Supported by transparent and reliable data and methodology, Deloitte has developed a tool to calculate and benchmark the CO2 footprint of food produce. The solution is modular and can be tailored to report on different part of the supply chain at different level of granularity.

Users are free to opt for different approaches depending on their data with an increase accuracy when providing company specific information. The CO2 tracker enable users to take the first step into taking data-driven sustainable decision by providing them with their product footprint and possible area of prioritization.



PROJECT EXPERIENCE

Sustainability and Traceability Analytics

Providing insights on the traceability to origin and the sustainability in the supply chain of food products

ISSUE

A global food cooperation is dedicating their efforts and resources to deliver to their ambitious commitments towards Sustainability Development goals and themes such as deforestation and child labor. Next to that, they see an increasing urge from their customers to deliver insights on sustainability initiatives and their impact, as well as transparency on the origin of their food products. To achieve the sustainability goals and bring transparency to their customers, the cooperation aspires to become a data driven organization and have a single source of truth for all their sustainability and traceability data.

SOLUTION

- The Deloitte team has engineered a scalable sustainability and traceability data architecture on a Hadoop data-lake platform (CDP). This data platform will be scalable, in sense that with minimum alterations, it will allow full flexibility in adding future sustainability initiatives and capturing new KPI's, in an increasing scope of countries.
- A deployed data governance structure will ensure the data quality, enabling downstream consumption, internally via dashboards, and externally via a customer-oriented reporting tool. The data platform will serve as the foundation for future sustainability and traceability analytics.

IMPACT

Deloitte delivered value by providing expertise on delivering an end-to-end solution, starting from requirements gathering and data exploration to data engineering, creating a scalable data platform, setting up a data governance framework to UX/UI design work and creating a customer portal.

Reduced time to market for sustainability and traceability report to provide customers with clear insights on the sustainability within the food supply chain

Having a foundation layer for analytics on sustainability and traceability themes, allowing the client to define actions to improve the sustainability in the supply chain and even predict where potential sustainability risks might occur.



PROJECT EXPERIENCE



Royal Agrifirm Group

Sustainable Animal Nutrition Solutions

ISSUE

Agrifirm is a leading global agricultural cooperative with an international network of subsidiaries in 16 countries and with a worldwide distribution network. It offers its farmers high quality products for animal nutrition and crop care as well as advisory services for improved agricultural practices. Agrifirm has the ambition to be at the forefront of creating a responsible food system for future generations by delivering measurable, relevant and sustainable value to farmer, field and industry.

To deliver on its ambition it has established a number of innovation themes along which it intends to develop innovative new business models.

