Scottish Malting Barley and Distilling Supply Chain

SAOS

About This Sector

DEFINITION

- The malting barley supply chain includes arable farmers, co-ops and grain merchants, maltsters and malt whisky distillers
- These businesses align themselves in separate and distinct vertically integrated chains

MAIN ACTIVITIES

- Spring barley growing and harvesting
- Grain testing, drying and storage
- Malting (steeping, germination, kilning and cleaning)
- Mashing, fermentation, distilling, storage, maturation, blending and bottling

MAJOR PLAYERS

Co-ops and Merchants

- Co-ops/farmer groups - Aberdeen Grain, Banff and Moray Grain Group, East of Scotland Farmers, GrainCo, Highland Grain
- Merchants - Cefetra, Frontier, MSP, ScotGrain

Maltsters

- Bairds, Boortmalt, Crisp Malting, Diageo, Simpsons Malt

Distillers

- Diageo, Chivas Bros, Edrington Group, Wm Grant and Sons, and many other smaller distillers

Malting Barley and Distilling Supply Chain

Key External Drivers

- Climate
- Exchange Rates and Tariffs
- Market Demand for Malt Whisky
- Alcohol Consumption Per Capita
- Health Consciousness
- Real Disposable Household Income

1st Tier Suppliers

- Seed Barley Suppliers
- Fertilisers and Pesticides
- Agricultural Machinery and Equipment
- Farmers Growing and Harvesting Barley

Grain testing drying and storage

- Grain Testing
- Drying to a 12% Moisture Content
- Other Added Value: Preparation of Grain Bulks

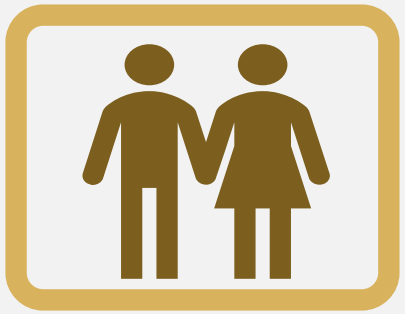
Malting, distilling

- Malting (steeping, germination and kilning)
- Mashing, Fermentation and Distilling
- Storage and Maturation
- Blending and Bottling

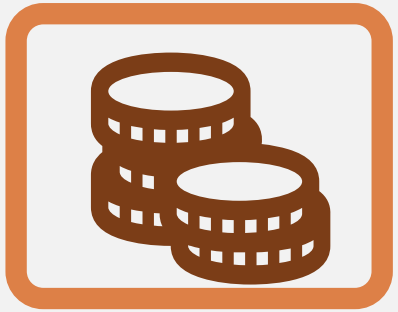
Markets

- UK: Grain Buyers
- UK: Maltsters, Distillers
- UK and Exports: Wholesalers, Retailers and Foodservice

Key Facts and Figures



>10k people directly employed in the Scotch Whisky industry in Scotland and **>40k** jobs across the UK supported by the industry



The whisky supply chain is worth more than **£1.8bn**
In 2020 exports were worth **£3.8 bn**

Consumers drinking lower volumes of higher quality alcohol
Global whisky consumption is steadily increasing

924k tonnes of malting barley p.a. **~90%** of the whisky sector's barley requirements; **39%** of UK produced malt worth **£140m** to the farming economy

Import tariffs on Scotch whisky entering the US have affected export sales (now removed) – US is largest export market

Top **5** export markets for Scotch Whisky by value are US, France, Singapore, Taiwan, Latvia
Global exports fell by more than **£1.1bn (23%)** during **2020**

Malting Barley Distilling Production Process

On-Farm

Sow, grow and harvest barley. Moisture Level 17 – 20%

Grain Store

Dry, screen and store barley. Moisture Level 12% (required to stabilise grain)

Maltsters

Wash and steep barley. Moisture level 44% (required to stimulate germination**)**

Maltsters

Stop germination process by reducing moisture content. Kiln grain to ~5% moisture

Distillers

Add water to the malt. Heat to extract sugars. Drain mash prior to the fermentation and distillation process

