
Capgemini invent
SOWING INNOVATION IN FARMING
How to shape the future
of the most innovative industry?

IT'S NOT ONLY ABOUT MACHINES AND PRODUCTS. IT'S ABOUT ADDING DATA.

Farming always was smart.
Its future always was innovation.
Yet data will offer unparalleled changes.

How to create sustainable and efficient agriculture while maintaining food security

The digital era promises the next revolution in agriculture. Artificial Intelligence, Internet of Things and Digital Services are highly prioritized topics. Opportunities offered through digitalization can be applied along the entire agri-food value chain.

How can we combine these new technologies with new ways of working to create sustainable and efficient agriculture while maintaining food security? In this paper we approach this topic from three vantages:

- Firstly, **sustainability** itself since we are convinced that it can be aligned with an efficient food production system. It has the potential to complement and refine existing business models to increase profitability.
- Secondly, **connected products and services** serve as a main element in the agricultural machinery industry and also in the crop science industry combing ag input products with adjacent services. New technologies help to establish a flexible and optimized value chain and create opportunities to optimized processes on the farm and the fields.
- And thirdly, **the way how ag companies do business with farmers** and how they act within the value chain. This includes on the one hand the transaction itself including selling directly to growers and distributors and on the other hand the grower experience containing adjacent services and advisory tools.

The crop science as well as the agriculture machinery industry and digitalization go hand in hand. Our clients are willing to take the path into a digital future and often have one essential question: “Where to start?”

Capgemini offers a broad range of solutions for overcoming the challenges described in this paper. As one of the leading consulting companies in the field of innovation and digitalization, Capgemini Invent supports you in the definition of your digital initiatives and accompanies you as a partner into your digital future. We are looking forward to taking this path together with you.

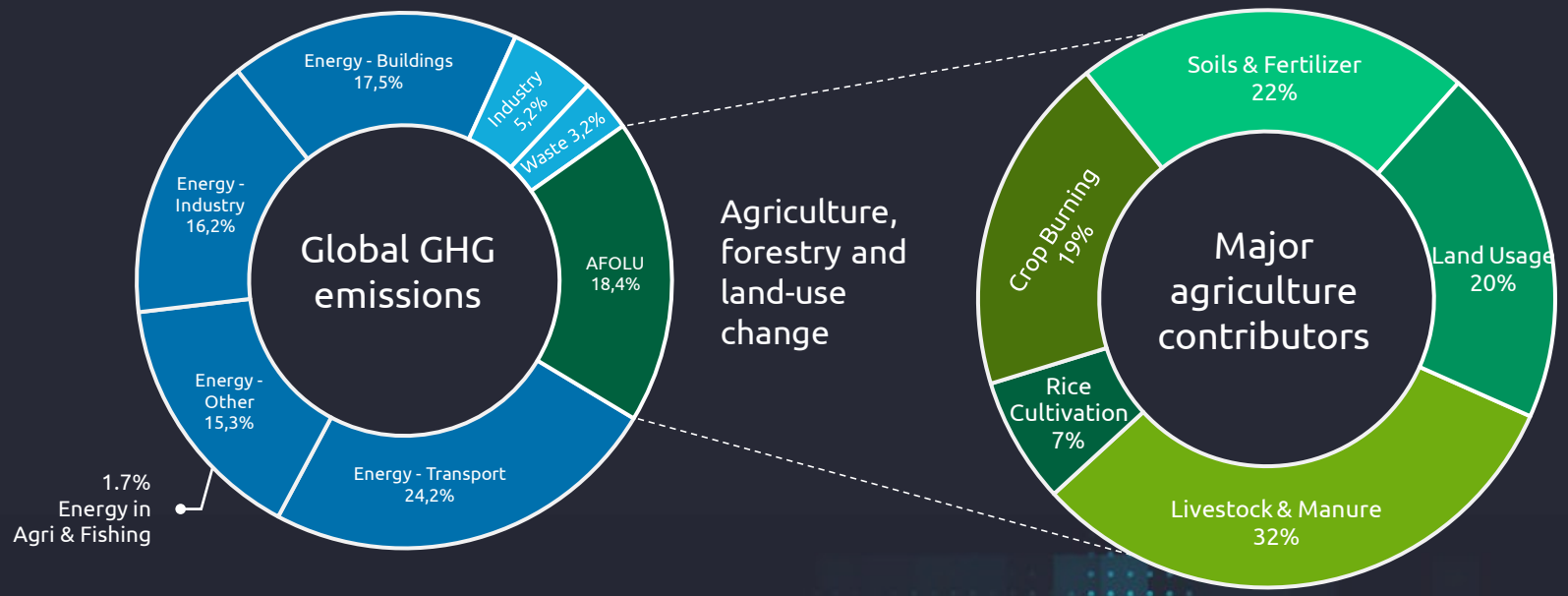
01 IT'S NOT ABOUT THE RIGHT RESOURCES. IT'S ABOUT USING RESOURCES SUSTAINABLY.

