FOODPORT: CONNECTING FOOD PORT REGIONS BETWEEN & BEYOND

February 2011

Work Package 3.1

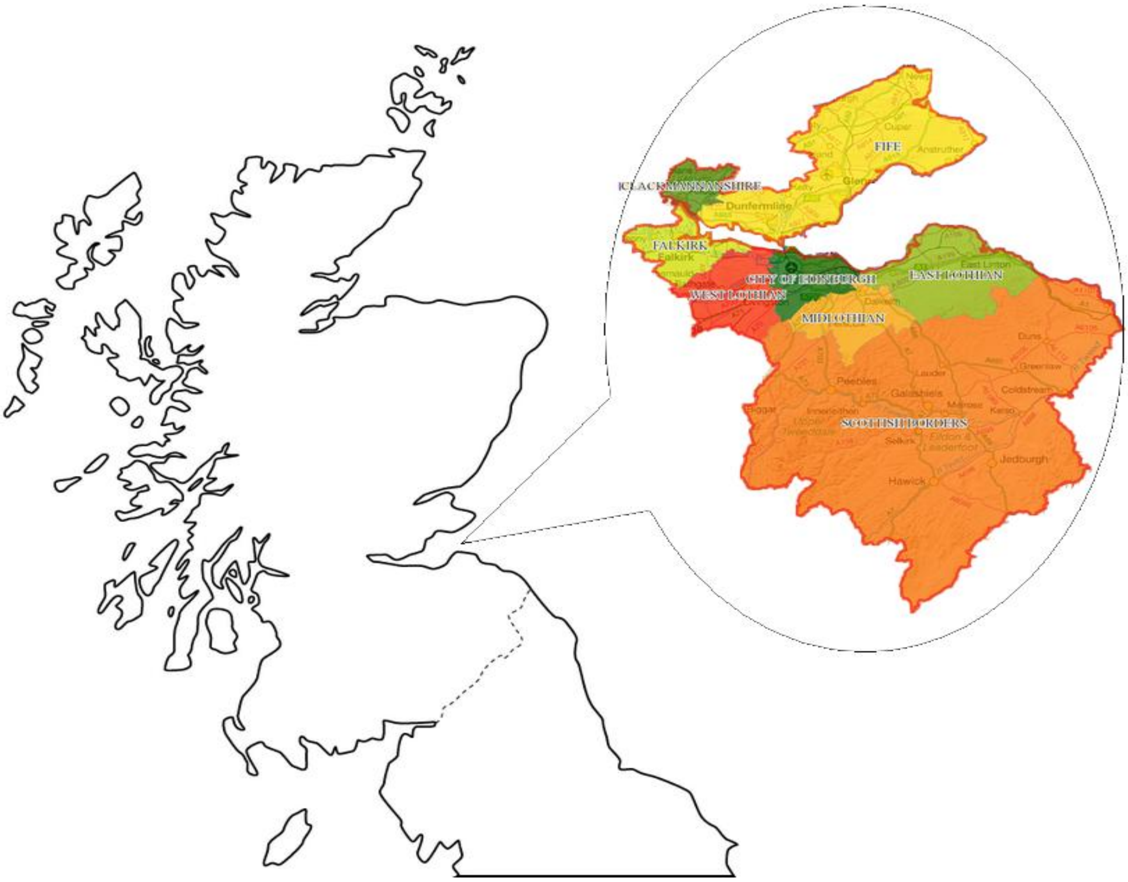
Author(s)

SEStran
Transport Research Institute (TRI)
MVA Consultancy

1.1 & 1.2 Geographical Area and Background Data

1.3.1 The South East of Scotland Transport Partnership (SEStran) area incorporates eight local authority areas in south east Scotland, as follows: City of Edinburgh, Clackmannanshire, East Lothian, Falkirk, Fife, Midlothian, Scottish Borders and West Lothian. Its location is shown in the map below.

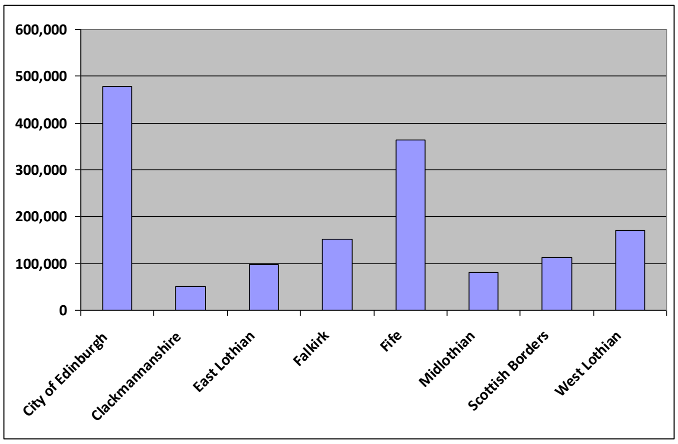
Figure 1: Location of SEStran Area in South East Scotland



1.3.2 The 2009 mid year population estimate for the area is 1,505,500[1] which is around 30% of the Scottish total, and the distribution of this population between constituent local authority areas is shown below.

[1] http://www.gro-scotland.gov.uk/statistics/theme/population/estimates/mid-year/2009/list-of-tables.html

Figure 2: SEStran Area Population (2009 mid-year estimate).



1.3.3 The split of population by age is shown in Figure 3 below into three age groups broadly representing children (<16), working age (17-65) and retired (65+). The figures are shown for each of the local authorities, all SEStran and Scotland.

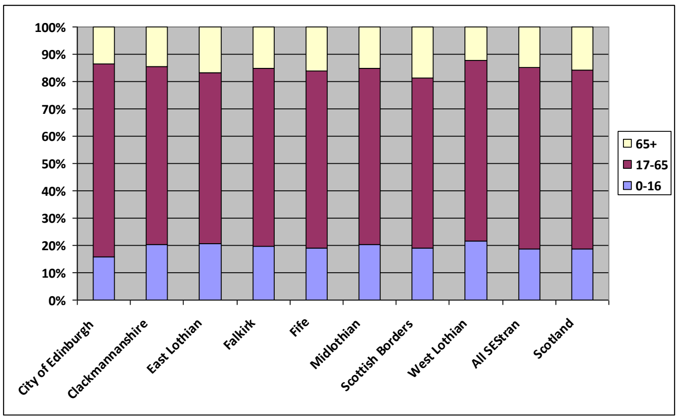


Figure 3: Age Profile within the SEStran area (2009 GRoS)

1.3.4 Overall the SEStran area is typical of Scotland in terms of age profile. It is notable though that the City of Edinburgh area has a lower share of 0-16s and a higher share of working age (17-65) population. This will reflect its position as the main employment centre in the area.

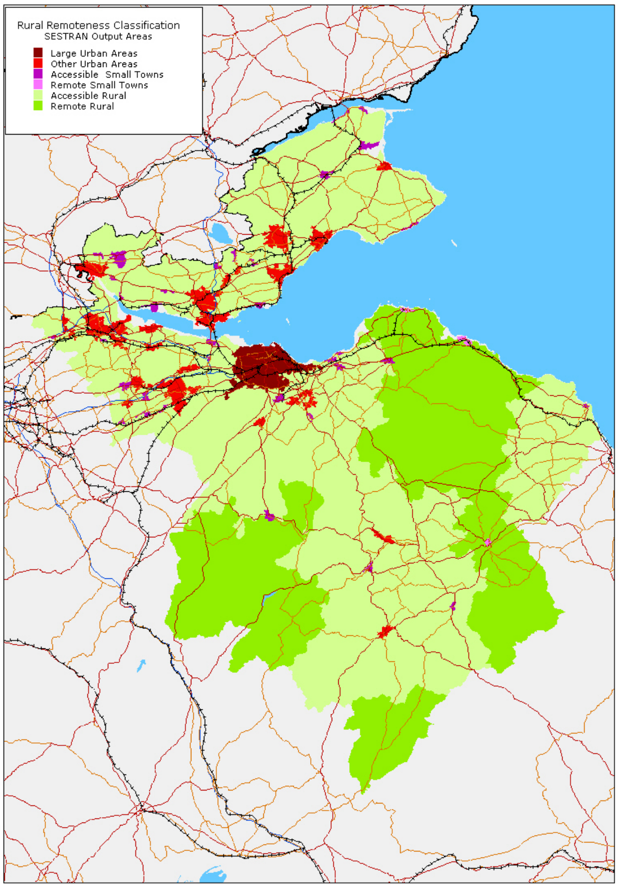
1.3.5 Looking ahead, in the period 2008 to 2033, the population of Scotland is projected to increase by 7%. The SEStran area is projected to see much stronger population growth however at around 16%, the strongest projected growth of any Scottish area. By contrast, the west of Scotland area centred on Glasgow is projected to see no significant change in population, underling the economic importance of the Edinburgh regional economy to Scotland. The other main demographic trend over time is the aging of the population. By 2033, it is projected that those in the 65+ age group will account for 25% of the total Scottish population, up from 17% in 2008.

1.3.6 Of the 1.5 million population in the SEStran area, around 450,000 live within the City of Edinburgh itself. There are no other cities in the area, and the top 10 settlements, in terms of size are shown below.

Table 1: Population distribution of the SEStran area

Settlement	Local Authority Area	Population
Edinburgh	City of Edinburgh	454,280
Falkirk	Falkirk	98,940
Dunfermline	Fife	78,550
Livingston	West Lothian	63,160
Kirkcaldy	Fife	48,630
Glenrothes	Fife	47,280
Dalkeith	Midlothian	38,940
Buckhaven	Fife	31,450
Alloa	Clackmannanshire	29,020
Bonnybridge	Falkirk	24,490

1.3.7 The total population can also be categorised using the six-way Scottish Government defined urban-rural classification as follows:



- 32% in 'Large Urban Areas' (ie settlements of over 125,000 people, ie Edinburgh);
- 40% in 'Other Urban Areas' (Settlements of 10,000 to 125,000 people, eg Kirkcaldy, Dunfermline, Alloa, Falkirk, Livingston, Penicuik, Hawick, Musselburgh etc);
- that is almost three quarters of the population are 'urban';
- 13% in 'Accessible Small Towns' (ie Settlements of 3,000-10,000 people, within 30 minutes drive of a settlement of 10,000 or more, eg Burntisland, Queensferry, Haddington, Armadale, Tayport etc);
- 1% in 'Remote Small Towns' (ie Settlements of 3,000-9,999 people, with a drive time of over 30 minutes to a settlement of 9,999, eg North Berwick; Dunbar and Kelso);
- that is a 14% of the population live in small towns;
- 12% in 'Accessible Rural Areas'(ie Settlements of less than 3,000 people, within 30 minutes drive of a settlement of 9,999 or more);
- 2% in 'Remote Rural Areas (ie Settlements of less than 3,000 people, with a drive time of over 30 minutes to a settlement of 9,999 or more);

- that is 14% of the population is 'rural'.
- Thus, the SEStran population is one that is predominantly urban in nature but with a significant rural minority.

1.3.8 The SEStran area economy is dominated by Edinburgh and this has been the fastest growing and most dynamic economy in Scotland for some time. Figure 4 below shows the local authority level Gross Value Added (GVA), and also the GVA per head in the area.

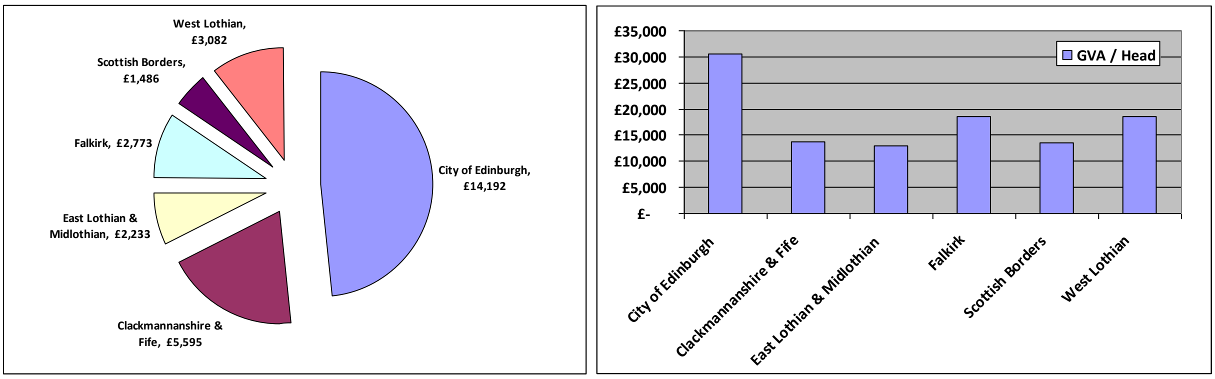


Figure 4 GVA (£m) and GVA per head in the SEStran Area (2006)[2]

1.3.9 Within the SEStran area, the economy tends to be dominated by service sector employment and public services. Edinburgh clearly remains a major centre for financial services, despite the major impact that the banking and financial crisis had on the sector. Tourism is also a key driver of the SEStran economy with Edinburgh being renowned internationally as a tourism destination in its own right, in addition to the major cultural events such as the Edinburgh International and Fringe festivals.

1.3.10 The Scottish Government has defined a set of 'key sectors' which are at the heart of the Government Economic Strategy. These are Creative Industries, Energy, Financial and Business Services, Food and Drink, Life Sciences, Tourism, Universities.

1.3.11 The SEStran area has particular strengths in most of these key sectors.

1.3.12 Workplace employment data from 2004 is shown below and this underlines the trends discussed above.

[2] http://www.keyindicators.org.uk/profiles.aspx

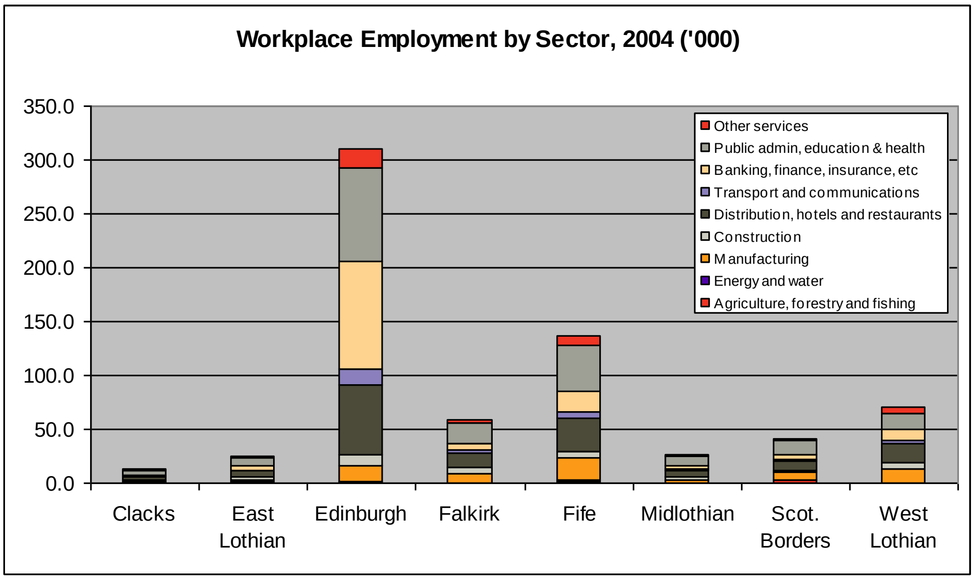


Figure 5 Workplace Employment by Sector (2004)

1.3.13 It can be seen that Edinburgh accounts for around 45% of all jobs in the SESTRAN area, followed by Fife with 20%. With the exception of West Lothian and Edinburgh, Public Administration, Education and Health is the largest single employment sector. The very large and key Banking, Finance and Insurance sector in Edinburgh is clearly illustrated.

1.3.14 The regional GVA figures are broken down into the three main sectors of services, construction and manufacturing below. These figures underline the importance of Edinburgh-based service sector activity to the area's economy.