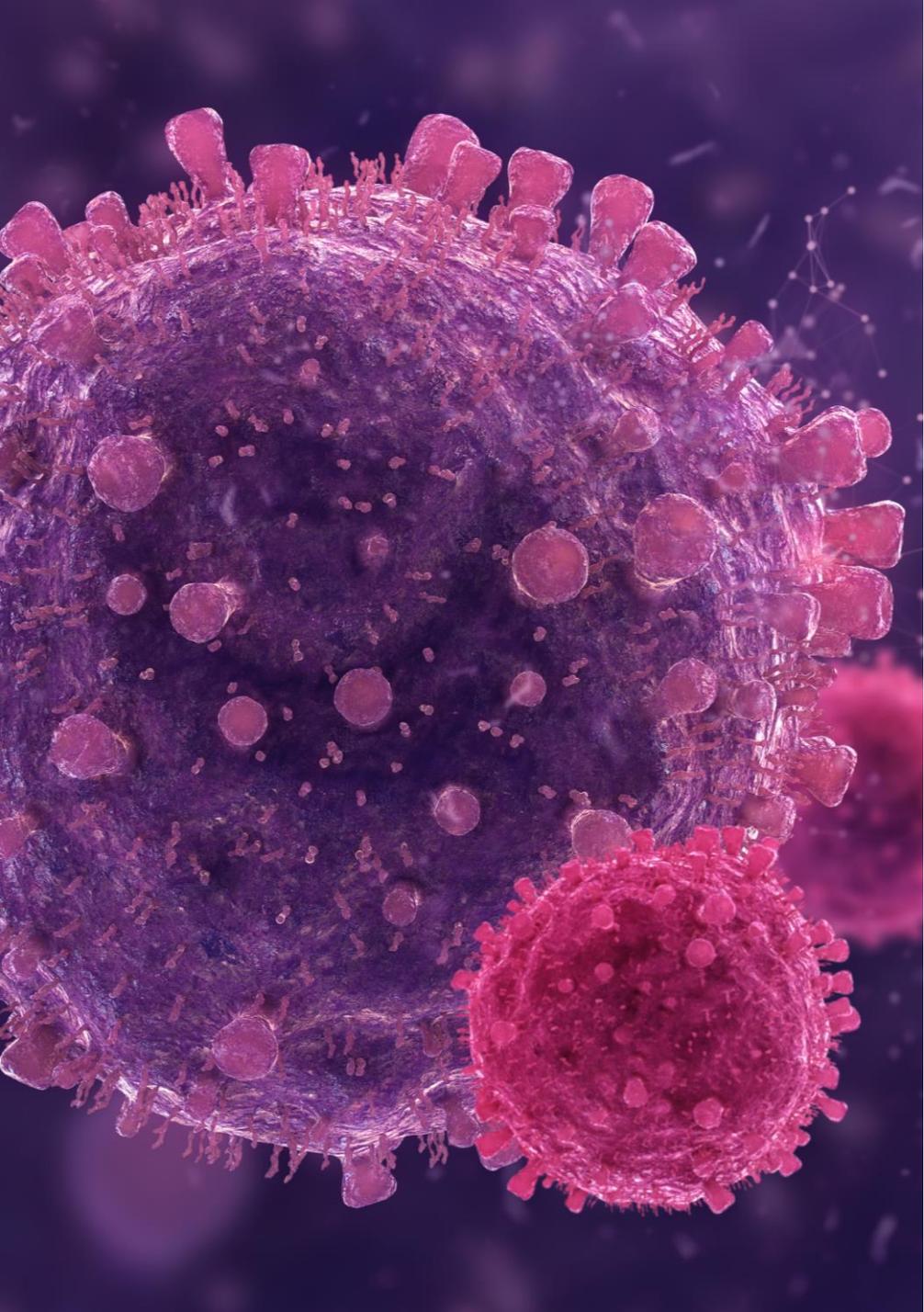
SOLUTION

Used the proprietary Venture Path approach for managing venture building programs complemented with Deloitte's customer strategy and supply chain capabilities. Deloitte is providing support with a.o. the following:

- Overall program management including contractor management
- Assessing the Full Life-Cycle Carbon Footprint and simulating impact of circular and renewable feed and farm solutions on E2E carbon footprint with minimal impact on consumer prices and margins
- Designing new commercial business and operating models for online local-for-local food sales platform
- Local Supply & Demand matching through detailed analysis of clusters of target consumers with a diverse assortment of fresh farm food
- Modelling local-for-local logistics & fulfillment costs

IMPACT

The programme aims to bring innovative value propositions to life and help Agrifirm future proof their business while contributing to a lower carbon food system, consumer access to a fully local and fresh food supply and education about the origin of their food supply, fair income for farmers and compensation for sustainable operations, and simulating collaboration among farmers



PROJECT EXPERIENCE

The Global Fund

Responsible Procurement Framework



ISSUE

The Global Fund to Fight is an international financing and partnership organization that aims to attract, leverage and invest resources to end the endemics of AIDS, Tuberculosis and Malaria. The Global Fund (GF) spends around \$2 billion per year on the procurement of a large variety of health products to battle HIV, TB and malaria. Given the magnitude of its procurement operations, GF is directly related to the impact of its supplier base on society and the environment. GF aims to shape the respective markets from an availability perspective; furthermore, it aims to address the social, environmental and economic implications of its procurement activities that might endanger its integrity and mission. GF intends to use the **Responsible Procurement Framework (RPF)** to address these critical issues, contribute to the achievement of the UN Sustainable Development Goals (SDGs) and foster responsible practices across its supplier base.