Digital and data driven technology
can help to use resources more efficiently
and drive sustainable ambitions

1 Agriculture is a major source of greenhouse gas emissions; significant reductions are needed

Global GHG emissions - Agriculture

GHG emissions and agriculture emissions



Key take-aways

- **Agriculture** contributes to **~ 20%** of **all global GHG emissions**
- Unlike other industries the energy used is not the main source of GHG emissions
- There are **several major contributors to agriculture emissions**, measurement and reduction correspondingly remains difficult
- The reduction of these emissions and overall decarbonisation can be regulatory driven
- In contrast, it can also be a **source of potential profit realisation** and be used to establish a new **business model** (e.g. carbon credits)

Source: Climate Watch, the World Resources Institute, Our World in Data (2020)

1 CO_2 and GHG emission reductions are a key driver for future profit generation through several sustainability measures

Profit generation - Internal vs. External perspective

Internal perspective

Resource Efficiency
Net-Zero Targets

- Improved efficiency and a reduction of emissions can lead to a surplus of carbon credits that are allocated to a business
- Not used credits can then be traded to generate additional profits, reduce costs and gain a competitive advantage

Existing business model remains, narrow potential for profit generation

External (market) perspective

Sustainability as a selling point
Sustainability as a business model

- Businesses can capture existing emissions and gain carbon removal credits that can be sold
- New business models can be developed by establishing an accessible marketplace for trading carbon credits or offsets

New, disruptive or incremental business models shifts possible, vast potential for profit generation