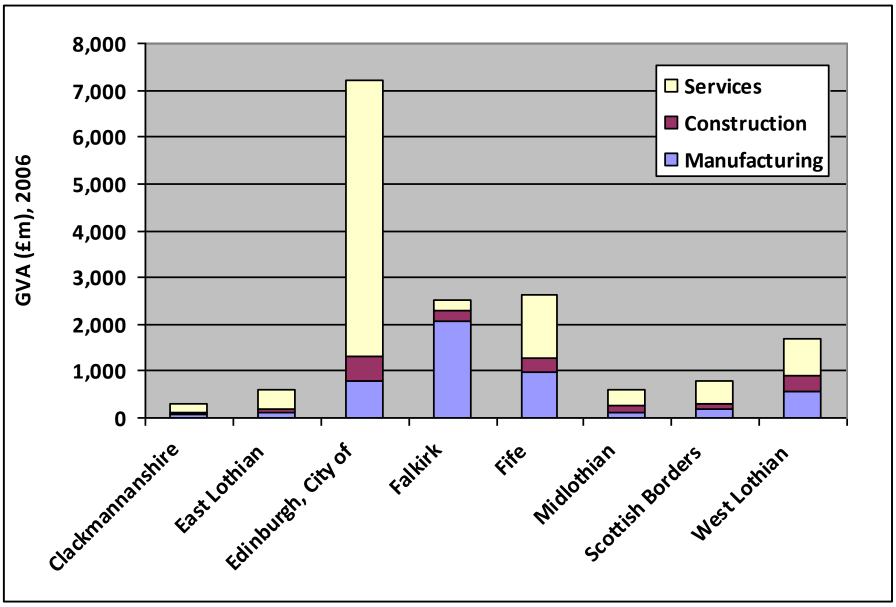
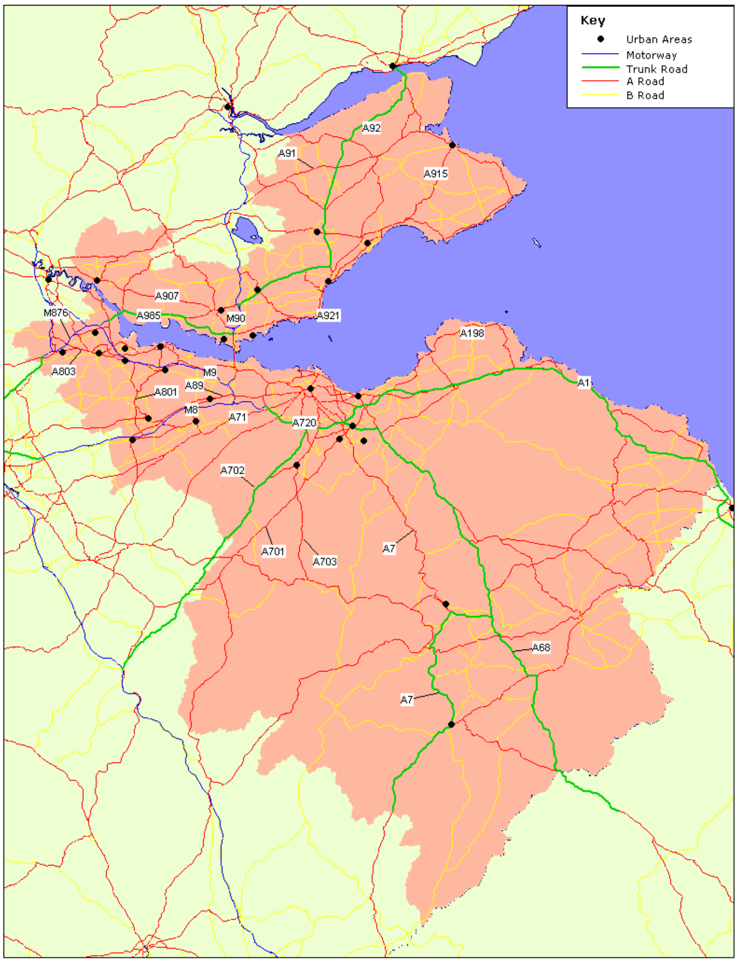


Figure 6 Regional GVA by sector (2006)

1.3.15 There is an extensive network of trunk and local roads in the area, controlled by Transport Scotland and the local authorities respectively. The trunk road network forms the key, highest volume routes providing links within SEStran and between SEStran and the rest of the country and consists of: the A1, A7 (south of Galashiels) A68 (A6091), and A702, providing links to the south; the A720 Edinburgh City Bypass; the M8, M9 and A80 / M80 providing links to the west and north; the M90 to Perth, the A9 and the Highlands; the A92 providing a link between Fife and Dundee / the north east; and the A876 / M876 and A985 Kincardine Bridge to Dunfermline.



1.3.16 To the south, the A1 is the highest standard route, and it is gradually being upgraded, but large sections of single carriageway remain. Un-interrupted dual carriageway standard is not currently reached until Morpeth, over 100 miles from Edinburgh, and this has to be regarded as a constraint on the area. There are no plans in either Scotland or England at present, to fully upgrade the A1 to dual carriageway standard. The other routes to the south, the A68, A702, and A7 are all single carriageway routes, with small sections of 'climbing lane' provision in places.

1.3.17 The M8, M9 and M90 motorways are all of dual two-lane standard. Traffic flows on the M8 are rather higher than the other motorways, with AADT values of greater than 60,000. The busiest and most congested section of road in the SEStran area is the A720 Edinburgh City Bypass, where flows approach 80,000 AADT. The Forth Road Bridge (FRB) is widely recognised to be carrying traffic loads well in excess for which it was designed (in fact around double), currently around 65,000 vehicles per day. This, coupled with the age of the FRB and the identification of corrosion in key structural elements, places the long term future capacity of the FRB in some doubt and a second crossing will shortly begin construction. The existing bridge will be retained as a public transport only link. The trunk road network is of course supplemented by an extensive network of local roads. These provide internal connectivity, in addition to further external links. Most of the inter-urban local road network in SEStran is single carriageway.

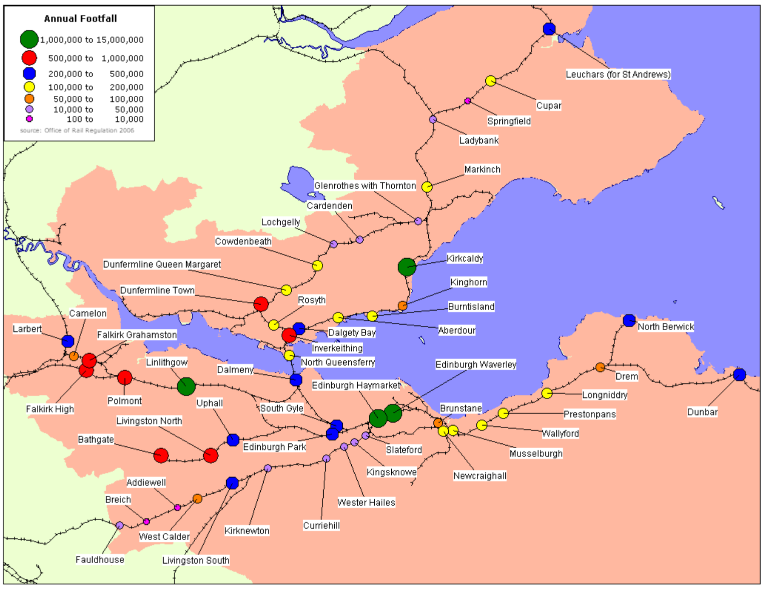
1.3.18 The road network provides key strategic links to the area's ports and airports, the most important of which are Grangemouth, Leith, Roysth and Methil docks, and Edinburgh Airport.

1.3.19 There are a significant number of **ports** operating in the SEStran area which provide key economic links to Europe and the wider world. Forth Ports (Leith and Grangemouth) moves the largest quantity of tonnes of any port in Scotland, mainly in the form of 'liquid bulk' exports at Grangemouth. Grangemouth also handles a substantial quantity of container-based traffic, and is also home to the only rail freight terminal in the SEStran area, the use of which is growing fast.

1.3.20 The Rosyth to Zeebrugge 'ferry' service has had a chequered history in recent years. At present, the service is run by DFDS as a freight-only operation with four departures a week from each port. Other smaller port operations in the SEStran area are found at Methil and Burntisland. There are also several minor fishing and leisure ports and harbours along the Fife and East Lothian coasts.

1.3.21 **Edinburgh Airport** is located west of Edinburgh and now caters for over 40 airlines providing an average of 310 flights per day (source: BAA). Current passenger numbers are around nine million per annum. Surface access to the airport by public transport is currently limited to the Express bus service to / from Edinburgh city centre, although this has recently been supplemented by a new service running directly from Fife. There are plans for a new rail / tram interchange station at Gogar, and a tram link between the city and the airport is currently under construction.

1.3.22 The **rail network** in SEStran is a combination of local and long distance services operated by Scotrail, and long distance services provided by GNER and Virgin Cross Country. Edinburgh Waverley station forms the main focus of these services. The main character-ristics of the rail network in the SEStran area are as follows:



- East Lothian: local service to North Berwick, with GNER and Virgin serving Dunbar;
- there are currently no train services for Midlothian and Scottish Borders (although the Borders Railway currently under construction will resolve this);
- West Lothian is served by four main train services – Edinburgh-Shotts-Glasgow, Edinburgh-Bathgate-Glasgow, Edinburgh-Falkirk-Glasgow, Edinburgh-Falkirk-Dunblane - the latter two also serving Falkirk; and

- Fife has an extensive local network via the Fife Circle, services to Dundee and the north-east, and other services to Perth and the north.

1.3.23 Outside of Edinburgh Waverley and Haymarket, it can be seen that the busiest stations are Linlithgow and Kirkcaldy, followed by Falkirk High, Falkirk Grahamston, Inverkeithing, Dunfermline, Bathgate and Livingston North.

1.3 Identification of the importance of food produce to the regional economy

1.3.24 Food and drink is an import industry[3] in the Scottish economy. With annual sales of £8.3bn, the manufacturing sector alone makes a significant contribution to the Scottish economy in terms of GVA and employment and shows a strong export performance. Taking the agriculture and fishing sectors into account, the whole food and drink supply chain employs 367,713 people across Scotland and accounts for 9.8% of total Scottish GVA. It is also the largest manufacturing sector in Scotland, representing 21.2% of total manufacturing workforce, 18.3% of sales and, with 24.5% of GVA, it is greater than the proportional representation in the UK which is around 15.5%. Table 2 below gives an overview of the key facts of Scotland's food and drink supply chain[4].

Table 2 Key factors of food and drink supply chain in Scotland, 2008

	Manufacturing	Wholesaling	Retailing	Non-residential catering	Agriculture	Fishing	Industry Total
GVA (£billion)	3.426	1.293	2.861	1.638	0.764	0.144	10.126
%* of Scottish GVA	3.3	1.2	2.8	1.6	0.74	0.14	9.8
GVA Annual Avg. Growth Rate	7.7%	3.1%	4.8%	3.4%	-2.0%	6.1%	4.5%
Turnover (£billion)	8.321	8.032	11.562	3.350	2.325	0.308	33.898
%* of Scottish Turnover	3.5	3.4	4.9	1.4	0.98	0.13	14.3
Turnover Annual Avg. Growth rate	3.7%	6.4%	3.8%	3.0%	2.8%	3.1%	4.2%
No. of Employees	44,200	21,300	112,300	122,300	39,345	3,100	367,713
%* of Scottish Employment	2.6	1.3	6.6	7.2	3.8	0.18	21.6
Exports (£billion)	3.839 (Total food products exports amounted to £0.782bn. Drink sector achieved £3.057bn, where manufacture of Distilled Portable Alcoholic Beverage contributed £2.98bn.						3.839

Source: Annual Business Survey

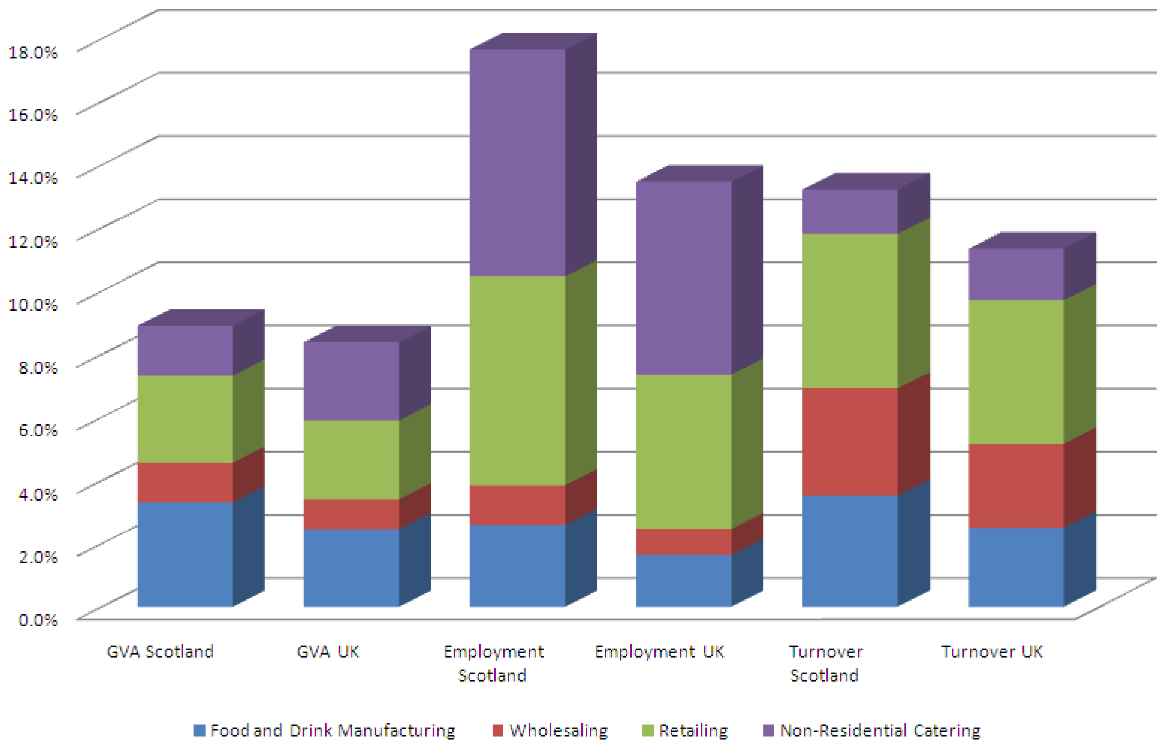
Note: Annual average growth rate calculated on the period between 2001 and 2008

[3] The food and drink industry consists of food and drink manufacturing, wholesaling, retailing and no-residential catering.

[4] Food and drink supply chain refers to to the food and drink industry plus agriculture, sea fishing and aquaculture.

1.3.25 The importance of the food and drink industry to the regional economy may firstly be revealed through a comparison of its economic contribution to gross value added (GVA), employment and total turnover between regional and national level. Figure 7 gives an overview of Scotland's food and drink industry compared to the UK In 2008; all three indicators show the industry makes a relatively high contribution in economic well being, either on the regional or national level. The gross value added of the food and drink sector in Scotland achieved £9.2bn, about 8.9% of the Scottish total and slightly above the UK's 8.4%. However, the proportion of employees in Scottish food and drink firms is well above the country as a whole; 17.7% compared to 13.5%. Similarly, sales generated by the industry contributed 13.2% and 11.3% to the total turnovers of Scotland and the UK respectively.

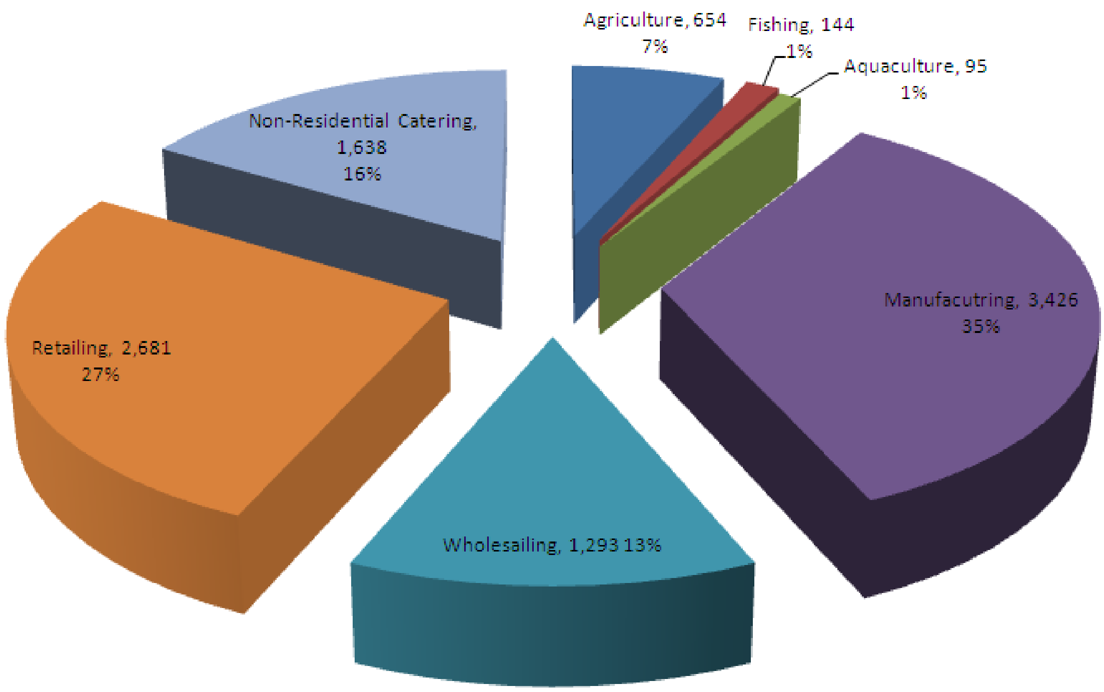
Figure 7: Economic Contribution of Food and Drink Industry to Regional Economy, 2008



Source: Annual Business Survey

1.3.26 The Gross Value Added in the food and drink supply chain in Scotland reached £9.93 billion in 2008, about 9.6% of the regional total. Figure 8 below shows that the manufacturing sector is the largest contributor, accounting for nearly 35% alone. GVA of the food and drink retailing, wholesaling and non-residential catering sectors was measured as £2.68, £1.29 and £1.64 billion respectively, less than the manufacturing sector but significantly larger than the contribution made by agriculture (£0.65bn), fishing (£0.14bn) and aquaculture (£0.1bn).