Primary Production

Growing and Harvesting

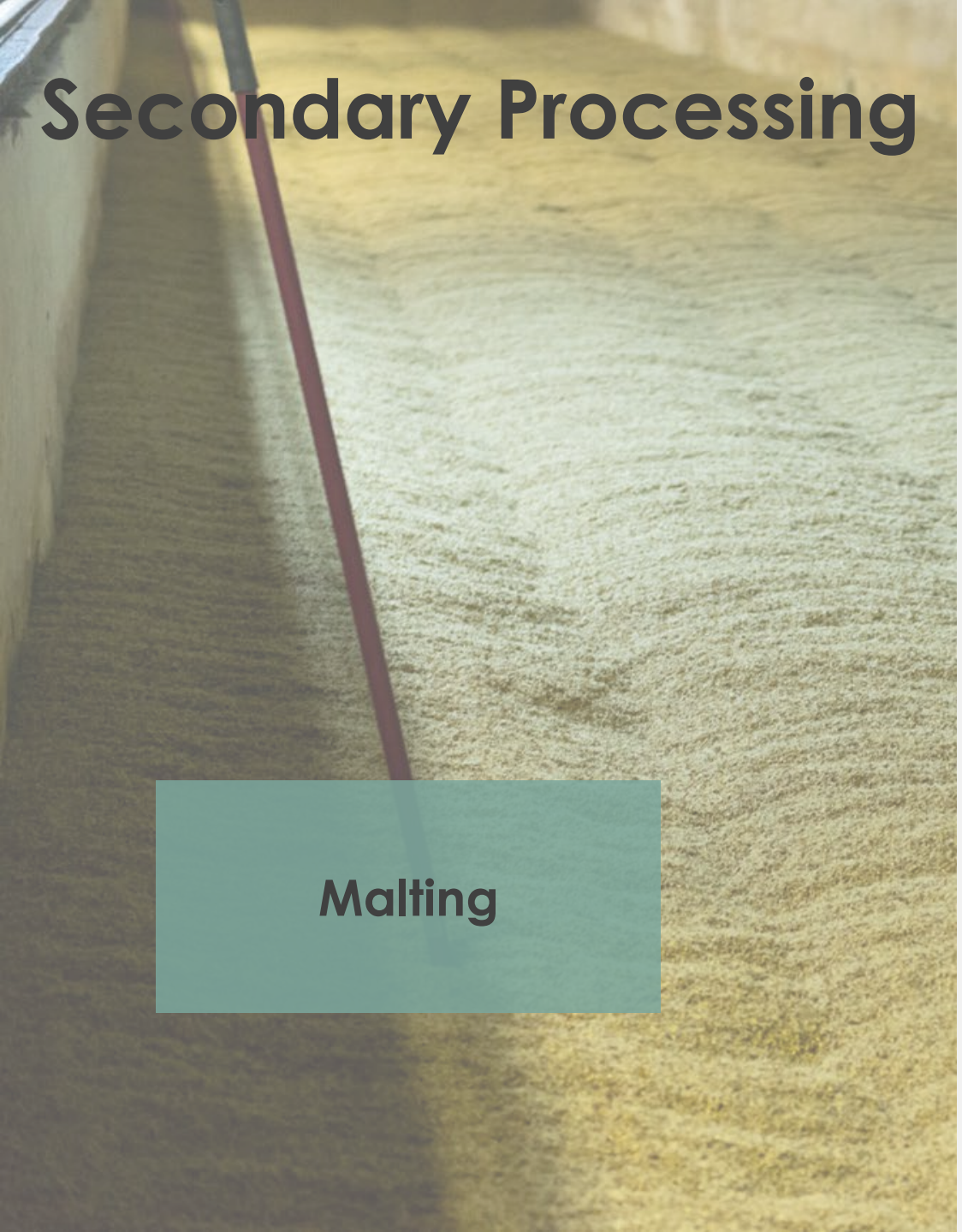
- Barley is the largest cereal crop grown in Scotland
- Spring barley makes up >80% of the total barley crop (winter and spring)
- The largest market for barley in Scotland is malting, with much of the remainder used for animal feed or seed production
- Barley used in malt production must meet tight specifications for moisture (<12%), screenings, germinative capacity, nitrogen (<1.65%) and skinning
- The area of spring barley planted is influenced by several factors including weather (how much winter crop was sown and so what area is left), rotational considerations and malting barley demand and price
- Winter ploughing is one of a suite of methods used for seedbed preparation
- Weather patterns and rainfall, particularly at harvest, significantly affect growing conditions, yields and quality