Sustainability

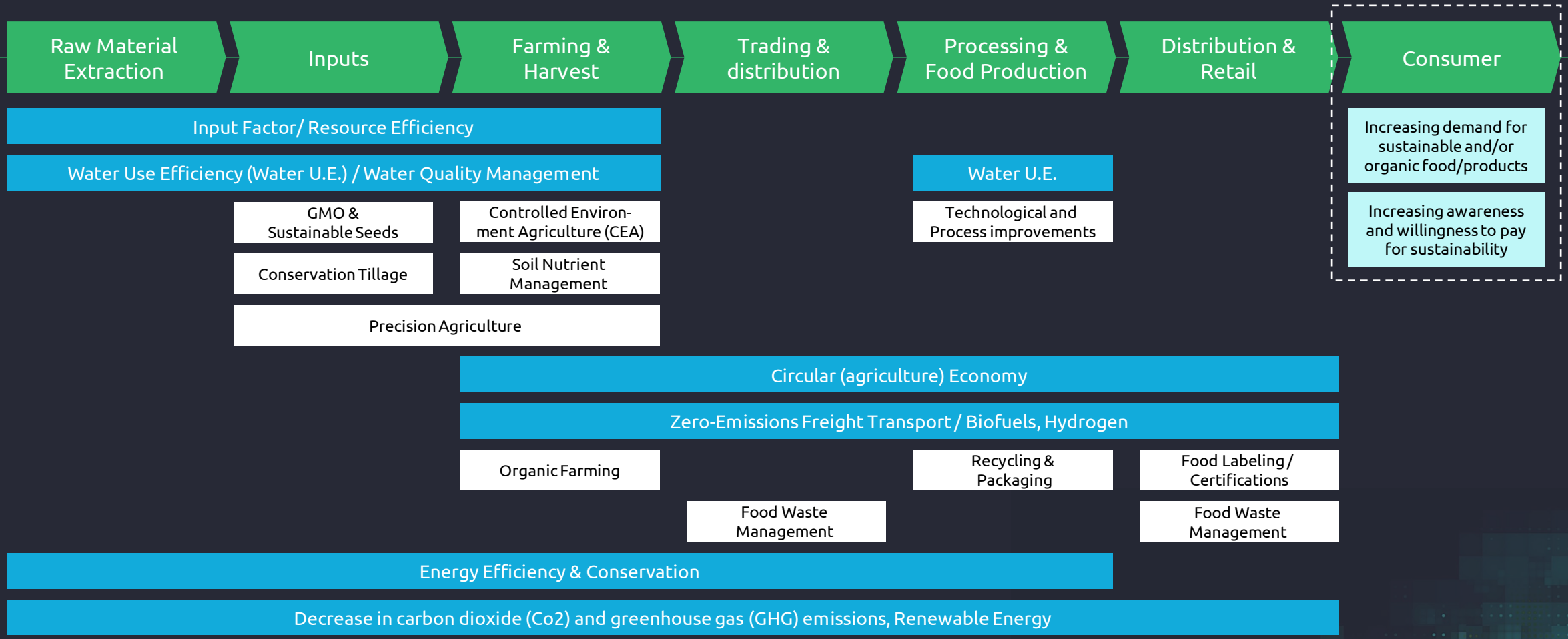
CO_2

Emission reduction

Source: Capgemini Research

1 Further opportunities for multiple sustainability use cases are emerging along the agri-food value chain

Current trends – sustainability along the agri-food value chain



Source: Capgemini Research

Overarching industry-wide trends Use case examples

1 Capgemini provides a proven framework & sustainability offerings to companies along the agri-food value chain

Capgemini's holistic sustainability framework

COMMIT

Sustainability strategy – Purpose, commitments, transformation path

ACT
4 levers to make it happen

New business models & stakeholders engagement

Green products

Green operations Manufacturing – Supply Chain

Sustainable IT

MONITOR & REPORT

Data platform, monitoring & reporting for net zero strategy

SPECIFIC PROPOSITIONS - Examples

Sustainable Target Operating Model

Return on Sustainability Invest (ROSI)

Circular Economy Impact Measurement

Climate Impact Assessment

Sustainability Maturity Assessment

Decarbonization Roadmap

Our Offerings

Definition of a holistic Sustainability strategy

Definition and Implementation of new business models
especially around Co2 emission reduction and carbon credit trading

Utilizing our Carbon Calculator to measure and reduce emissions

Support in establishing and running data platform, monitoring & reporting for sustainability strategy

02 IT'S NOT ABOUT A SINGLE PRODUCT. IT'S ABOUT AN OPTIMIZED ECOSYSTEM BEHIND IT.

Connected Products and Services can establish an efficient and flexible value chain

2 Connected products and services need to deliver a tangible value-add to farmers, addressing their needs and pain points

What farmers are willing to pay for

Increase Efficiency

Key Pain Points:

- Cost of ownership
- Cost of consumables
- Capital intensity of machinery
- Idle time
- Farm input costs
- Operational waste
- …

Success Metric:
Lower operating cost

Mitigate Risk

Key Pain Points:

- Machine downtime
- Unexpected / untimely failures
- External impact of weather, prices, etc.
- Over-concentration of risk (op, financial, etc.)
- …

Success Metric:
Less outcome variability

Improve Results

Key Pain Points:

- Insufficient yield
- Low crop quality
- Sub-optimal crop price
- Un- or under-utilized fields / capacity
- …

Success Metric:
Higher revenue

Add Convenience

Potential Opportunity:

- Access data by increasing operator / owner convenience
- Engage operator / owner with product and brand