Figure 8: Gross Value Added (millions) in food and drink supply chain in Scotland, 2008



Source: Annual Business Survey

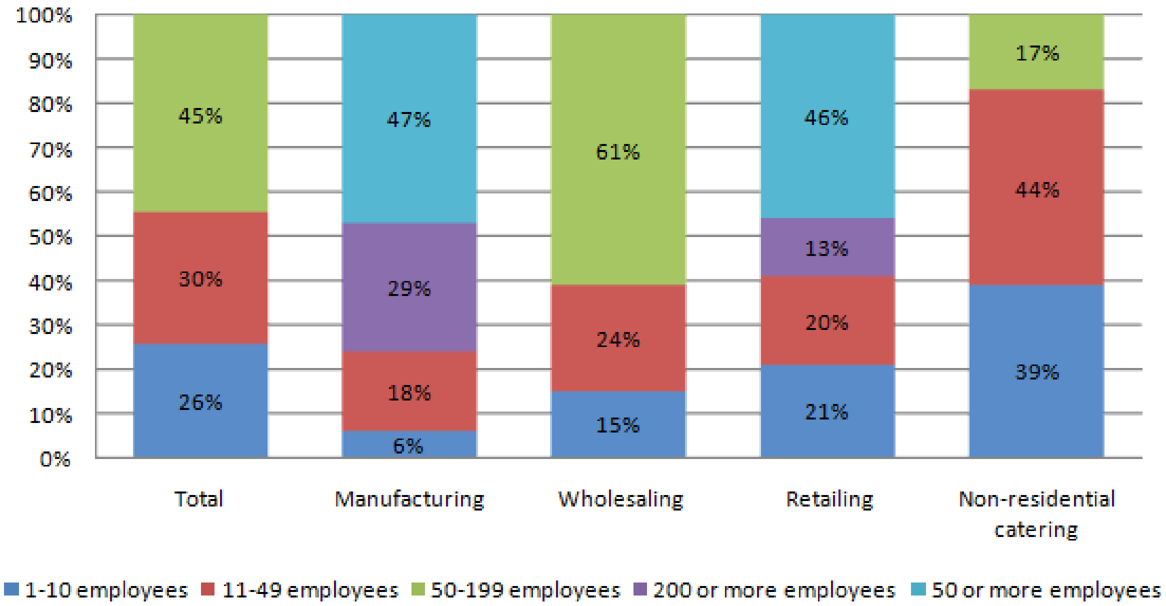
1.3.27 There were more than 22,800 businesses, employing around 300,100 people, working in the whole of the food and drink industry in Scotland in 2008. 45% of all employees in the food and drink industry were employed by businesses with 50 or more employees. Large business with 200 or more employees accounted for 47% and 46% in the manufacturing and retailing sectors respectively. Most of the workforce in the non-residential catering sector (83%) was employed by smaller firms with 49 or fewer employees (see Figure 9).

1.3.28 Employment within the food and drink industry has fallen by 10,000 since 2001 as the industry has focussed on increasing its productivity in an attempt to boost its competitiveness. Figure 10 sets out productivity improvement in food and drink manufacturing[5] in Scotland compared with the Scottish average, measured in GVA per employee between 2001 and 2008. As shown by the green bar, employees working in the food and drink manufacturing sector reduced from 53,100 in 2001 to 44,200 in 2008, around 20% of total employment. However, the average worker produced almost £78,000 of the GVA by 2008, more than double in current prices since 2001. Compared to the Scottish average[6], the annual growth rate of productivity in food and drink manufacturing in Scotland shows more significant and sustained growth over the same period.

---

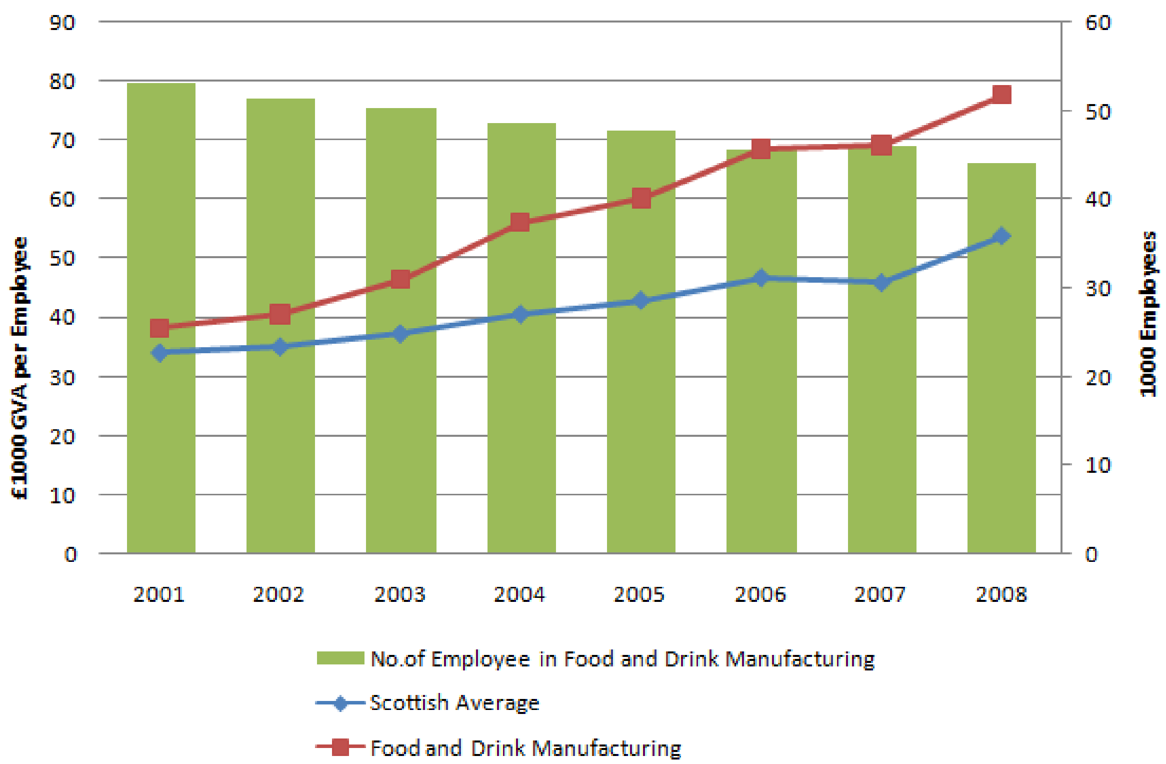
5 Due to data limitations, GVA per employee is only available in the food and drink manufacturing sector.
6 The calculation of Scottish average excludes parts of agriculture, financial sector and some of the public sector.

Figure 9: Number of employees in the food and drink industry in Scotland by sizeband, 2008



Source: Food and Drink in Scotland: Key Facts 2010

Figure 10: Productivity in food and drink in Scotland, 2001-2008



Source: Scottish Annual Business Statistics 2008
Note: This figure represents the figures in Manufacturing

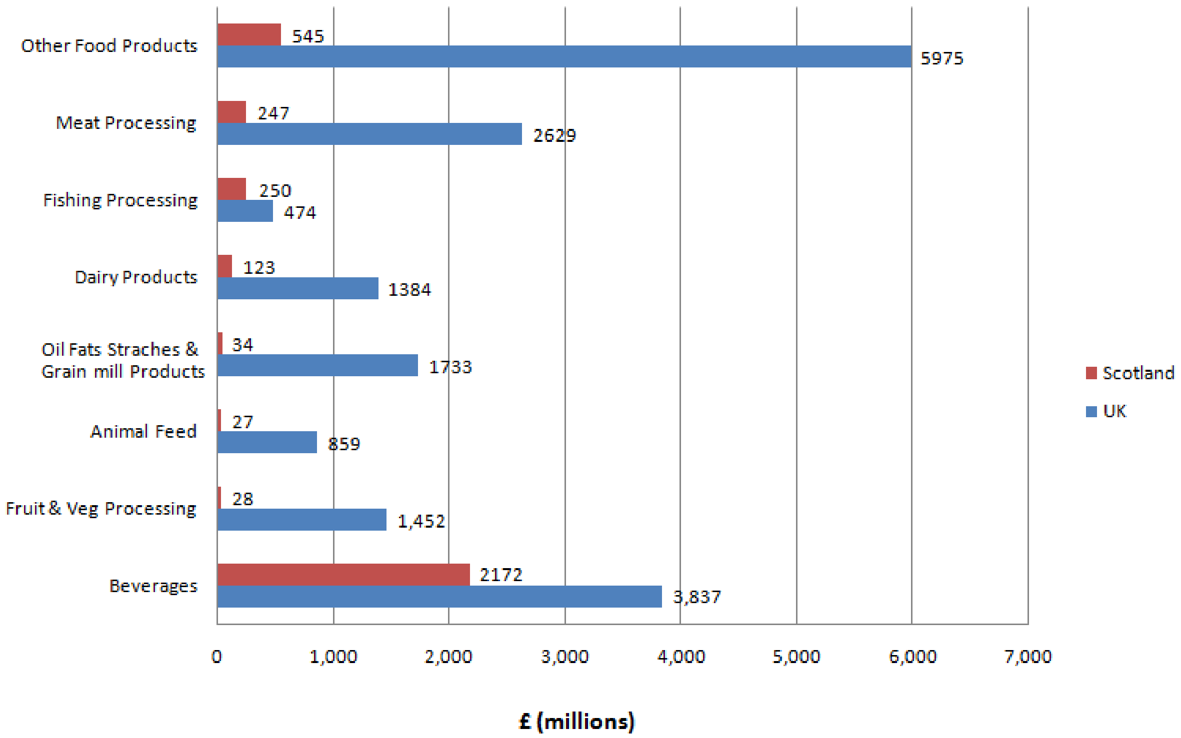
1.3.29 The gross value added (GVA) contributions of the main sub-sectors in food and drink manufacturing are used to identify the key product groups in the industry. Table 3 and Figure 11 compare the GVA contribution of the UK and Scotland food and drink manufacturing main sub-sectors in percentage share and the current price respectively. The former clearly indicates that beverages, fish and meat are the three major food and drink groups in Scotland. The beverages sector in particular accounts for 63.5% of total food and drink manufacturing in Scotland and 56.6% when taking the UK as a whole. It is worthy to note that, in 2008, the Scottish fishing processing sector contributed more than half of the UK's as well.

Table 3: Comparison of the GVA contribution of main sub-sectors in Scotland and UK, 2008

Food & Drink Manufacturing	UK	Scotland	Difference
Beverages	20.9%	63.4%	**-42.5%**
Fruit & Vegetable Processing	7.9%	0.8%	7.1%
Animal feed	4.7%	0.8%	3.9%
Oils, fats, starches & grain mill products	9.4%	1.0%	8.4%
Dairy Products	7.5%	3.6%	3.9%
Fish Processing	2.6%	7.2%	**-4.6%**
Meat Processing	14.3%	7.2%	7.1%

Source: Food and Drink in Scotland: Key Facts 2010 and Annual Business Survey

Figure 11: GVA in food and drink manufacturing in Scotland and UK by main sub-sectors, 2008



Source: Annual Business Survey

1.3.30 Scotland Food & Drink, the leadership organisation for the food and drink industry in Scotland, has identified five key areas in which it will develop its strategy for growth for the industry:

- Reputation – enhancing Scotland's reputation as a Land of Food and Drink;
- Collaboration – Share best practice across the entire supply chain;
- Innovation – linking commercial needs and academic research into market commercialisation;
- Skills – Improve and recognise the need for business-led skills at all levels
- Sustainability – balancing social, environmental and economic needs

1.3.31 The Innovation Working Group has been established by Scotland Food & Drink for linking commercial needs and academic research into market commercialisation. It involves the following organisations:

- Rowett Institute of Nutrition and Health at the University of Aberdeen (merged recently)
- Quality Meat Scotland (QMS)
- Harviestoun Brewery
- Scottish Development International (SDI)
- Scottish National Heritage
- Macphie of Glenbervie
- Scottish Agricultural College (SAC)
- Highlands and Islands Enterprise (HIE)
- NIZO Food Research
- University of Abertay
- Nairn's Oatcakes
- 3x1 Public Relations
- Scottish Enterprise
- Interface – The Knowledge Connection for Business
- Food Processing Faraday
- 2kT
- Kettle Produce Ltd

2.1.1 Agriculture

1.3.32 There are over 42,000 farm holdings throughout Scotland. Table 4 below details the statistics for Scotland and the Southeast regions (which contains the SEStran area).

Table 4 Key facts of Scottish agriculture industry

	South East (includes Tayside)	Scotland
Farm Holdings (2009)	7,843	42,267
Area (2009 Hectares)	610,055	1,947,438
Employment (Employees 2007)	10,506	25,938
GVA (2007)	-	£821m
GVA per employee (2007)	-	£31,652
Turnover (2007)	-	£2.12bn
Overseas Exports (2007)	-	£5m

1.3.33 It can be seen that the south east accounts for around 40% of Scottish agricultural employment but only 18% of farms. This suggests more labour intensive farms are present in this area.

1.3.34 The Scottish Government produced a document entitled 'Food and Drink Key Sector Report' in 2009. It presents a SWOT analysis of the Food and Drink Sector as a whole, from which several points specific to agriculture can be taken:

- Strengths – Excellent raw materials, high animal welfare standards, family owned businesses which fit with consumer desire for provenance, premium image (eg Scotch Beef).
- Weaknesses – Exports from food manufacturing low compared to drink manufacturing, increasing input costs such as energy and commodities, producers are unable to pass on increased costs through the supply chain.
- Opportunities - Harness the increasing demand on local foods and provenance, utilising carbon labels to highlight produce with lower carbon footprint than imports.
- Threats – Economic downturn is suppressing demand, access to credit becoming increasing difficult

1.3.35 It is reasonable to assume that these general themes would also apply to the SEStran area.

1.3.36 The geography of farming types within Scotland is presented in Figure.

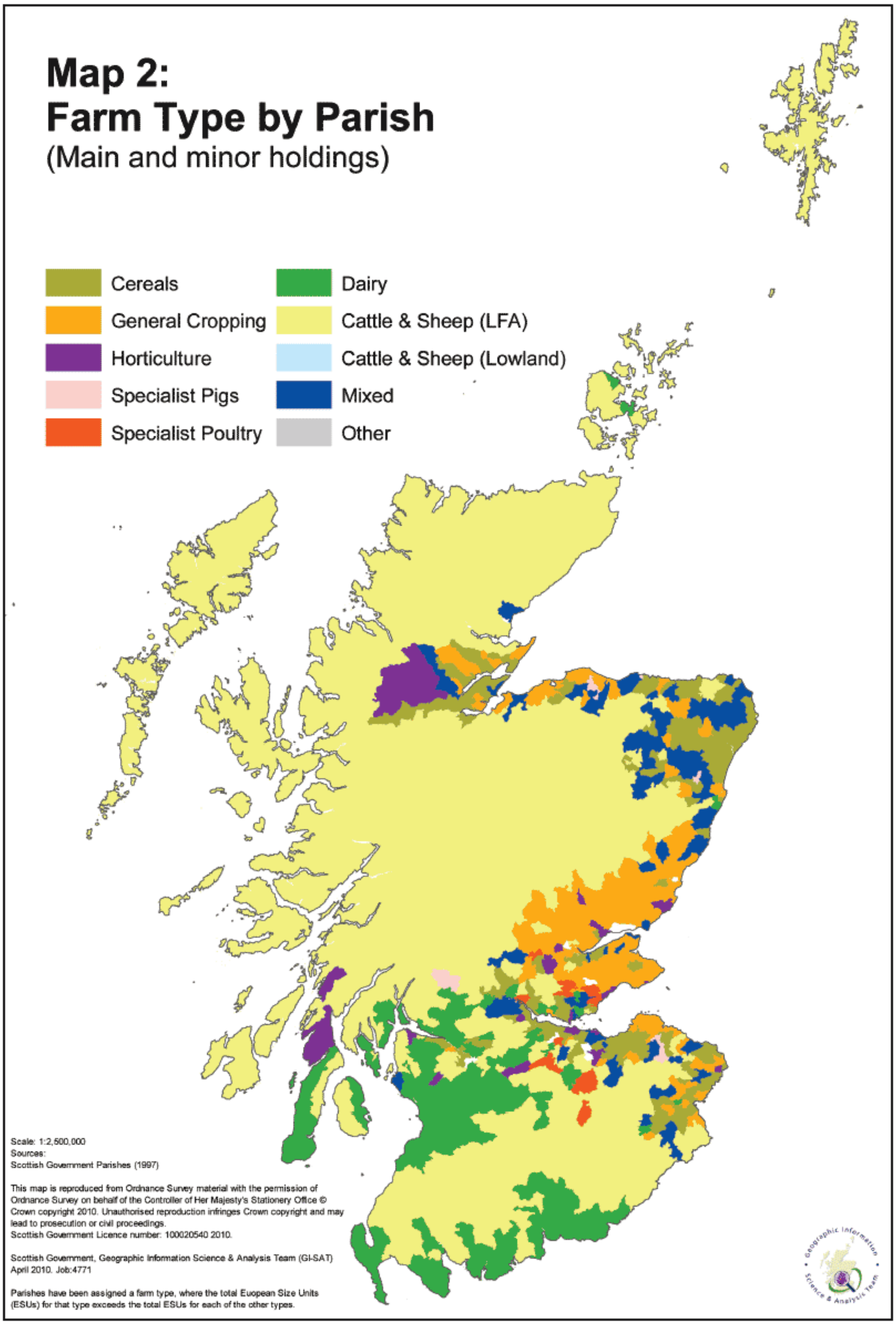


Figure 12 Farm type by Parish across Scotland

1.3.37 It can be seen that the SEStran area includes a wide and diverse range of agricultural activity. Eastern parts of Fife and East Lothian are a rich source of cereals and general crop production. The area also contains almost all Scotland's specialist poultry sector, whereas there is much less dairy farming, which is focussed in the west of Scotland, reflecting the local climatic conditions. The higher ground and river valleys of the Scottish Borders (away from coastal areas) are dominated by cattle and sheep farming.

1.3.38 In overview, NFU Scotland report that:

- The beef industry is the single largest sector in Scottish agriculture
- Total production of beef was worth £516m in 2008
- Scotland is home to 30% of the UK's beef herd
- In 2008, the value of Scottish finished lamb was £147m and Scotland accounts for 20% of the UK breeding flock
- Pig meat to the value of £60m was produced in 2007
- Chicken to the value of £75m was produced together with £30m worth of eggs in 2008
- Cereal farms (concentrated in the east of the country) produce in the main barley
- Fruit and vegetables – principally raspberries and strawberries as high value crops

1.3.39 In terms of the livestock sector, key elements of the supply chain include the location of livestock markets and abattoirs.