Primary Processing

Grain Testing, Drying, Dressing and Storage

- Demand for barley across the UK comes from two main sources: the drinks industry and livestock feed ~50% crop goes for malting; 45% for livestock feed
- Post-harvest, central grain drying, and storage is preferred due to the poor quality of some farm infrastructure
- Modest tonnages of barley are imported
- The major buyers include:
  - Farmer co-ops, including Aberdeen Grain, Banff and Moray Grain Group, East of Scotland Farmers, GrainCo, Highland Grain
  - Cefetra, Frontier, MSP (including WN Lindsay), ScotGrain
- Buyer numbers have recently declined, and it is not yet clear how the supply chain will realign
- There are limitations in the methods used in grain sampling and testing, which can damage trust in the supply chain
- Systems of traceability at this stage of the chain are paper-based which compromises transparency

Secondary Processing



Malting

- Scotland's whisky industry, which accounts for 75% of Scotland's food and drink exports is heavily dependent on malting barley grown by Scottish farmers
- On average, just over 50% of the barley crop is consumed by the malting sector ~ an average of around 920,000 tonnes per annum over the last three years
- In 2020, UK maltsters specified their anticipated purchase requirements across the UK at 1.8 million tonnes
- Four Key Maltsters Anglia Maltings (includes Crisp Malting), Baird's, Boortmalt and Simpsons Malt together account for ~70% UK market share. Diageo Scotland produces much of its own malt
- Bairds has recently made investments in new capacity. Boortmalt and Simpsons have announced plans for additional processing
- Maltsters co-operate with each other, through MAGB to pool info on barley type and quality needed to produce malt in line with customers' specifications

Secondary Processing

Distilling, Maturation and Blending

- ~83% of UK spirit production revenue is generated from whisky
- The combination of fresh water, peat and the Scottish climate gives Scotch Whisky a unique flavour
- Four major players (Diageo, Chivas Bros, Edrington Group, William Grant & Sons together account for ~67% of UK spirit production market revenue
- Many companies have invested in Scotch Whisky distilleries to maintain Scotland's geographical dominance and fulfil booming demand for the product
- Over the past five years the industry has become more concentrated, leading to an expansion of production capacity and installation of new equipment at bottling plants to improve efficiency
    - *(source: IBISWorld Spirit Production)*

Markets

Wholesalers, Retailers, Foodservice UK and Exports

- The Scotch Whisky supply chain is worth more than £1.8bn
- In 2020 exports were worth £3.8 billion - a reduction from £4.9 billion, due to tariffs in the US market and COVID
- UK Off-Trade markets (supermarkets, convenience stores, off licenses) are anticipated to account for ~62.6% of spirit sales in 20-21and On-Trade (pubs, restaurants, hotels, etc.) ~37.4%
- Demand for premium spirits has consistently outpaced demand for non-premium spirits over the past five years
- Exports of whisky have grown considerably due to the weak pound, though the 25% tariff imposed by the US has constrained growth. SWA estimates losses of ~£400m in the 14 months to Dec 20. The US is the largest export market
- The four largest export markets for spirits are US, France, Singapore and Spain. Emerging markets such as India and the Far East, including China are gaining market share
- Scotch Whisky is the leading export product and Johnnie Walker the leading export brand. Bells and Famous Grouse are the leading UK brands

SWOT Analysis

STRENGTHS

- Established and connected supply chains
- Regular cross industry forums
- Strong international reputation for high quality malting barley
- Ideal growing climate
- Well established and successful global brands
- Strong R and D institutions providing development support along the chain
- Development of International Barley Hub to research new varieties
- Resilient to climate change
- Ambition to develop net zero barley
- A distilling sector which has been consistently profitable