2 Identifying the ‚right' connected products and services along the agri value chain drives a positive financial impact

Example – Ag Machinery

Example

	Non-Connected Machine-related Services	Connected Machine-related Services	Performance/ Adaptive Services	Farm-/Jobsite-related Services
Increase Efficiency	▪ Maintenance contract ▪ Extended warranty ▪ Fluid sampling ▪ Parts/consumables subscription ▪ Short- / mid-term rental ▪ Full-service leasing ▪ Certified Pre-owned ▪ Machine inspection ▪ Machine optimization ▪ Operator training	▪ Condition monitoring ▪ Remote diagnostics ▪ Uptime guarantee ▪ Equipment feature rental ▪ Connected machine optimization ▪ Connected fleet optimization ▪ Connected operator training ▪ Efficiency reports ▪ Selling data (e.g. RTK)	▪ Usage-based machine servicing ▪ Proactive machine servicing ▪ Usage-based ext. warranty ▪ Residual value / CPO w/ condition transparency ▪ Smart insurance ▪ Pay-per-use ▪ Pay-per-output	▪ Monitor and synthesize farm data, e.g., drone and satellite imagery ▪ Support farm decisions, e.g., agronomic advice ▪ Optimize harvest logistics, e.g., Vehicle/freight sharing ▪ In-field route optimization and path planning ▪ Emission management
Mitigate Risk				
Improve Results				
Add Convenience				

Indicative potential direct and in-direct revenue impact:

up to 5% services
Direct revenue of connected products and services

up to 3% parts
Driving spare parts loyalty, e.g. through ext. warranty and service contracts

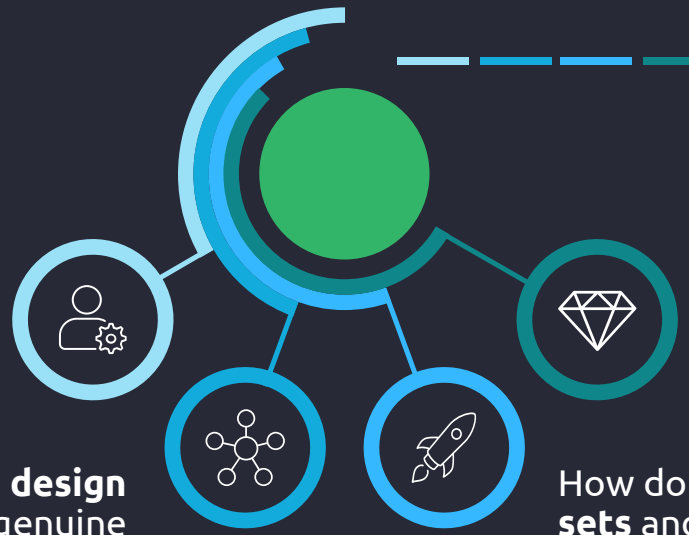
up to 1% wholegoods
Increasing re-purchase through higher customer satisfaction and lock-in

2 While many players have started to connect machines and offer services, some struggle to realize the envisioned benefits

Key challenges in the implementation of intelligent offerings

How should my **strategy** and corresponding **product service portfolio** look like?

How to **design services** that solve genuine **farmer pain points** and have a **high willingness to pay**?



How do I **empower my sales force and/or dealers** to sell connected products and services?

How do I create the **right skill sets** and **mindset** to deliver connected offerings?

2 We help to unlock new growth potential delivering end-to-end solutions along the agri value-chain

From strategy to market roll-out

Strategy & Business Models

- Define ambition and financial goals
- Define role and positioning in the agri value chain/ ecosystem
- Identify and evaluate potential new business models and strategic options for portfolio incl. data monetization, sustainability and data solutions
- Conduct initial research to understand farmer needs and pain points, ecosystem, cross-industry best practices, trends and regulations

Offer & Product Design

- Identify and design new connected service offers and products
- Define how new services and products integrate into current farmer journey, portfolio and product architecture
- Detail product and service roadmaps including business and technology enablers, e.g. sensors and connectivity
- Conduct detailed farmer / agri value-chain research
- Validate potential offers with famers and stakeholders through prototypes/MVP

Operating Model & Architecture

- Design organization and governance around the new digital business
- Identify needed capabilities and how to close gaps
- Create roadmap and business case incl. transformation and technology enablement
- Design future IT architecture, select IT tool, build data and analytics capabilities
- Capture requirements and build IoT platform, embedded software, product/prototypes, etc.