1.3.40 There is one weekly Livestock Market within the SEStran area, located in Newton St Boswells in The Scottish Borders. There are six weekly markets within close proximity of the SEStran area, as shown in Figure 13.

1.3.41 There are also several abattoirs located throughout SEStran and beyond, dealing with a variety of species. Figure 13 shows the location of these and the type of species slaughtered there.

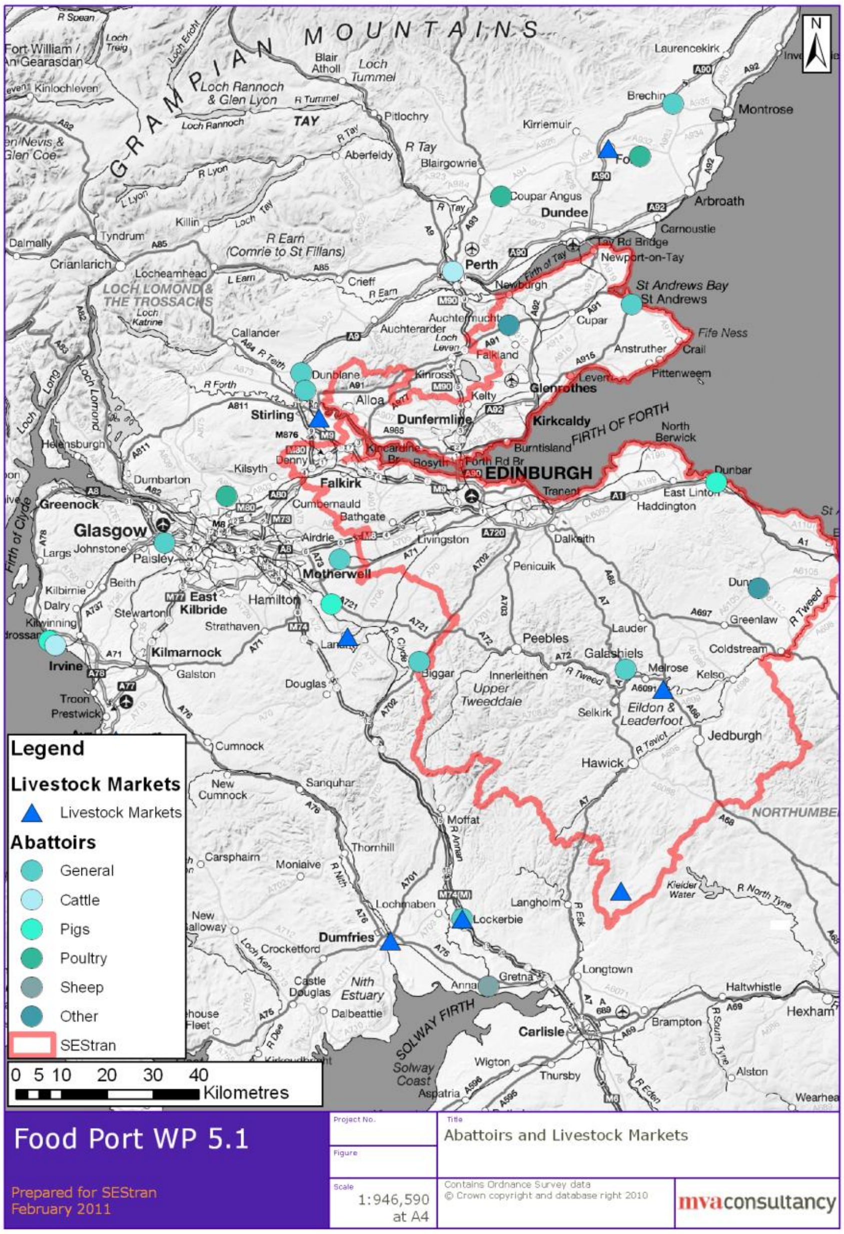


Figure 13: Location of Local Livestock Markets and Abattoirs

1.3.42 Statistics on the proportion of agricultural produce which is distributed to various end or intermediate users are not available.

2.1.2 Manufacture

2.1.2.1 There are more than 1200 companies working in the food and drink manufacturing sector in urban and rural economies across the country. When measured either by the total percentage share of GVA or employment, the distribution of these business units are mainly concentrated in the following 11 areas:

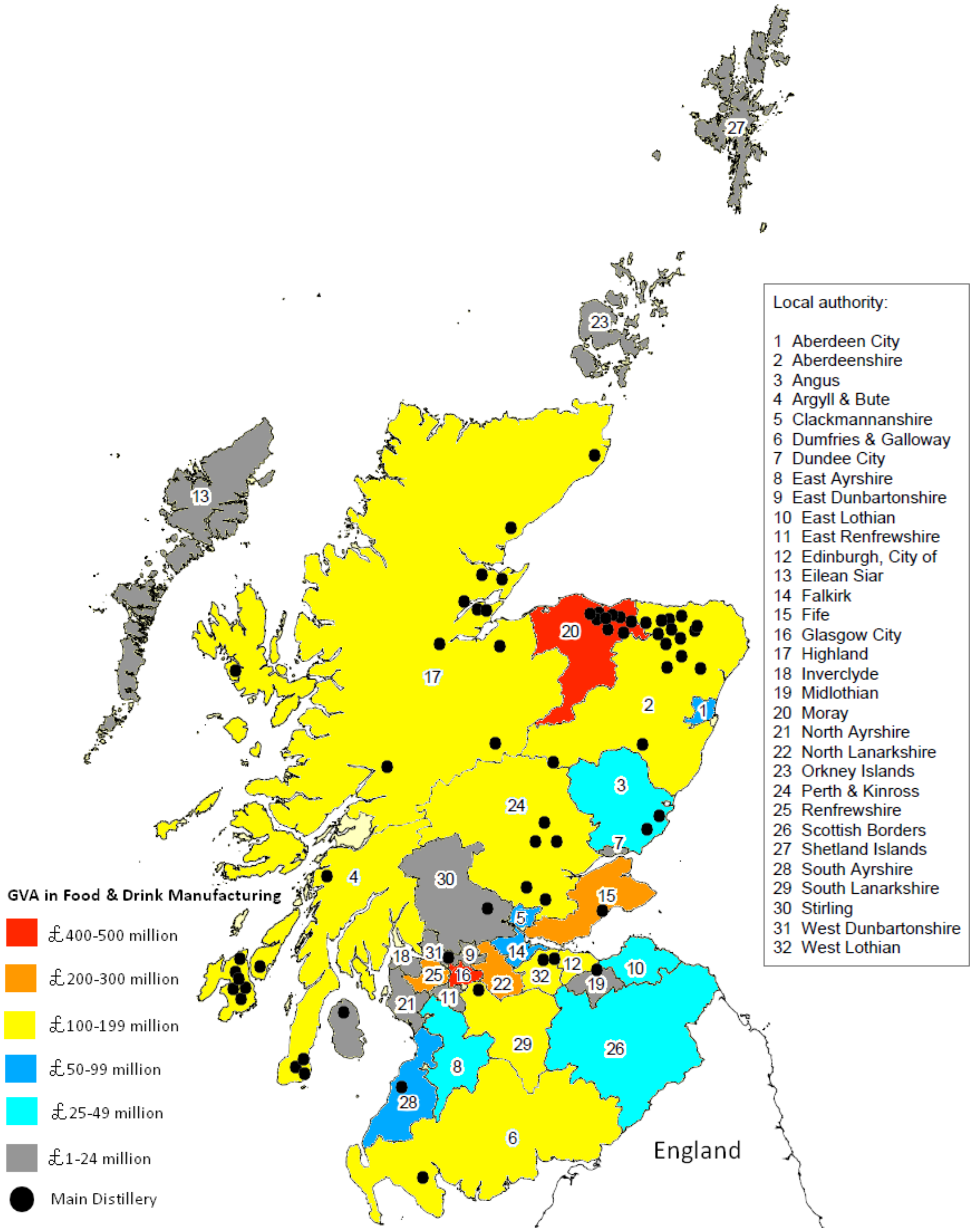
Table 5 Geographical distribution of food and drink manufacturer in Scotland, 2008

Local authorities	Share of Total GVA in food and drink manufacturing	Share of employment in food and drink manufacturing
Glasgow City	13.5%	9.8%
Moray	13.0%	8.0%
North Lanarkshire	8.1%	8.0%
Fife	7.8%	4.8%
Renfrewshire	6.7%	3.4%
Aberdeenshire	5.7%	8.0%
Edinburgh. City of	5.0%	4.3%
West Lothian	5.0%	6.2%
South Lanarkshire	4.3%	8.7%
Highland	4.0%	5.0%
Dumfries & Galloway	3.3%	5.9%
Total	**76.3%**	**72.9%**

Note1: Local authorities with yellow background colour refer to the partnership areas with SEStran.
Source: Scottish Annual Business Statistics 2008

2.1.2.2 The food and drink manufacturing cluster in the region is strong by the very nature of its diversity of produce and centrality to the population. Detailed economic data of total 32 local authorities in Scotland is shown in Figure 14 and Table 6.

Figure 14: GVA of food and drink manufacturing in Scotland by local authorities, 2008



Source: Scottish Annual Business Statistics 2008

Table 6 :Key facts of food and drink manufacturing in Scotland by local authorities, 2008

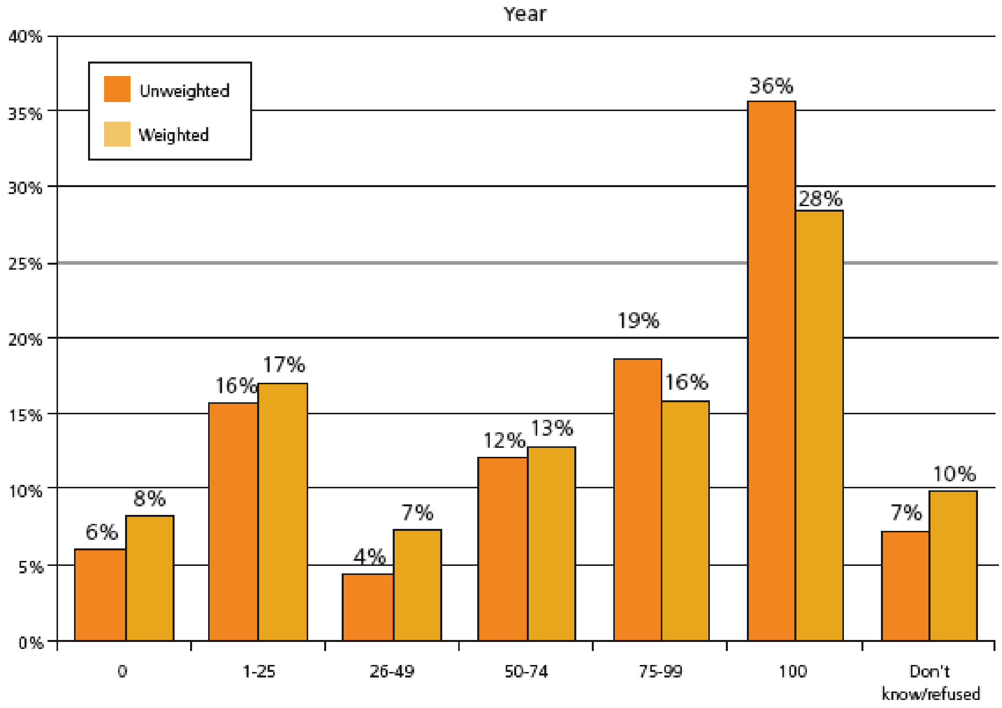
Local Authorities	No. of Units	No. of Employees (thousands)	GVA at the current price (£millions)	Purchase of goods and services (£millions)	GVA per employee (£)
Glasgow City	92	4.3	433.7	538.8	100637
Moray	83	3.5	417.5	320.9	120247
North Lanarkshire	46	3.5	259.5	373.4	74684
Fife	79	2.1	250.5	201.7	119408
Renfrewshire	23	1.5	216.8	133.6	145870
Aberdeenshire	105	3.5	182.6	484.3	52710
Edinburgh. City of	60	1.9	161.3	263.8	83698
West Lothian	21	2.7	161	306.2	58648
South Lanarkshire	54	3.8	137.9	296.3	36541
Highland	101	2.2	128.1	256	58450
Perth & Kinross	41	1.5	105.4	283.7	72188
Dumfries & Galloway	57	2.6	105.1	372.4	41196
Argyll & Bute	48	0.8	102.3	120.7	60758
Falkirk	23	1.5	88.3	-	60335
Clackmannanshire	16	0.5	82.7	67.8	171730
South Ayrshire	19	0.6	63.9	90	114218
Aberdeen City	57	1.1	55.8	138.8	49717
East Ayrshire	24	0.7	43.7	48.6	60250
Scottish Borders	34	0.9	38.5	78.2	40558
Angus	23	0.9	36.8	87.3	42815
East Lothian	23	0.4	30.8	48.7	70034
North Ayrshire	20	0.4	21.9	55.9	50393
Stirling	22	0.7	21.3	70.5	31290
Shetland Islands	20	0.5	19.6	40.8	41304
Orkney Islands	21	0.2	19	24.2	81253
Inverclyde	15	0.3	11	16.6	39120
Dundee City	14	0.2	10.2	20.3	42215
Midlothian	11	0.2	9.4	20.9	42720
East Dunbartonshire	9	0.3	3.4	28.3	12864
East Renfrewshire	5	0.1	3.2	4.8	36304
Eilean Siar	18	0.3	-4.3	54.3	-14057
West Dunbartonshire	8	-	-	-	-
Scotland Total	1192	43.7	3216.9	4847.8	62440
SEStran total	267	10.2	822.5	987.3	53927

Source: Scottish Annual Business Statistics 2008
Note1: Local authorities with yellow background colour refer to the partnership areas with SEStran.
Note2: data marked with * has been replaced with the available data of 2007.

2.1.2.3 Food and drink manufacturing is an important trade partner of related industry, the agriculture sector in particular. Total purchase of goods and services of Scottish food and drink processors was £4.9bn in 2008. Figure 15 below shows the percentage share of inputs that Scottish processors source from Scotland by band (0%, 1-25%, 26-49%, etc.).

The majority of Scottish food and drink processors source at least 7% produce from Scotland, and impressively, nearly one third of processors sourced entirely from within Scotland.

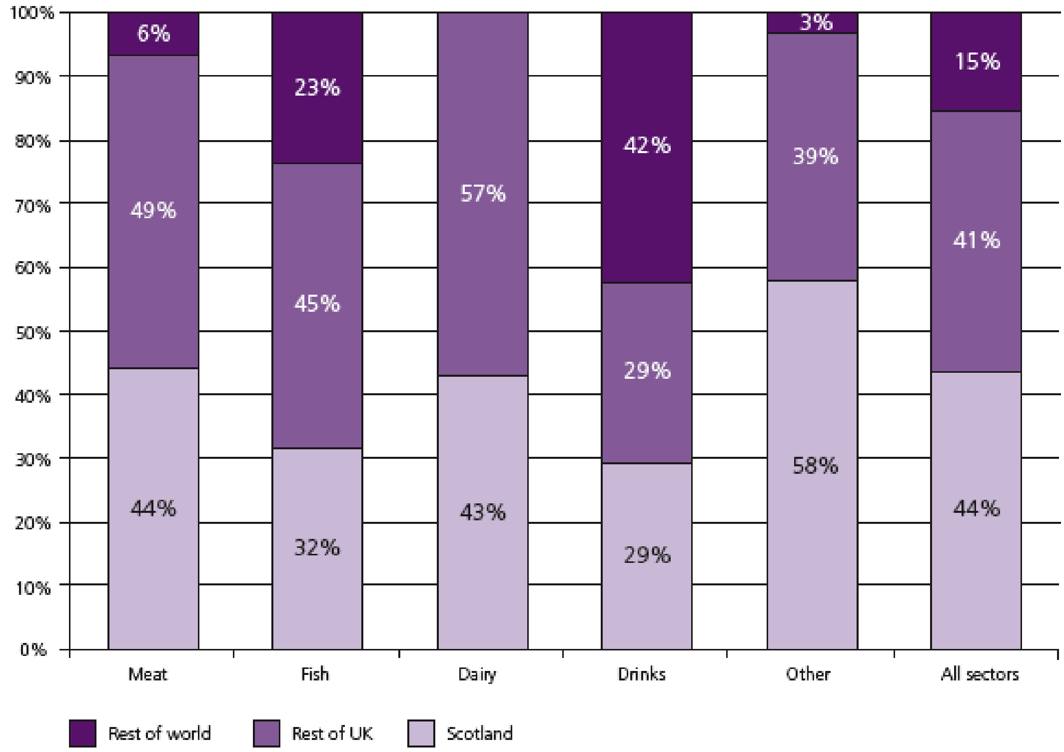
Figure 15: Scottish processors sourcing of inputs from within Scotland, 2008



Source: Food and Drink in Scotland: Key Facts 2009

2.1.2.4 The UK domestic market dominates the consumptions of all Scottish food and drink processor's output. Figure 16 provides an overview of the destination of sales for each of the key sub-sectors of the food and drink processing industry. 15% of all Scottish processors' output is exported to the overseas market; the rest is sold in the UK domestic market, where Scotland accounts for 44% and the rest of UK consumes 41%. The dairy sector even achieved 100% consumption within the UK market. However, the drinks processing sector (reflecting mostly whisky exports) focuses largely on non- UK markets, with 42% of its produce sold abroad.