WEAKNESSES

- A need to maintain some winter ploughing
- Quality of some farm drying and storage infrastructure
- No data on the reasons and rates of barley rejection are collected, pooled and analysed
- Shortage of truck drivers for harvest grain transport
- Varietal robustness – rejections, waste and cost
- Reliance on pesticides and fertilisers
- Paper-based traceability
- Limitations of the methods used in grain sampling and testing, damaging trust in the supply chain
- Historical lack of investment in malting capacity – now being addressed
- Susceptibility of whisky exports to sudden tariff changes
- Brand imitation and counterfeiting in export markets
- An aging workforce at many points along the chain

SWOT Analysis

OPPORTUNITIES

- Greater uptake of precision farming and use of new practices, e.g., green digestate
- Reduce inefficiencies due to the limitations in grain testing - update and standardise quality tests between farms and maltsters
- Development of the International Barley Hub
- Use of latest technologies to reduce carbon footprint for energy use, e.g., green hydrogen or other sustainable fuel
- Use of new technology to improve transparency and traceability, e.g., e-passports
- Development of new varieties with a lower environmental impact
- Development of new biotechnologies to support plant health
- Increased collaboration between representative organisations along the chain to address issues of concern

THREATS

- Loss of plant protection and other agronomic chemistry, e.g., glyphosate
- Ban on peat extraction which prevents the production of peated malts
- Climate change and linked risk from increasing incidence of mycotoxins, e.g., T2/HT2
- Climate change and linked risk to evolution of new plant disease and pest challenges
- Increase competition for arable land to grow proteins for human consumption as consumer meat consumption declines

Sector Trends

- Recent and planned investments by the malting sector are likely to mean there is a growing demand for malting barley in Scotland
- The potential additional demand is currently challenging to quantify. New investment might result in the displacement of older, less efficient capacity
- SWA has developed a sustainable strategy focused on four key goals: cutting GHG to achieve net zero by 2040, using water within the responsible use range by 2025, all new packaging to be reusable, recyclable or compostable by 2025 and playing an active role in the conservation and restoration of peatland to deliver environmental benefits for the common good by 2035
- There has been some consolidation among existing players to diversify product portfolios and expand market reach. Growth in the number of new craft distilleries being established is also evident
- An active global health lobby continues to seek further restrictions to reduce alcohol consumption

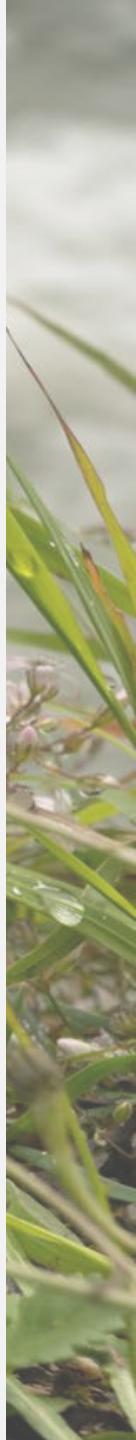
Sustainability

ECONOMIC

- Demand for malting barley is relatively consistent, backed by its use in the whisky sector
- Heavy investment in brands and marketing of Scotch Whisky to appeal to new generation of consumers
- Farm production, drying and storage, malting and distilling have a well-established supply chain
- High quality institutions supporting R and D, certification and quality assurance
- Collaboration among key R and D institutes to develop the International Barley Hub, to research new varieties with a focus on climatic robustness, e.g., non-GN winter varieties
- New investment in malting capacity has the potential to increase efficiency
- Over the years there has been a steady flow of new varieties

SOCIAL / PEOPLE

- Shortage of truck drivers for harvest grain transport
- An aging workforce at many points along the chain



Sustainability

ENVIRONMENT

- As the climate warms, growing may be possible on higher ground, expanding output
- New technologies and spring barley varieties improve supply chain efficiency
- Scottish climate is generally positive for malting barley production
- SWA aims for the sector to reach net zero by 2040. Progress to date:
  - 28% primary energy usage now from non- fossil fuel sources
  - Greenhouse gas emissions < by 34%
  - Energy efficiency improved by 9.2%
  - Water efficiency improved by 22%
  - 94% packaging is recyclable or reusable
  - General waste to landfill < to1%
- SQC is benchmarked against the Sustainable Agriculture Initiative at silver level and is aiming for gold
- The Scottish supply chain is made up of smaller groups, with differing levels of vertical integration. They adopt different strategies and priorities for improving sustainability, therefore there is a lack of consistency across the sector
- Research necessary for eco-friendly fuels for drying and malting e.g., green hydrogen or other green fuel