Go-to-market & Roll-out

- Select the right sales and marketing channels, e.g. dealers/partner, direct vs. indirect
- Define new roles, responsibilities, tools, process and incentives for the sale of new offerings/products
- Conduct change management & enablement
- Define pricing and monetization models based on willingness-to-pay analysis
- Define bundling and localization approach

Operations (e.g., BPO, Hosting, Infrastructure)

03 IT'S NOT ONLY ABOUT SERVING A MARKET. IT'S ABOUT THE BEST INSIGHTS AND CHANNELS.

Digital innovations offer a huge potential to improve business and sales

3 Digitalization is changing the way customers are interacting and transacting with companies

B2B eCommerce Trends – Changing Customer Expectations

Research Findings[1]

Digital by Nature

45% of B2B buyers are **between 25-34 years old**

COVID as Accelerator

56% consider a contactless experience to be very important

Online Beats Physical

93% of customers want to complete their **transactions online**

Mobile First

Nearly 50% said they "feel comfortable to **place orders" on a mobile device**

Speed, Speed, Speed

50% of sales go to the vendor that **responds first**

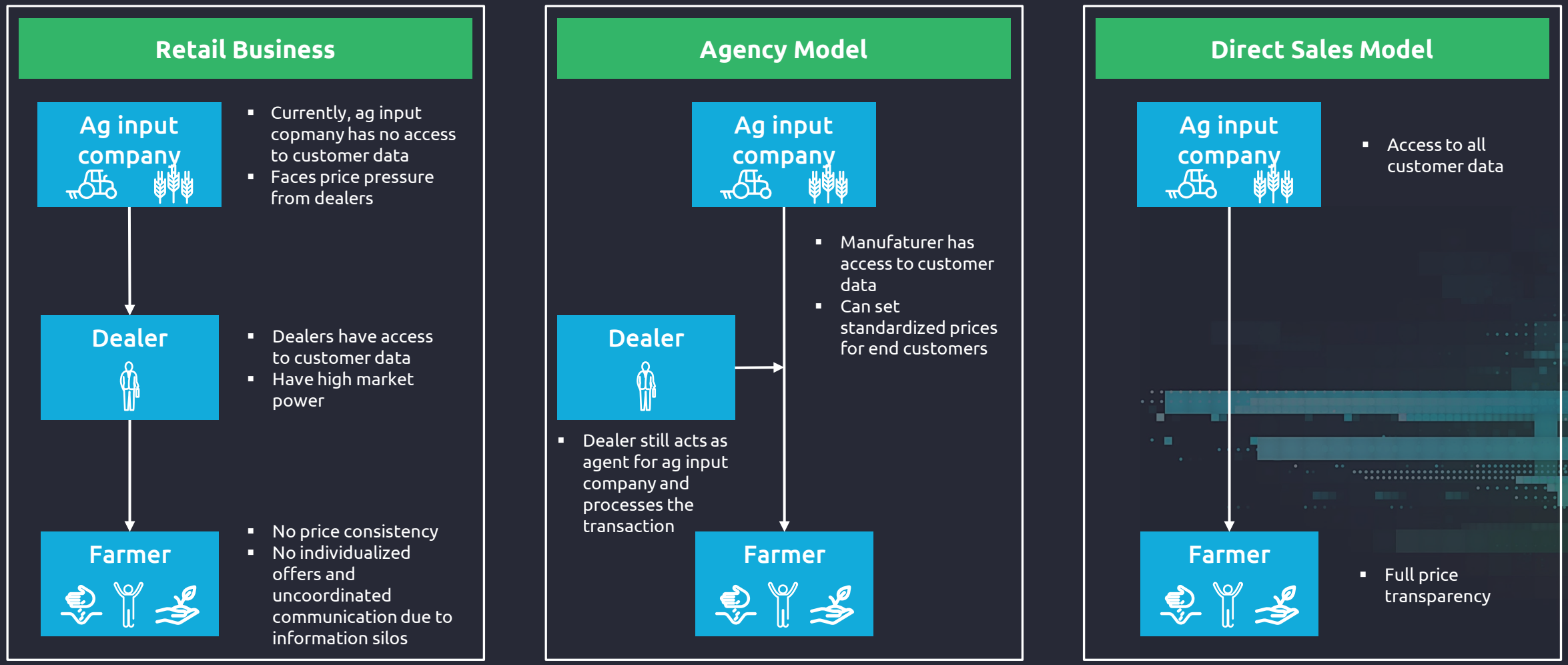
1 Source: Capgemini Research

Derived Implications

- To be successful, companies in agriculture and other B2B companies need to **become more customer-centric** and orchestrate channels. 8 out of 10 farmers are already relying on digital technologies.
- eCommerce is a **key enabler** to drive **incremental sales** and acquire **new customers**
- Agri-businesses are **significantly investing** in shaping their **digital customer experience and eCommerce** landscape. 20 Marketplaces have been added in Germany alone over the past 4 years.
- Alignment of **seeds and crop protection company's online** and **offline sales channels** required to enable seamless customer experience, which is **well integrated with the wider digital farming** ecosphere. In 2019 only 13% of European farmers purchased farm inputs online.

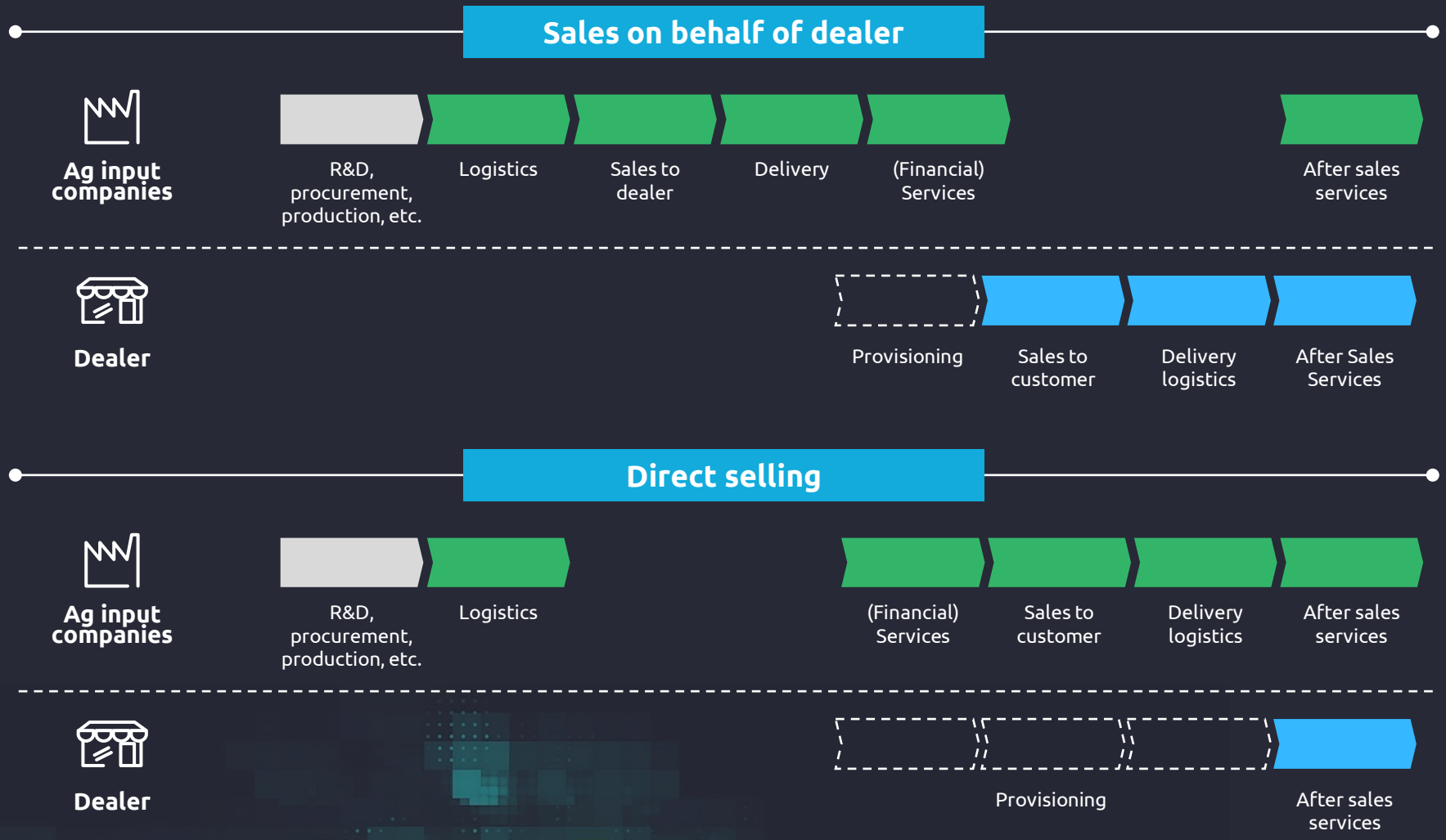
3 Ag input companies are transforming from traditional retail business to direct sales, with closer farmer relationships