Figure 16: Destination of the majority of Scottish processors' sales by sector, 2008



Source: Scottish Primary Food and Dink Produce Processed in Scotland

2.1.2.5 Whisky, fish and meat processing are the three key sectors of food and drink manufacturing:

Whisky:

- The Scottish whisky industry is one of the country's biggest earners, contributing vastly to Scotland's multi-billion pound food and drink exports;
- In 2008, Scottish whisky contributed £2.7bn in Gross Value Added (GVA) to Scotland's economy. 1.08 billion bottles of Scottish whisky were exported at a value of around £3.1bn; in 2009 export levels rose slightly to 1.1bn bottles at a value of £3.13bn.
- The industry directly employs 10,284 workers, with a total gross income of £464 million. Employment within the related bottling, packaging and distribution sectors is much higher than it is within the whisky distilling sector itself;
- The distilling sector has strong links with rural areas, such as Islay and Speyside where primary agriculture activities or distilling take place.
- Operation further down the supply chain such as bottling and packaging tend to be located in urban areas, such as Glasgow, Broxburn and Livingston. Employment statistics for the Scottish whisky industry reveal that Strathclyde accounts for 56.1%, 16.9% is located in Central & Fife, 13.6% in Grampian, 11.0% in Lothian, while 4.9% with Highland and Rest of Scotland only take around 2% (The Economic Impact of Scotland Whisky Production in Scotland, SWA);
- Around 15% of Scottish whisky is bottled overseas;

- Around £30 million was spent on transport and distribution, about 3% of Scottish operating costs in the Scottish whisky supply chain.
- The market of Scottish whisky production is dominated by a few players (see Table 7).

Table 7 **Top players in Scottish whisky produce market, 2008**

Malt ownership by company		Grain ownership by company	
Owner	**% of distillation capacity**	**Owner**	**% of distillation capacity**
Diageo	27%	Diageo	44%
Pernod Ricard	18%	Wm Grant & Son	19%
Wm Grant & Son	9%	Pernod Ricard	12%
Edrington	8%	Whyte & Mackay	12%
Bacardi	6%	Edrington	10%
Others	32%	Loch Lomond	4%

Source: The Scottish Whisky Industry 2009

Fish processing

- Fish processing contributed nearly £250million in terms of Gross Value Added, more than half of the UK's total.
- There are about 230 processors in Scotland, employing approximately 7000 people. Most of them are small, mainly primary processors;
- Aberdeenshire is the predominant location for workplaces in the fish processing industry. 51% of all of the processing units are concentrated in Grampian (Aberdeenshire) and provide 62% of the employment. The highland and Islands is the next most important in terms of employment in the processing sector and provides 16% of the processing units as well as 11% of the employment (http://www.seafoodscotland.org);
- A significant share of Scottish fresh fish landed is trucked south to Humberside for value-added processing;
- Raw material sourcing shows a trend of increased importing of supplies of frozen fish due to lower price competitiveness of the local fish supply.

Meat processing

- Gross Value Added in meat processing achieved £247 million, about 7.2% of total GVA in the Scottish food and drink manufacturing sector;
- Good reputation of Scottish finished livestock and meat products under the label of "Scotch Beef", "Scotch Lamb" and "Special Selected Pork";
- Total production in 2008 was 175,300 tonnes of beef worth £466.3 million, 58,700 tonnes of lamb worth £138.6 million and 50,400 tonnes of pork worth £60.7 million (Scottish Agriculture output, input and income statistics, 2009);
- Beef (94%), lamb (87%) and pork (97%) production in Scotland are assured through the supply chain from feed to slaughter;

- Half of Scottish-slaughtered lamb and around 60% of beef are further processed outside Scotland.

Strengths	Opportunities
• Well recognised reputation of Scottish food and drink products; • Strong export performance on drink sector; • Relatively high productivity; • Sustainable policy support from local government	• Growth potential in international and UK market, particularly emerging economies; • The dominant global trend of health will be helpful to enlarge the market share of Scottish organic food;
Weaknesses	**Threats**
• Lack of secondary processing on food products, particularly fish and meat products; • Relatively low connectivity of maritime services	• Competition from other spirit producers outside Scotland; • Impacts of economic recession on food and drink consumption; High inflation rate seriously affects the cost of labour, raw material and other aspects

2.1.3 Wholesale

2.1.2.6 The wholesale sector provides a link between manufacturers / producers and retailers. Some wholesalers now allow public access, sometimes through membership schemes.

2.1.2.7 There a significant number of wholesalers located within SEStran, many of which are located in the Edinburgh area. Figure 17 below shows the locations of the key national and regional wholesalers in the region.

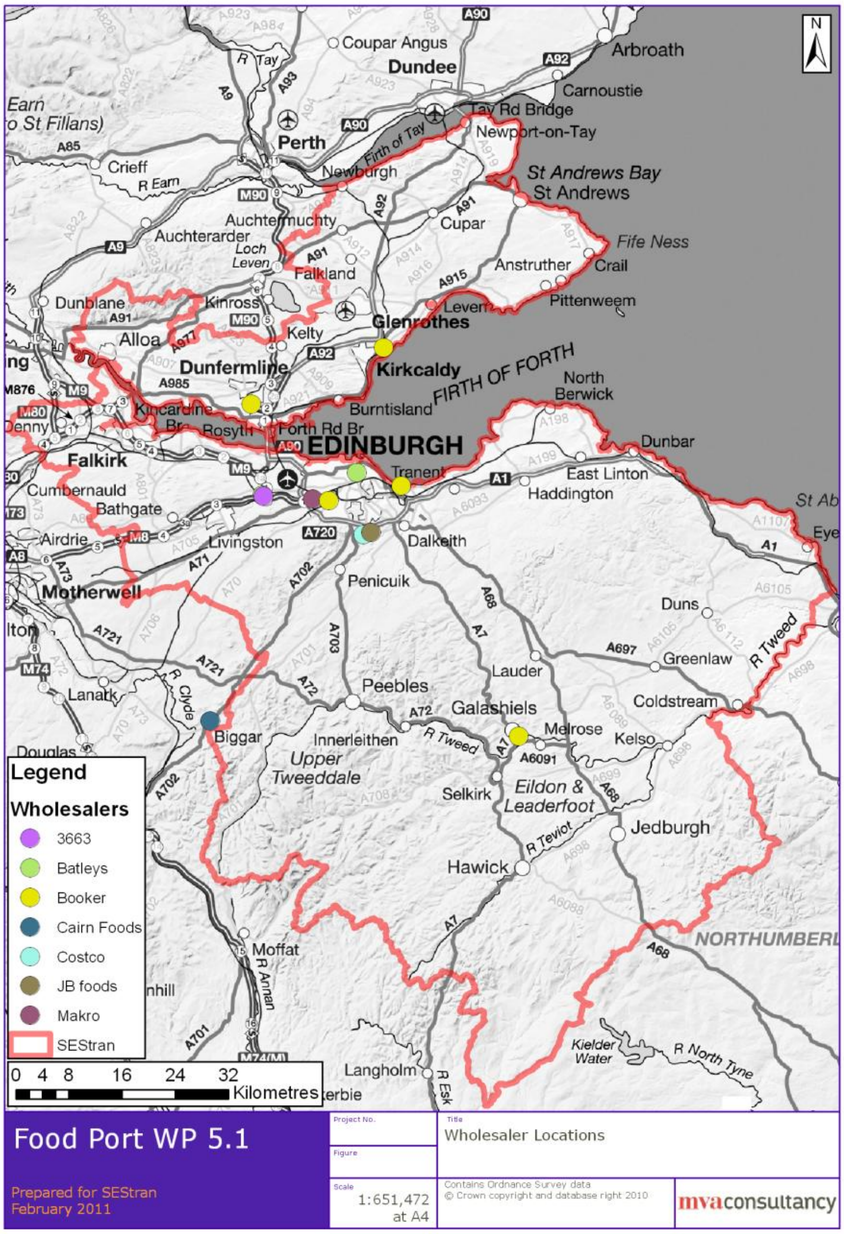


Figure 17 Location of Regional Wholesalers

2.1.2.8 Statistics relating to SEStran level wholesale-related volumes, GVA and employment are not available.

2.1.4 Retail

2.1.2.9 The retail picture in the SEStran area has followed a similar pattern to that seen across the UK in the last 20-30 years.

2.1.2.10 Edinburgh city centre has arguably lost its pre-eminent position as the main retail centre for the area. A proliferation of edge of town and out of town retail centres and parks have emerged which provide free parking and easy access to ‘mainstream’ shopping. Edinburgh city centre now focuses rather more on higher value retail allied to a thriving bar / restaurant culture. Regional retail parks continue to develop across the area, especially at Livingston. The main supermarket chains are also continuing to expand with new shops opening all across the area.

2.1.2.11 According to the Scottish Retail Consortium, there are 14,390 VAT registered enterprises in Scotland with Glasgow making up 12.8% of these and Edinburgh 9.7%. Scottish Retail Turnover was £24 billion in 2009, accounting for 11% of total Scottish Turnover. Average gross weekly earnings in retail in Scotland are £218, slightly less than the £250 average in the UK as a whole.

2.1.2.12 In 2007 retail employment in Scotland totalled 240,000, around 10% of all jobs. In the Edinburgh and Lothians area (City of Edinburgh, East Lothian, Midlothian and West Lothian council areas), the figure was around 41,000, which was 9.4% of total employment. ‘Transport, travel and storage’ accounted for a further 3.4% of total employment in the Lothians.[7] As such, it can be seen that the retail sector is highly significant in terms of employment at the Scotland and SEStran level.

2.1.2.13 Data compiled by CACI provides a classification of towns across the area by their retail offering. Categories A to C can be regarded as the major retail centres.

Table 8: Classification of towns in retail offering

Classification (CACI)	Town
A – Primary Centre	Edinburgh
B – Major Centres	Dunfermline, Livingston, Bathgate
C – Regional Towns	Galashiels, Falkirk, Glenrothes, Kirkcaldy
D – Urban Centres	Many areas of Edinburgh
E – Local Centres	St Andrews, Musselburgh, Edinburgh – Corstorphine, Linlithgow, Edinburgh - Newhaven Road, Cowdenbeath, Dalkeith, Edinburgh – Newcraighall, Edinburgh - Wester Hailes Centre, Denny, Stenhousemuir, Bo'ness, Alva, Tillicoultry, Inverkeithing, Kirkcaldy - Dunearn Drive, Burntisland, Lochgelly, Dunfermline - Halbeath Road, Dalgety Bay, Bonnyrigg, Penicuik, Broxburn, Edinburgh – Loanhead, Whitburn, Livingstone - Carmondean Centre, Edinburgh - Seafield Road, West Calder, Blackburn, Armadale, Edinburgh – Balerno, South Queensferry, Edinburgh - London Road, Tayport
F – Rural Centres	Hawick, Kelso, Peebles, Grangemouth, Cupar, Leven, Haddington, Duns, Jedburgh, Melrose, Selkirk, Coldstream, Innerleithen,

[7] http://www.edinburgh-inspiringcapital.com/invest/economic_data/labour_market/industrial_structure.aspx

	Dollar, Anstruther, Methil, Tranent. North Berwick, Dunbar

2.1.2.14 The retail hierarchy as defined by CACI in the SEStran area is shown in the figure below (classes A to F as defined above). In particular this shows the distribution of local and rural centres (in green and blue respectively), of which there is a good coverage.

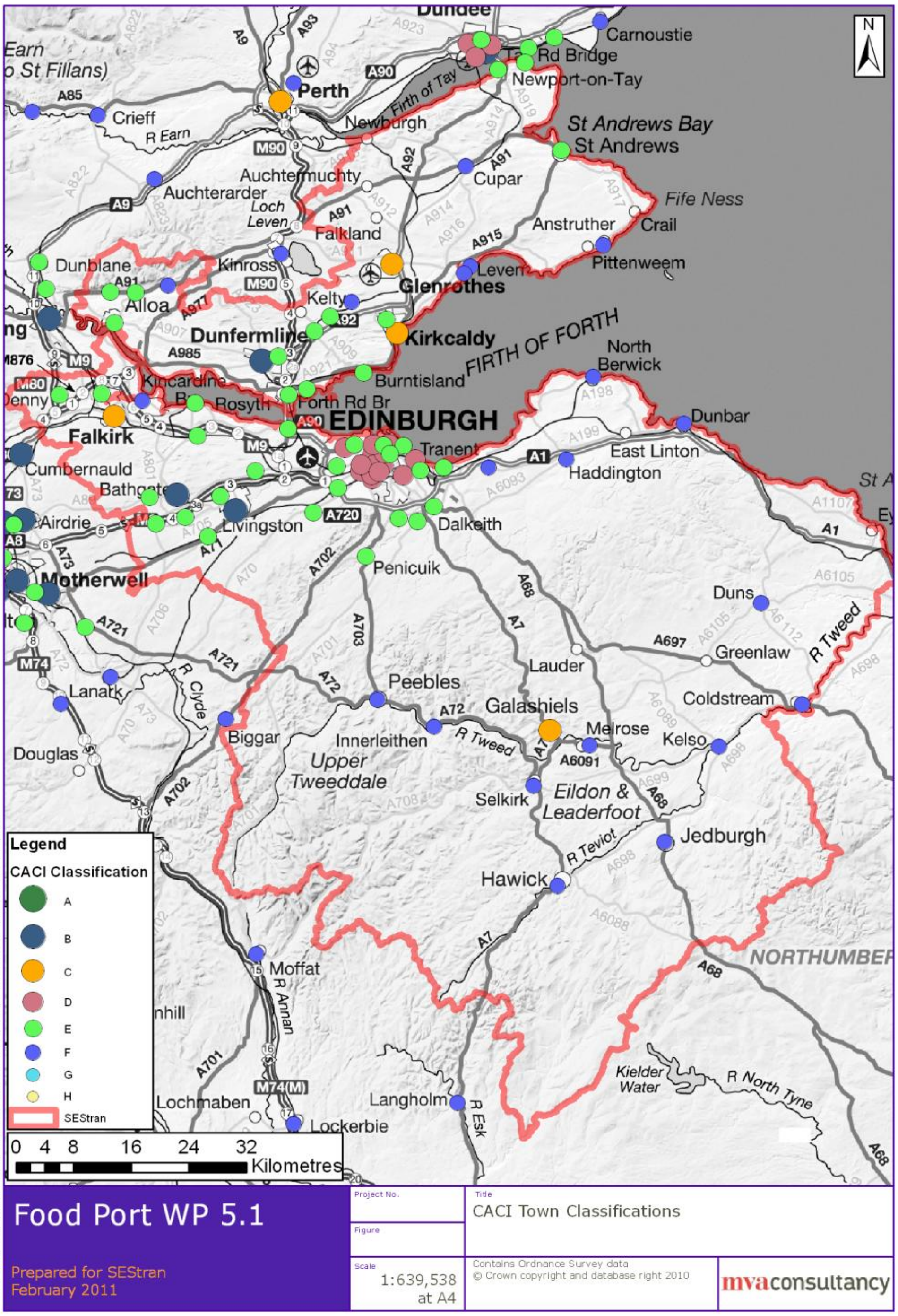


Figure 18 SEStran Regional Retail Hierarchy

2.1.2.15 The figure below also shows the location of regional retail parks – classed as 'major' or normal.

2.1.2.16 This pattern shows that many of the rural areas of SEStran are some distance from a retail park.

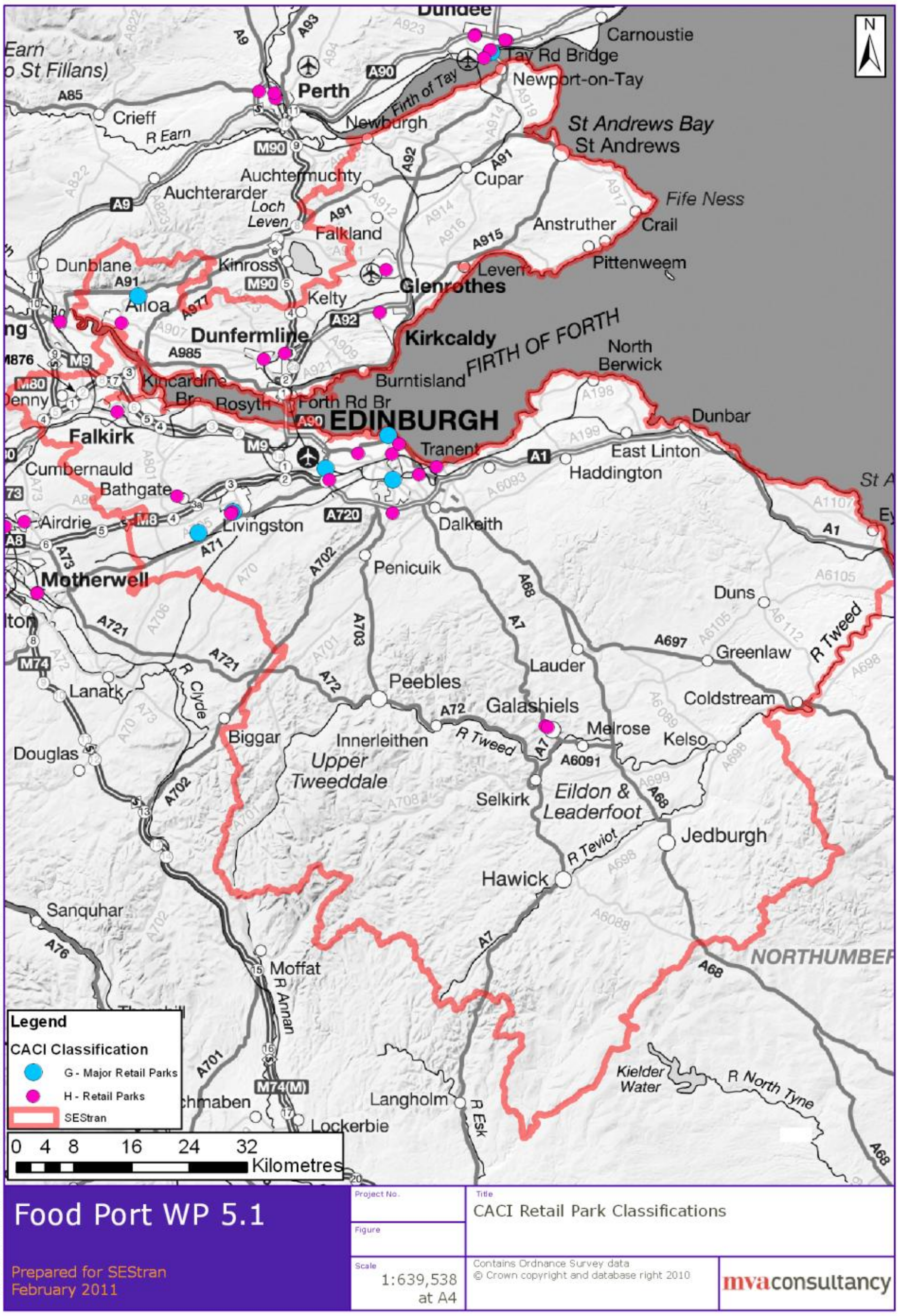


Figure 19 Location of Retail Parks in the SEStran area

2.1.2.17 In a separate report, CACI ranked Edinburgh as the 15th best retail centre in the UK, with shopping expenditure estimated at more than £1 billion per annum, although this figure is well behind Glasgow. Parking issues and disruption during the tram works are factors which are often cited as negative factors for the vitality of the city centre.