SOLUTION

Deloitte helped The Global Fund develop the Responsible Procurement Framework (RPF), which provides Global Fund with a clear structure and practical tools to mitigate responsibility risks. It helps GF buyers to implement sustainability metrics and select the right tools to measure and mitigate procurement risks associated with the Social, Economic, and Environmental dimensions of the bottom-line framework.

This framework is based on the three pillars, mainly Environmental, Social and Economic.

IMPACT

The Responsible Procurement Framework (RPF) helped The Global Fund to identify, measure and mitigate risks across their supplier base in the environmental, social and economic dimension.

The framework supplies procurement specialists (buyers) with metrics to measure risks and tailored tools to mitigate them. The end goal is to enhance compliance with social, environmental and economic standards and elevate good practices across suppliers.



PROJECT EXPERIENCE

World Wide Fund for Nature

Cognitive Deforestation Prevention



ISSUE

A tech consortium led by Deloitte joined forces with WWF to prevent illegal deforestation of rainforests around the world using an Early Warning System. The aim is to reduce illegal deforestation by 30%, reducing 30-100M tons of CO2 emissions, avoiding 150 – 500k hectares of forest loss, and preserve habitats of iconic species like the orangutan. WWF chose Deloitte as their technology partner to help improve and scale an existing prototype.

SOLUTION

The approach is centred around the use of satellite images and other geographic data (roads, populations, altitude, etc.) to predict future illegal deforestation before it happens.

We helped improve and scale the existing prototype solution, leading to a:

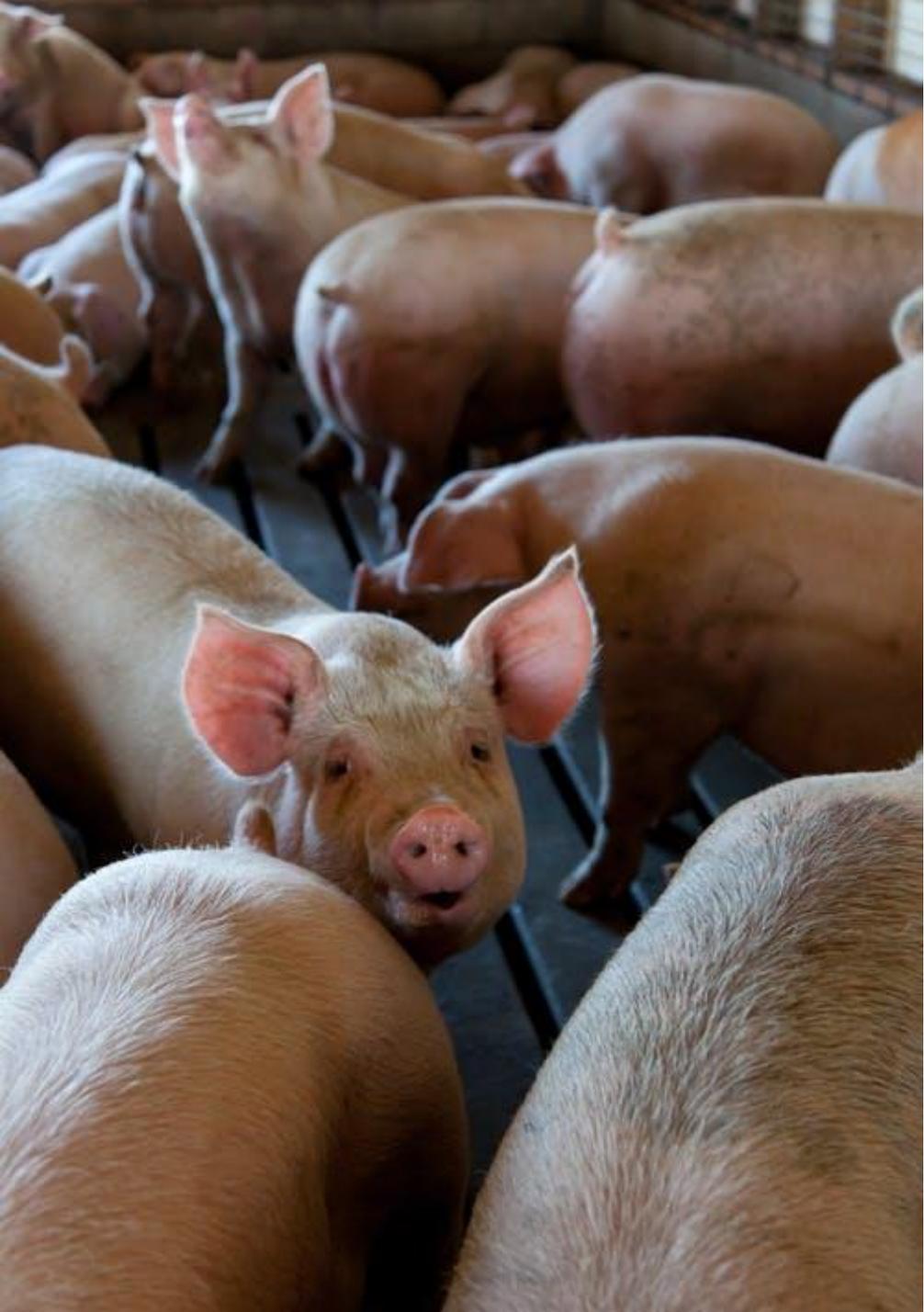
- Scalable, maintainable, cost-efficient, and 3x faster data pipeline that uses native AWS stack (i.e. AWS Lambda, StepFunctions).
- Predictive model with increased accuracy and interpretability linked to a prioritization of alerts. The current model achieves an 80% precision and a 40% hit rate. Several (native) AWS components were used (i.e. EC2, Sagemaker).
- Fully custom web application that is intuitive, scalable, fast, based on user feedback, and leverages MapBox technology and native AWS stack (i.e. CloudFront, Elastic Beanstalk, Cognito).

IMPACT

Since Deloitte started working on the Early Warning System, the solution made leaps and strides of progress:

- Geographical scope expanded from 260.000 km² (Central Kalimantan) to 840.000 km² (5 countries)
- All thirteen initial site visits in the pilot area showed signs of possible deforestation.
- Scalability of the solution increased through the use of cloud-native AWS technologies
- Enhanced the user experience with the development of a fully custom frontend

In the next phase, we aim to collect proof points as we move from having the technology ready to actual interventions carried out by local government actors.



PROJECT EXPERIENCE

Improving animal welfare in the food industry

Automated video analytics and dashboarding

ISSUE

What if intelligent slaughterhouse cameras could identify and label potential animal welfare deviations automatically and trigger corrective action through a dashboard?

Concerns about the effectiveness of animal welfare control in slaughterhouses have raised the need for more effective camera surveillance. As a slaughterhouse QA employee or inspector can only review a small fraction of the thousands of hours of video footage generated

SOLUTION

- Using object detection, markerless pose estimation and event classification to detect deviations in the process from in video footage
- Leveraging cloud computing (AzureML) to analyze large amounts of video data daily
- Select relevant video footage and present it to QA employees for review the next day

IMPACT

- The solution is currently implemented and used at multiple locations in The Netherlands and abroad for two process steps (offloading and debleeding)
- Every day, 24 hours of video data per camera is analyzed
- The solution is cloud native, which allows it to be easily scaled to multiple locations and processes



Our team



A team with the knowhow, skills and experience is happy to work with you

Our Data Driven Sustainability team has developed the vision, skills and materials to bring you closer to the competitive advantages that the combination of data and sustainability can provide

Find us at

www.deloitte.nl/datadrivensustainability



Thank you

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