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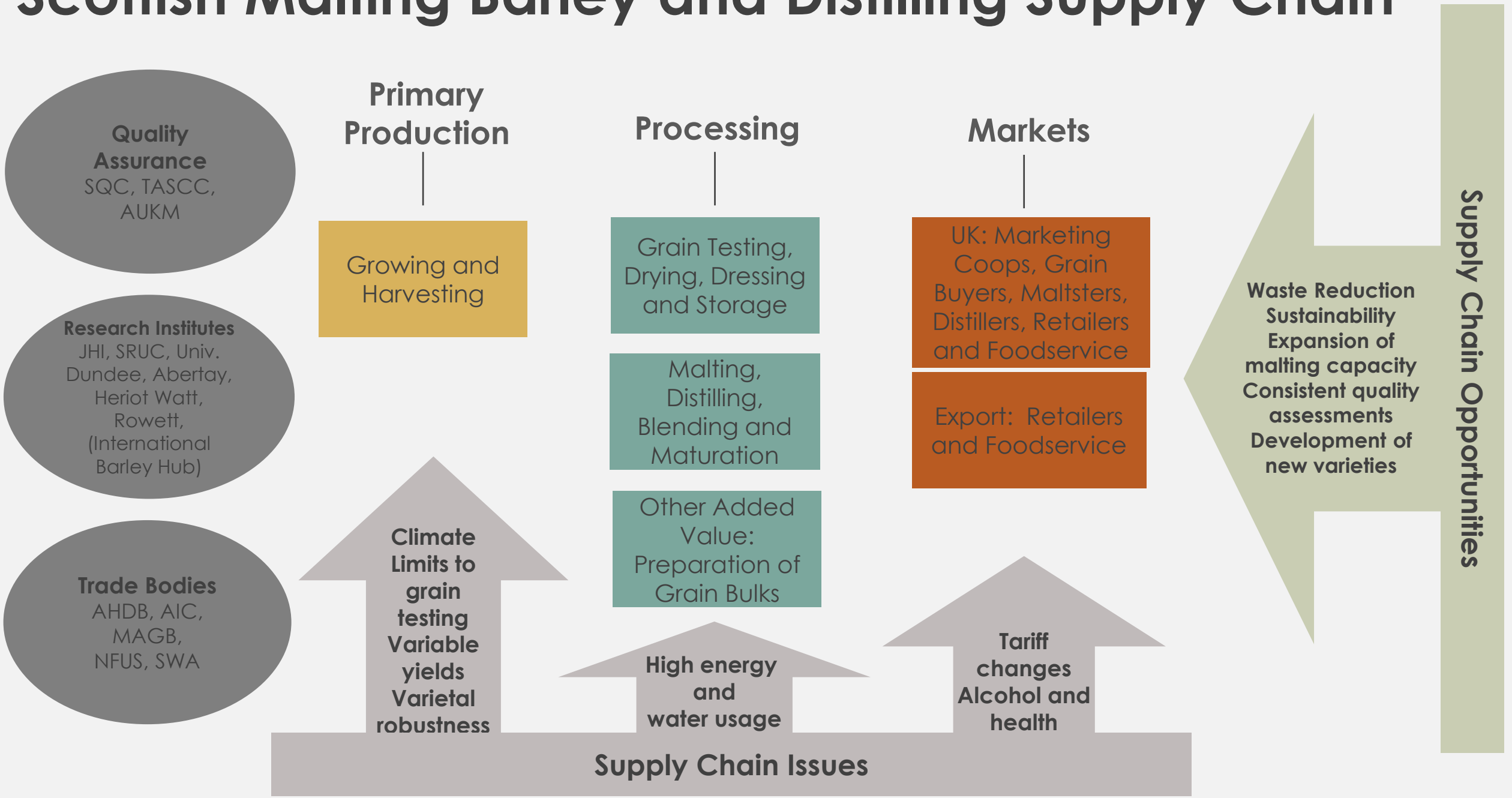

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