2.1.2.18 Figures 20 and 21 below show the locations of the principal foodstore retail outlets in the area. The location of regional distribution centre locations were available for Tesco, ASDA, Sainsbury's and Co-operative supermarket chains, and these are included in the graphic. Waitrose does not have any centres within Scotland, and data was not available for Morrisons.

2.1.2.19 These graphic show the distribution of stores by the different retailers. As would be expected, there is a close correlation with the distribution of population.

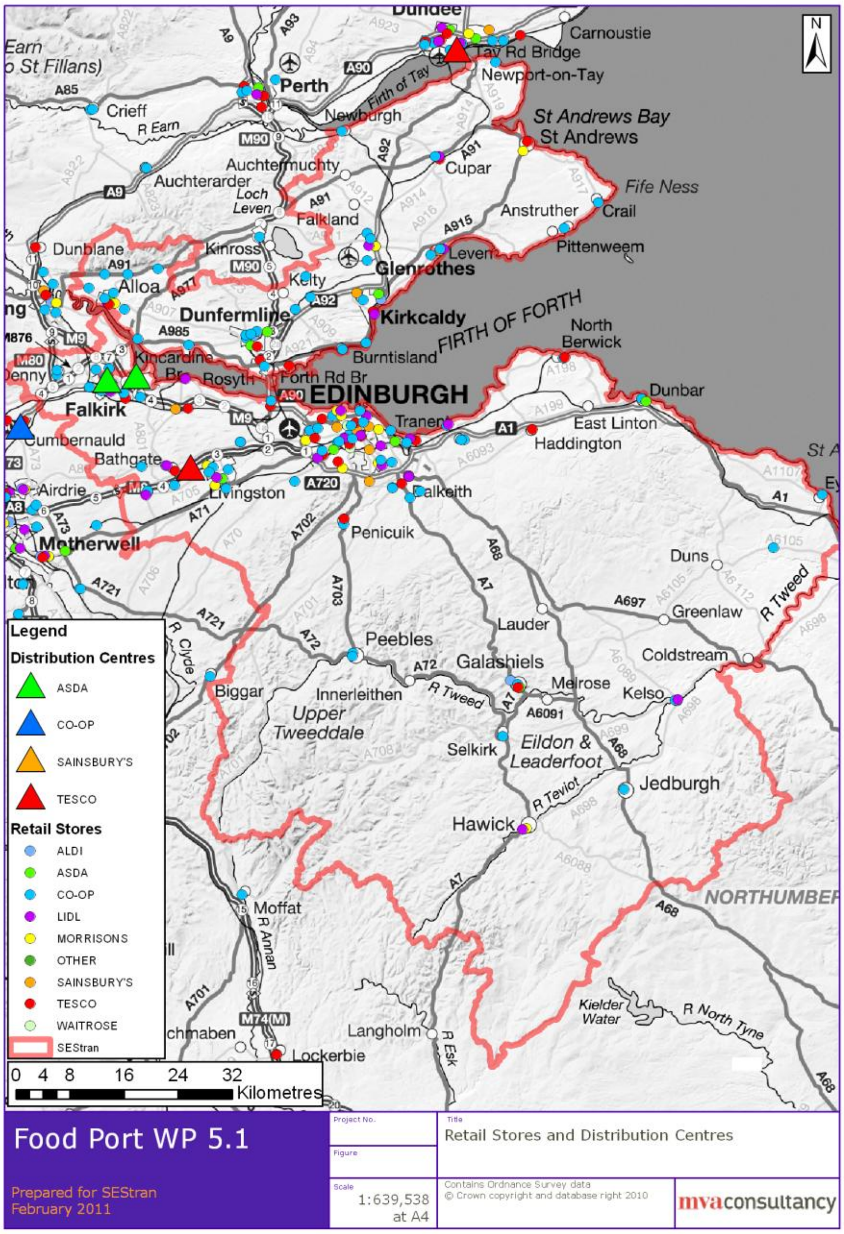


Figure 20 Food store retail locations in SEStran area (full)

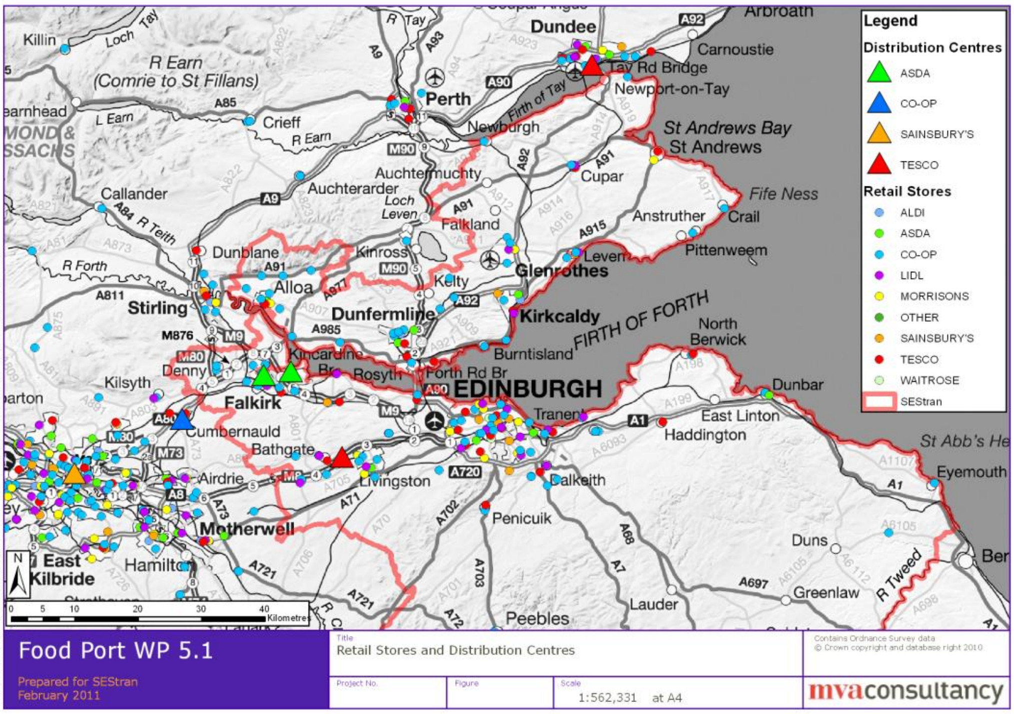


Figure 21 Food store retail locations in SEStran area (zoom)

2.1.5 Food and Beverage Services

2.1.2.20 Covered in other sections??

2.1.6 Transport and storage

"Lack of suitable distribution or access to appropriate distribution channels are both often cited as a major barrier to expanding micro, small and mediums sized businesses"

Anna Davies, communications and marketing manager, Scotland Food & Drink

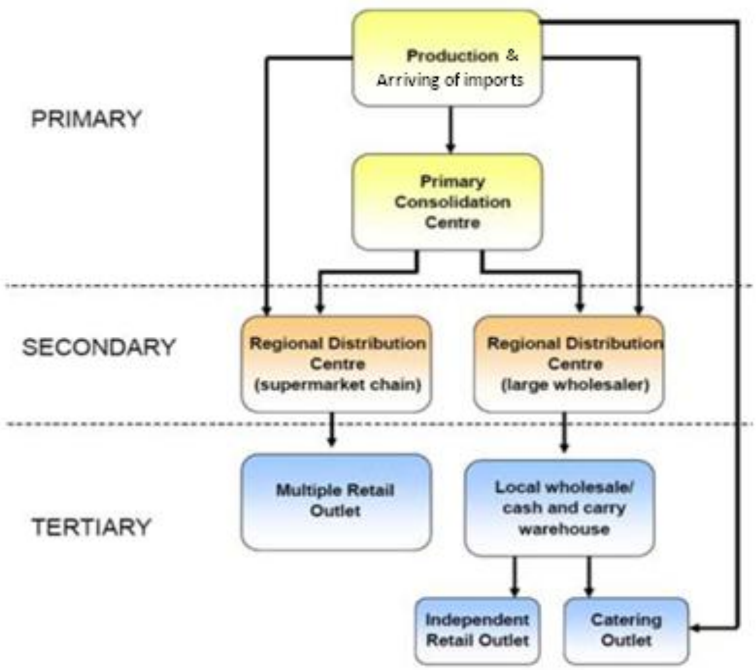
"Many companies in Scotland are based in remote locations so if they are able to improve their distribution networks, they will be able to distribute their products further afield via a wider network of buyers,"

Flora Mclean, Director, SFDF

http://www.foodanddrinkeurope.com/Financial/Scottish-government-investment-to-improve-domestic-supply-chain

2.1.3.1 From raw material to products in retail shops, the food and drink industry has been highly integrated as a supply chain which involves the collaboration between enterprises from different perspectives. The transport and storage aspects are key facilitators throughout the whole process. This section aims to provide an overview about the transport structure of food and drink products for entering and leaving Scotland (import and export will be discussed separately in the following section). The structure of food distribution channels is illustrated in Figure 22.

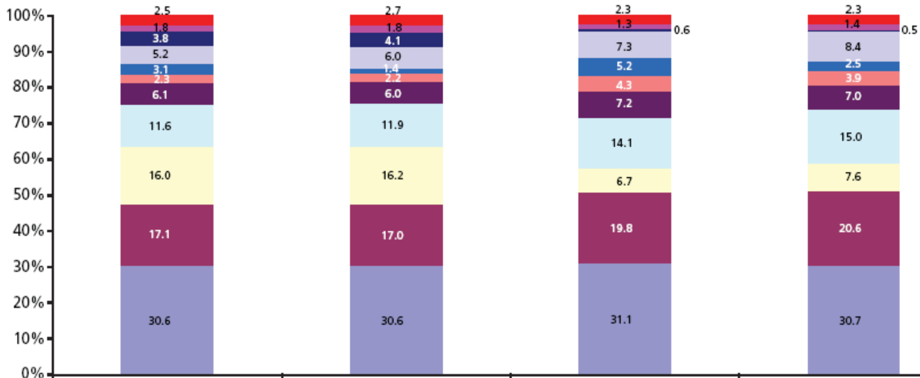
Figure 22: The structure of food distribution channels



Source: Reducing the External Cost of the Domestic Transportation of Food by the Food Industry

2.1.3.2 Manufacturers no longer have exclusive control on food transport and storage over the last 40 years. Design of the distribution system has been dominated by the major supermarkets in the UK. Figure 23 below shows, in 2010, nearly 83% of the retail market of grocery trade is controlled by five supermarket retailers, including Tesco (30.7%), Asda (20.6), Morrison (15.0%), Sainsbury (7.6%) and Co-operative (8.4%).

Figure 23: Retail value shares of trade for total grocery in Great Britain and Scotland, 2009



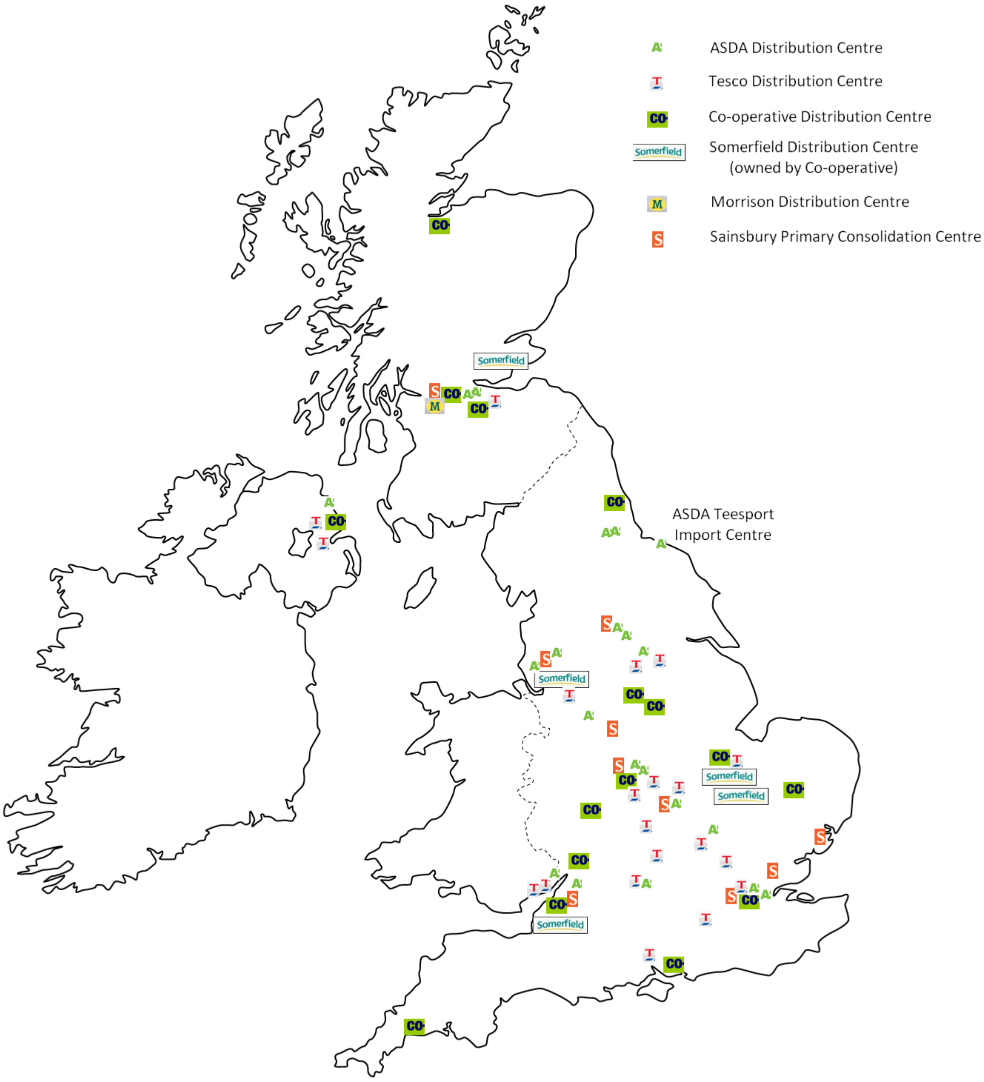
	GB October 2009	GB October 2010	Scotland October 2009	Scotland October 2010
Tesco	28,885	30,124	2,910	2,951
Asda	16,109	16,677	1,854	1,979
Sainsbury's	15,098	15,923	629	733
Morrisons	10,931	11,730	1,324	1,445
Discounters	5,715	5,897	677	677
Independents	2,181	2,211	404	379
Somerfield	2,904	1,422	485	239
Co-Op	4,946	5,901	687	809
Waitrose	3,604	4,053	56	53
Iceland	1,686	1,814	121	136
All Others	2,343	2,625	215	225

Source: Food and Drink in Scotland: Key Facts 2010

2.1.3.3 Figure 24 illustrates the National Distribution Centres (NDC) and Regional Distribution Centres (RDC) of the five major grocery retailers mentioned above. In terms of Scotland, the majority of these centres are concentrated in central Scotland, particularly close to Coatbridge and Grangemouth:

- ASDA (2): Grangemouth and Falkirk
- Tesco (1): Livingston
- Co-op (3): Cumbernauld, Harthill and Dalcross
- Sainsbury's (2): Glasgow and Langlands Park
- Morrison's (1): Eurocentral Mossend