From retail business to direct sales model



3 Direct sales model is shifting more value towards the ag input companies

Value Chain for direct online selling – Change of value capture from dealer to ag input companies



Within the value chain **ag input company** is taking over activities, becoming the **contract partner**.

Dealers can create additional **new income sources** based on provisioning, delivery and after sales support.

3 When moving to a direct sales model, the future roles of ag input companies and dealers need to be re-aligned

Moving to direct sales model – topics to address

1 Online direct selling value chain

How are the **business model** and **value chain** between ag input company and dealer/ distributor changing?

How are **interfaces** and the **collaboration** between manufacterer and dealer/ distributor changeing?

2 Role of ag input companies

- What are the **new functions** of the ag input companies in a changed value chain?
- What are the **organizational implications** for the ag input companies?
- How can ag input companies secure an **End-to-End customer care**?

3 Role of dealers/ distributors

- Which **role** plays the dealer in the new sales format?
- How does the **dealer network of the future** look like?
- Which **new retail formats** will come up?
- **How many dealers** are necessarry in the future?

4 Change Management

How can the tranformation of the business models happen **frictionless**?

How can all **stakeholders** and especially the **dealers** be convinced by the **advantages of the transformation**?

We have the expertise and insights to farmers' needs and expectations, to enable data-driven business steering

What's next: Future Differentiation via Data-driven insights

Farmers' Needs & Expectations

- **Managing with complexities**
- **Proactive and personalized information**
- **Trust – Access to 'solid' information**
- **Yields, sustainability and profitability**
- **Reliability and response times**
- **Information to insights**

Data-driven Business Steering - Opportunities To Differentiate

Customer specific data points and data-driven insights

- New ways of communication and collaboration
- Real-time and transparent access to 360° customer data
- E2E offerings (from field to finance)
- Call to action and "intelligent recommendations"
- Self service and cost-efficient support
- Enhanced GTM partner services

Ag companies have an opportunity to differentiate beyond its current customer engagement, by providing unique customer experience via data-driven business steering across all major markets

LET'S INNOVATE FARMING TOGETHER.

CONTACT US.

Dr. Leonardo Weiss – Vice President
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17+ years experience with focus on connected products and services (heavy machinery). He designed and implemented after service strategies for 3 leading agri machinery OEMs and is a convinced advocate for new business perspectives in farming.

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20+ years experience of which 10 in industry product mgmt and R&D. An expert in digitalization, digital farming and new business models for input suppliers + dealers he's excited about the future of farming and the chance to shape it.

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12+ years in crop science industry. Experienced in strategy and corporate development, he dedicated his whole life to farming. A farmer himself, he studied agricultural economics and knows the needs and challenges of the trade.

About Capgemini Invent

As the digital innovation, design and transformation brand of the Capgemini Group, Capgemini Invent enables CxOs to envision and shape the future of their businesses. Located in nearly 40 studios and more than 60 offices around the world, it comprises a 10,000+ strong team of strategists, data scientists, product and experience designers, brand experts and technologists who develop new digital services, products, experiences and business models for sustainable growth.

Capgemini Invent is an integral part of Capgemini, a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 340,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering, and platforms. The Group reported in 2021 global revenues of €18 billion.

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