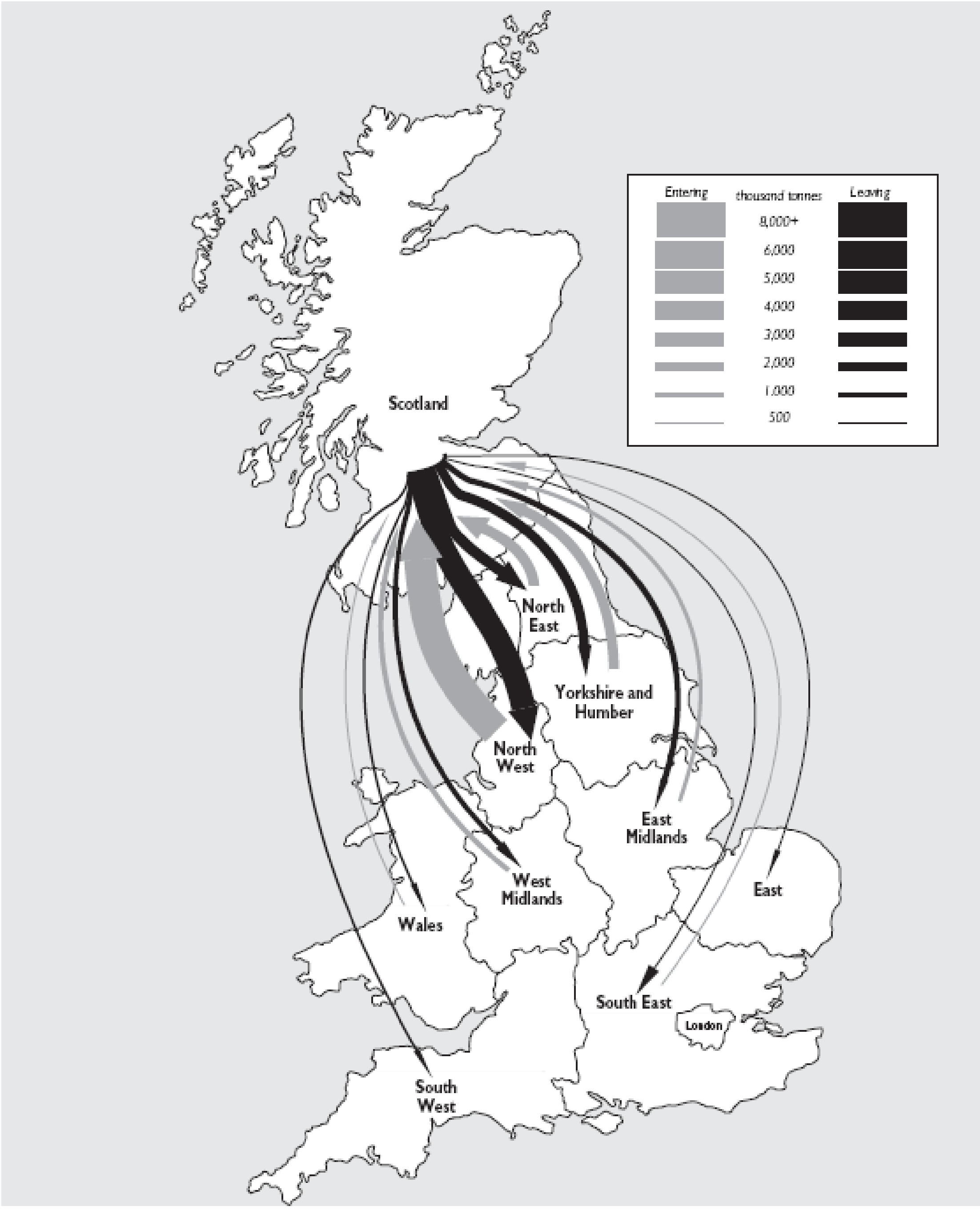
Figure 24: Distribution of the NDC and RDC of major supermarkets



Source: Draw by author according to retailers' individual websites
Note: Morrison's distribution centres in England are not shown due to data limitation.

2.1.3.4 The development of the supermarket's NDC, RDC and PCC networks represents the dominance of road travel. For example, more than 80% of deep-sea containers arrived in UK ports were distributed by road (Container freight end-end journey, DfT 2008). The geographical nature size of Scotland and relative distance to its major markets, in terms of freight movement, also offers great competitiveness to road transportation rather than other modes. Figure 25 shows the major origins and destinations of road lifted goods (not specifically food and drink products) entering and leaving Scotland.

Figure 25: Goods lifted by road; entering and leaving Scotland to or from rest of UK, 2009



Source: Scottish Transport Statistics No.29

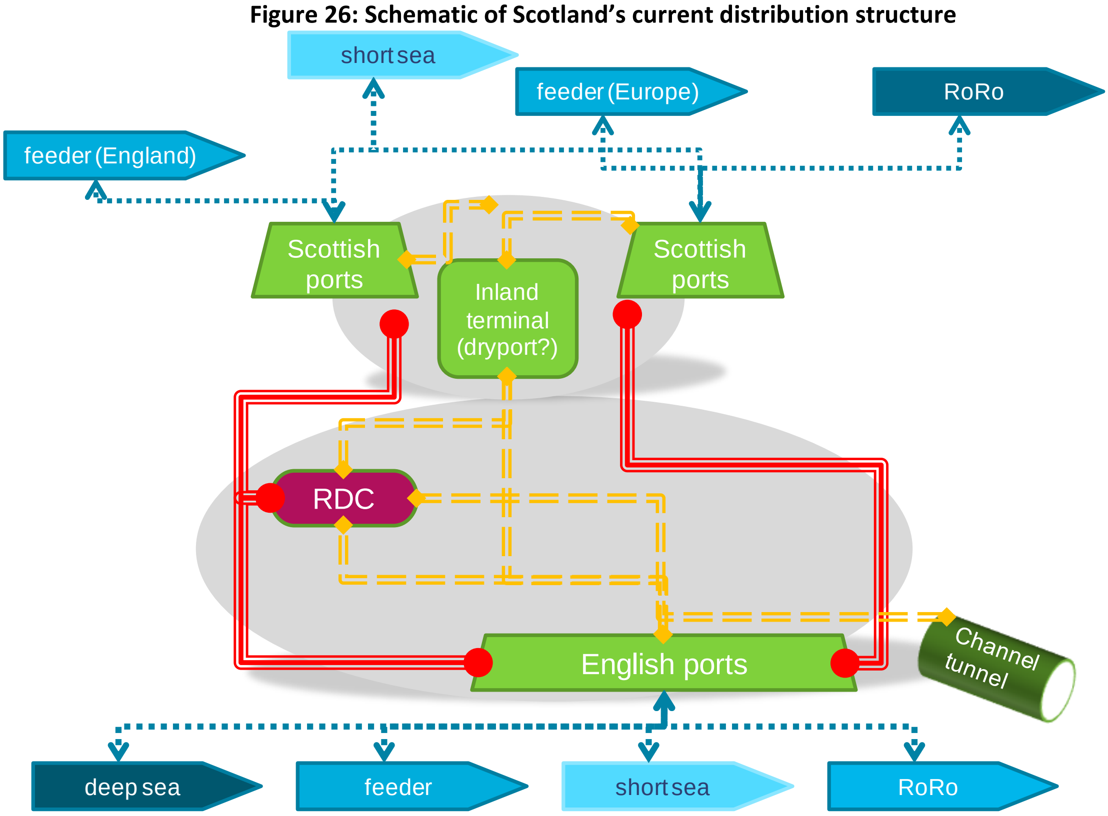
2.1.3.5 Comparing with road's predominance, supermarkets have recently been promoting their experiments in other modes, including barges and rail. The Scottish DCs are generally served by road from the larger DCs in England. But some supermarkets are beginning to try moving containers now by rail or sea:

- ASDA are bringing some containers by feeder ship from Felixstowe to their purpose-built import centre at Teesport in northeast England. Perhaps this could be extended to Scottish ports? ASDA have already built a DC at Grangemouth.

- ASDA is sending some containers by rail from Grangemouth to Aberdeen.
- Tesco is bringing some containers from Daventry (England) by rail to Grangemouth then road to the Livingston DC.
- Tesco is sending some containers by road from Livingstone to Grangemouth then by rail to Inverness.
- Co-op is running a trial of 2 containers per night from Coventry by road to Daventry, then rail to Coatbridge then road to their DC at Cumbernauld.

2.1.3.6 Figure 26 abstracts the current distribution structure of trade flows entering and leaving Scotland. It shows that "*UK logistics chains consolidate traffic via these RDCs that breaks the transport chain between English ports and Scotland and reduces opportunities for feeder or rail services. Moreover, constraints to the rail infrastructure in the south of England exacerbate these problems. Because of path dependency however, it remains difficult to entice shippers to break from these habits, as alternative options lack visibility*" (Monios and Wilmsmeier, 2011).

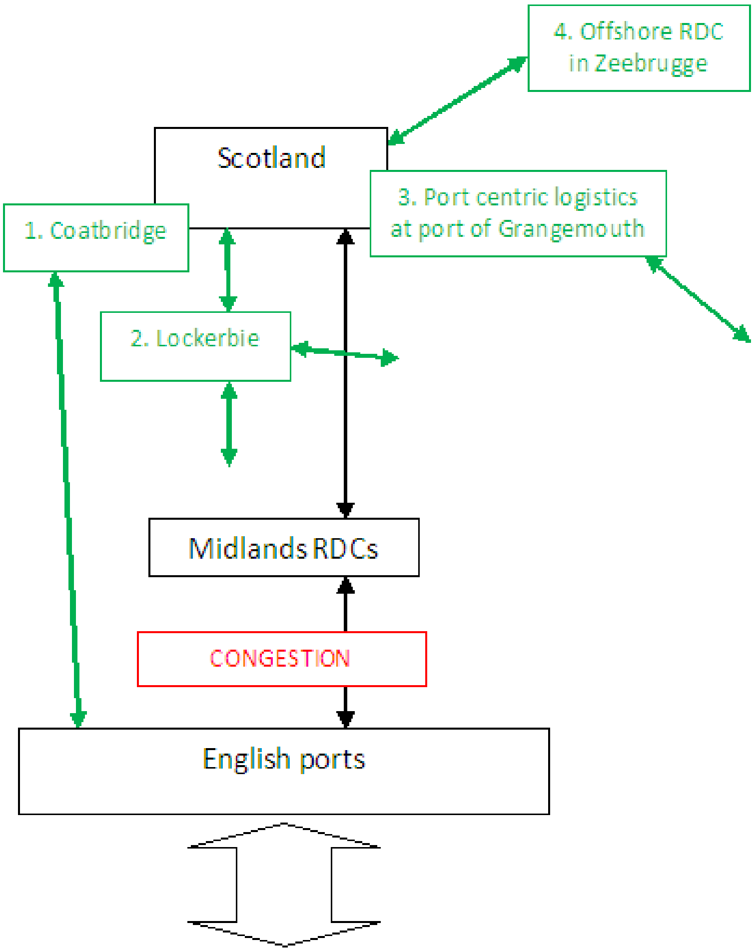
Figure 26: Schematic of Scotland's current distribution structure



Source: Monios and Wilmsmeier, 2011

2.1.3.7 Figure 27 illustrates a possible future development plan of modal-shift transportation in Scotland. First of all, enhancing rail and coastal shipping connections to the major English ports or distribution centres and reducing the reliance of road transport. Apart from the reasons of fuel cost, road congestion and environment impacts, extreme weather condition is also a significantly influence factor. The Coatbridge rail terminal and a possible Lockerbie one in future could be used as load centres with great modal-shift potential to connect with distribution centres in Midland. Since direct container trains services from UK ports to the midlands have grown over the last decade while direct services from UK ports to Scotland (i.e. Coatbridge) have fallen (Woodburn, 2007). Secondly, Scottish food and drink transport will benefit from port centric logistics development at port of Grangemouth as well. It offers not only more opportunities of cargo in- or outward distribution, but also other value adding logistics services at port. Finally, development plan of the Zeebrugge Offshore RDC created another possible distribution channel for direct imports and exports.

Figure 27: Possible future development plan of modal-shift transport in Scotland



Source: Monios and Wilmsmeier, 2011

Strengths	Opportunities
• Major distribution centres located closely to the main rail freight terminal – Coatbridge, and gateway port – Grangemouth; •	• Long distance travelling from major port in South East England provides great opportunities of intermodal activities; • Potential use of ferry services to reach EU market; • Integration of Grangemouth port and nearby terminals (i.e. Deanside and Mossend) as a central freight hub serves Scotland;
Weaknesses	**Threats**
• High dependence on road transportation; • Reliance on specialised transport equipment for frozen and chilled products; • Choice of transport provider and appropriate frequency of feeder services are restricted	• Economies of scale from large DCs in England makes direct imports to Scotland unattractive. • With double-decker trailers, road transport is even cheaper than before thus difficult for intermodal to compete. • Difficulties sourcing backhaul for rail or water services. • External competition from the development of Teesport

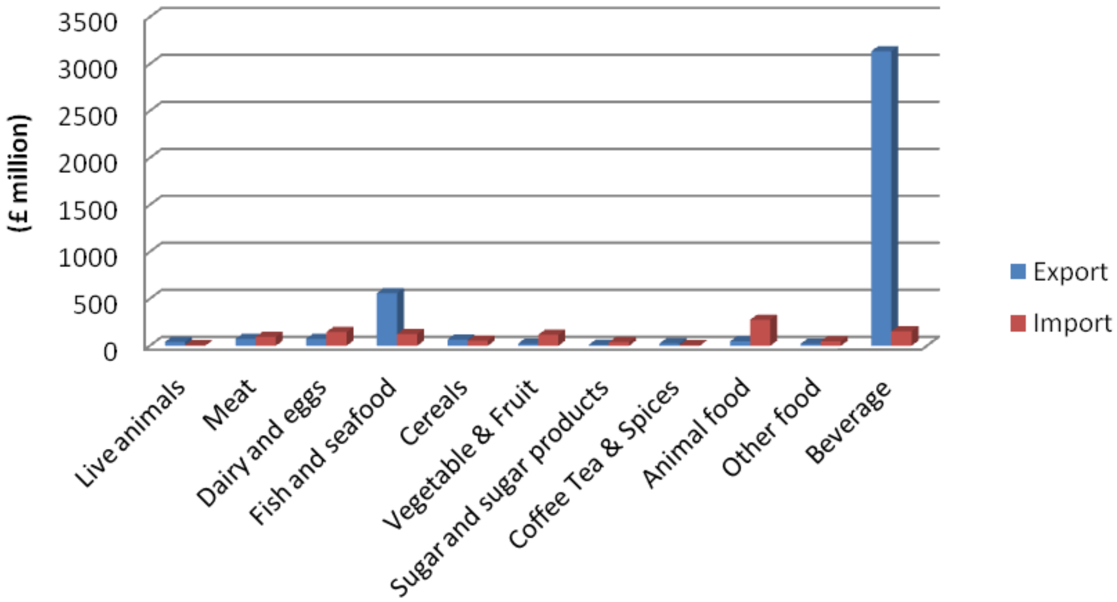
2.1.7/8 Export and Imports

Comments including:-

- Freight forwarders
- Border inspection post facilities for non-EU imported product (by volumes / food type if available)
- Sea ports used for food (by volumes / food type if available)
- Airports used for food (by volumes / food type if available)
- Road / rail used for food exports (by volumes / food type if available)
- Amount / % of finished goods, part processed and un-processed goods exiting or entering the region (by food type if available)

2.2.3.1 Export of food and drink overseas reached a new high of £4,073 million in 2009, nearly one-third of UK total food and drink exports. Meanwhile, Scottish food and drink exports also show a strong performance in terms of annual growth rate, 8.6% in 2008 and 6.1% in 2009. This was mainly due to increase in manufactured drink exports. The drink sector, principally whisky, exports were valued at £3,136 million and accounted for almost 77% of Scottish food and drink export in 2009. On the contrary, Scottish drink imports only total £ 155 million, about 5% of the exports in this category. The largest food sector group imported from overseas is animal feed, accounting for £277 million. Dairy and egg is the second largest on food and drink imports, at about £146 million. Following with fish products and vegetable and fruit, with imports valued at £124 and £113 million respectively (see Figure 28).

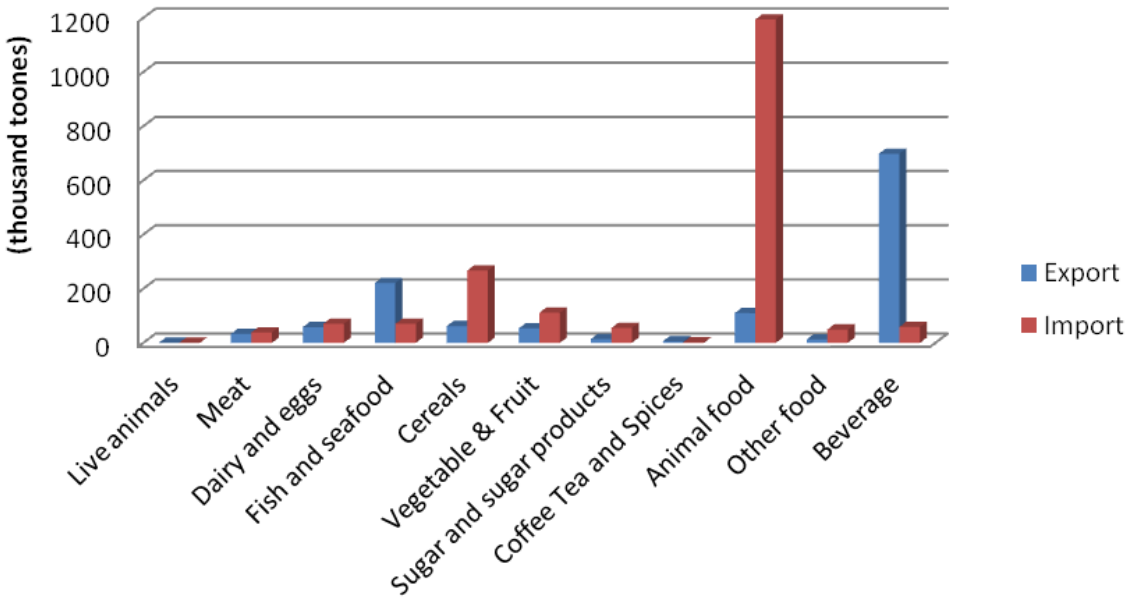
Figure 28: Overseas trade of Scottish food & drink sector by value, 2009



Source: Regional Trade Statistics, HMRC

2.2.3.2 Measured by volume, drink (mainly whisky) and fish products hold high proportions of total export volume in respect of their trade values, 55.1% and 17.4% respectively. Animal feedstuff predominates within the import sector, about 1194 thousand tonnes and 62.3% of total import flow. Figure 29 below provides a volume overview of imported food and drink products from the overseas market.

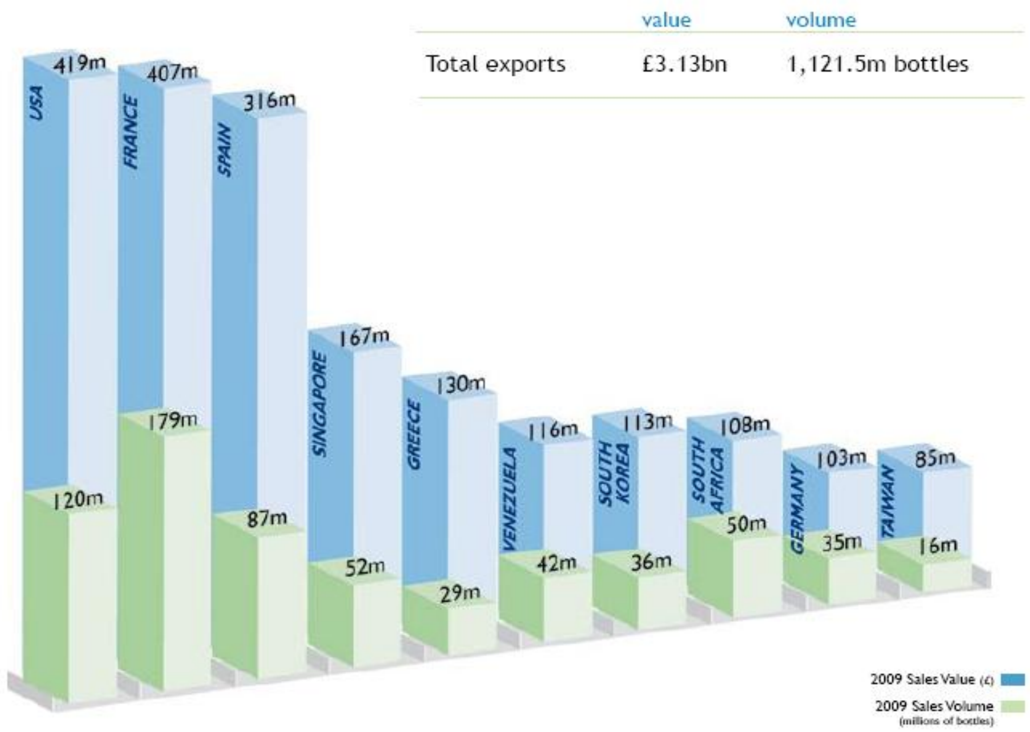
Figure 29: Overseas trade of Scottish food and drink sectors by volume, 2009



Source: Regional Trade Statistics, HMRC

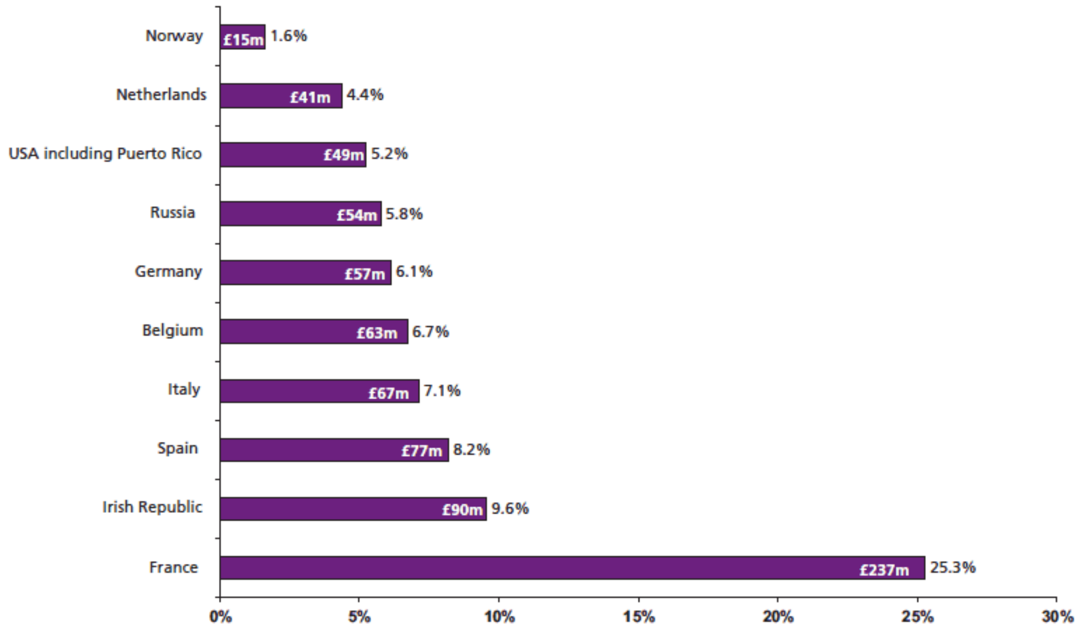
2.2.3.3 Destination of Scottish food and drink exports is a particularly important indicator to reveal the transport mode of export flows. In 2009, there were 1.121 billion bottles of Scottish whisky delivered to overseas markets (see Figure 30). France, Spain and the USA are the top three destinations in terms of volume. The East Asian countries such as Singapore, South Korea and Taiwan appear as new emerging markets, and more importantly, large potential still exists for future expansion. Venezuela in Latin America imported a total of 42 million bottles which is far greater than the imports of Greece (29 million), but accounting for a lower value than the later. It is mainly due to this reason, apart from duty costs, that around 15% of whisky products are bulk exported to Latin American and other areas and bottled in local factories. On the food sector, 10 countries as listed in Figure 31, mainly located in Europe, accounted for 80% of all Scottish food exports overseas. France was the biggest buyer of Scottish food produce, accounting for 25.3% of the total overseas food exports. The Irish Republic and Spain were the next two biggest markets, purchasing 9.6% and 8.2% each. Exports to Russia and North America also hold a significant share.

Figure 30: Top destinations of whisky export from Scotland, 2009



Source: Scottish whisky Association, http://www.scotch-whisky.org.uk

Figure 31: Top 10 country destinations of food export from Scotland, 2009

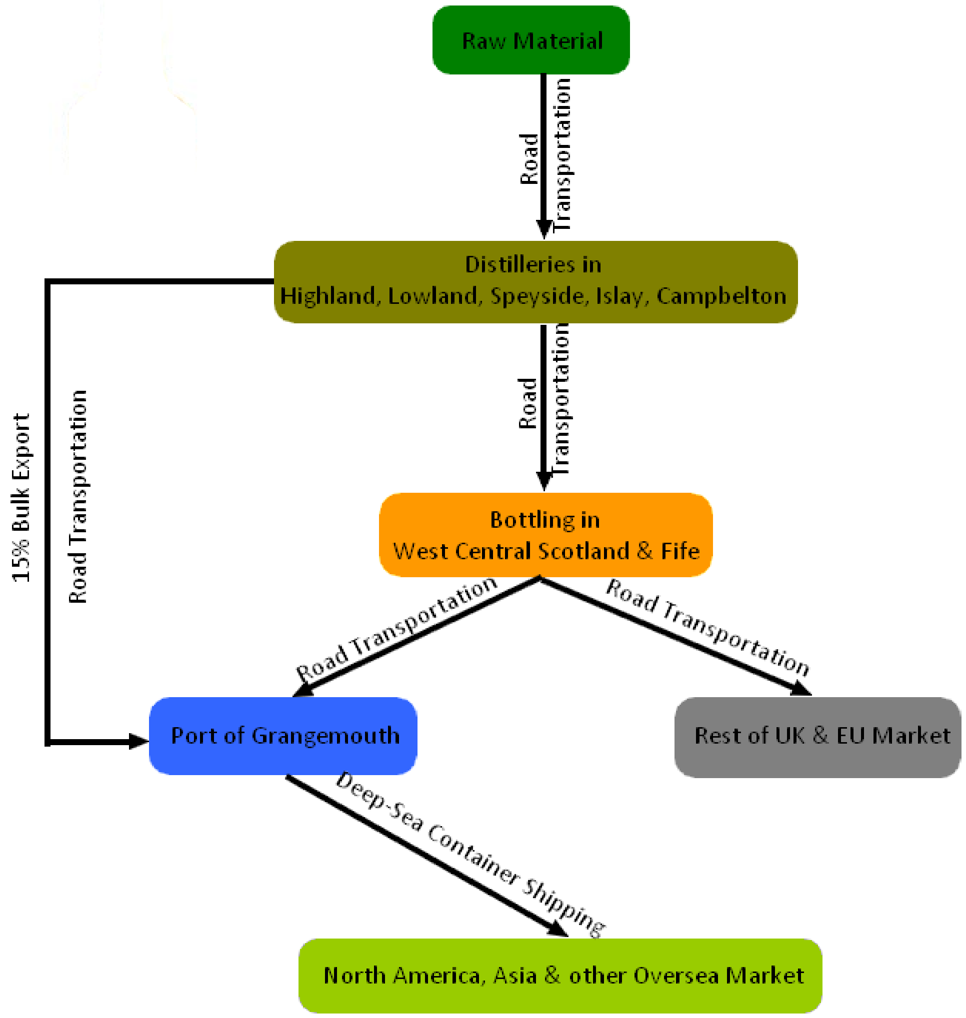


Source: Food and Drink in Scotland, Key Facts 2010
Note: Includes live animals, fish, animal feed, food manufacturing and wholesale exports.

2.2.3.4 Transport analysis of Scottish food and drink exports therefore mainly focuses on the two dominated groups, namely Scottish whisky and fish products.

- During the process of whisky export, road is the dominant transport mode for all the inland movements and part of overseas trade (e.g. EU countries are served through the Channel Tunnel in England). Exports to USA, Asia, Latin America and other overseas market are normally going by sea. As illustrated in Figure 32, finished whisky products involve multiple movements, rather than some other bulk products only moved once. *"The whisky is transported by road from a large number of distilleries (mainly located in Highland, Lowland, Speyside, Islay and Campbeltown) to a small number of bottling and storage facilities concentrated in West Central Scotland and Fife. From these locations much of the whisky destined for export is taken by road to Grangemouth to be loaded on deep-sea container ships to reach its main markets including North America and Asia. Much of the whisky destined for European consumption is transported by road to cross the Channel at Dover*" (Freight in Scotland – Freight Statistics Project, p.52).

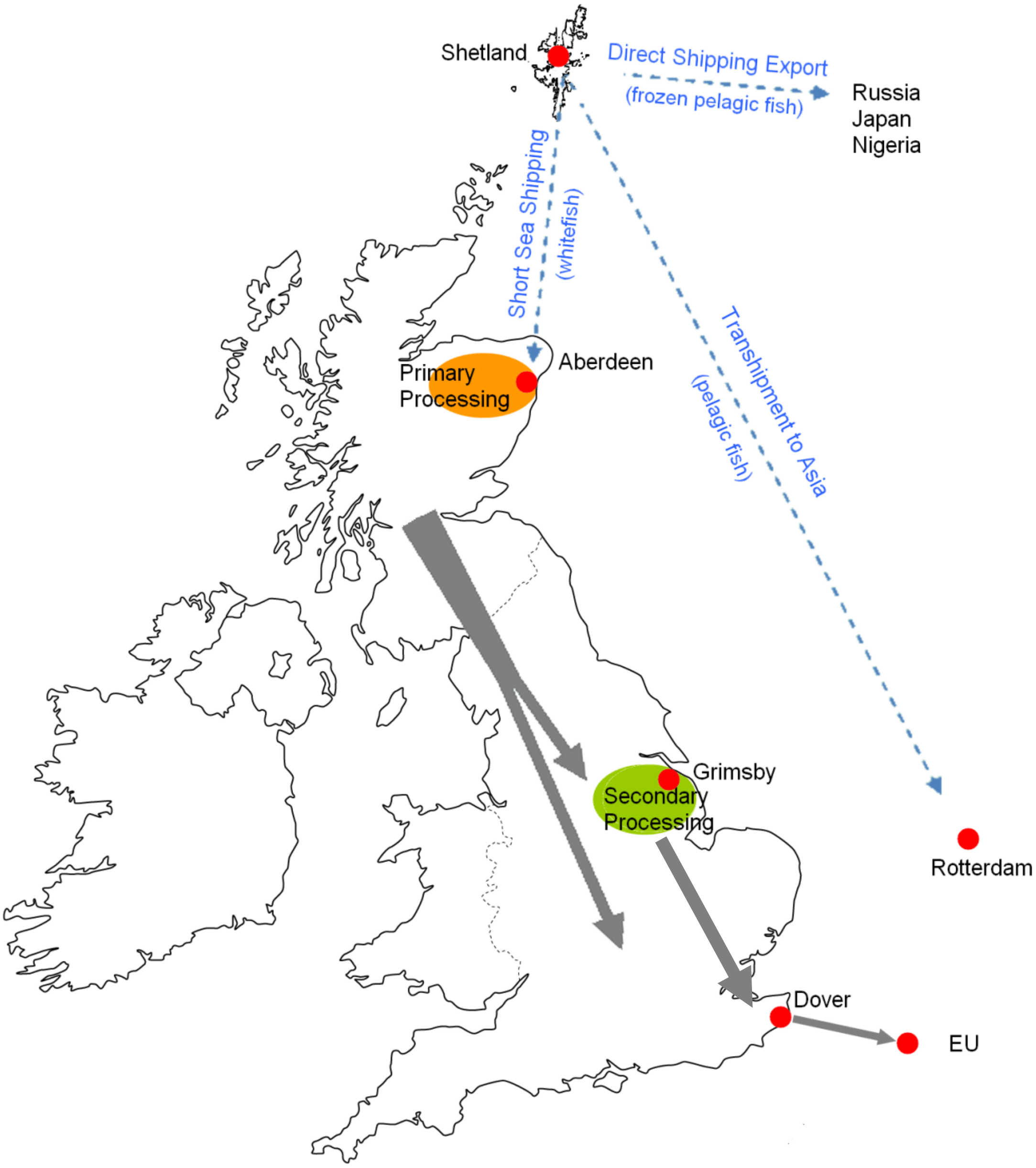
Figure 32: Process of Scottish whisky export



Source: Drawn by author

- The majority of fish product exports is also highly depend on road transportation, although there are a small number of direct shipping exports from Shetland. After gathering at the major fisheries port (Shetland), most of this seafood is transported (by short sea shipping) to Aberdeen for primary processing. Road is then used with specialist refrigerated vehicles and storage facilities to move the produce inland which is usually high-value and time-critical. With the exception of direct transportation to the EU, much of the seafood is further moved from north east Scotland to the Grismby area in England for secondary processing, and finally being transported to mainland Europe for distribution around the world.

Figure 33: Process of fish products export

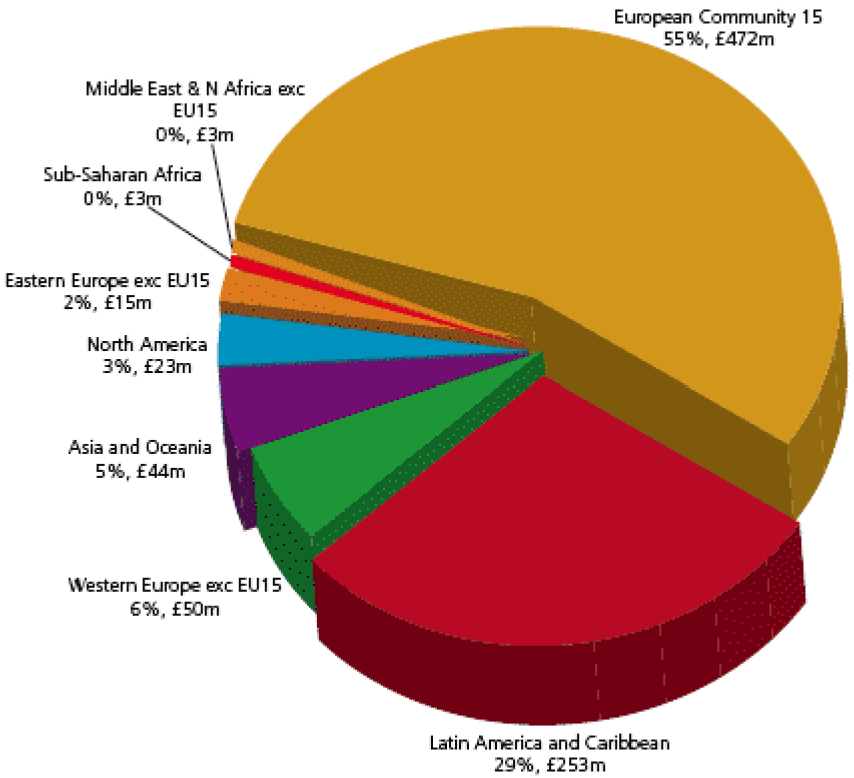


Source: Draw by author

2.2.3.5 As mentioned before, animal feedstuff is the single largest group regarding Scottish food and drink import volume. Figure 34 and 35 below show that Latin America and the Caribbean are the top origin areas; about 87% of total import value from these regions is transported (deep-sea shipping) to ports located in South East England and then delivered to

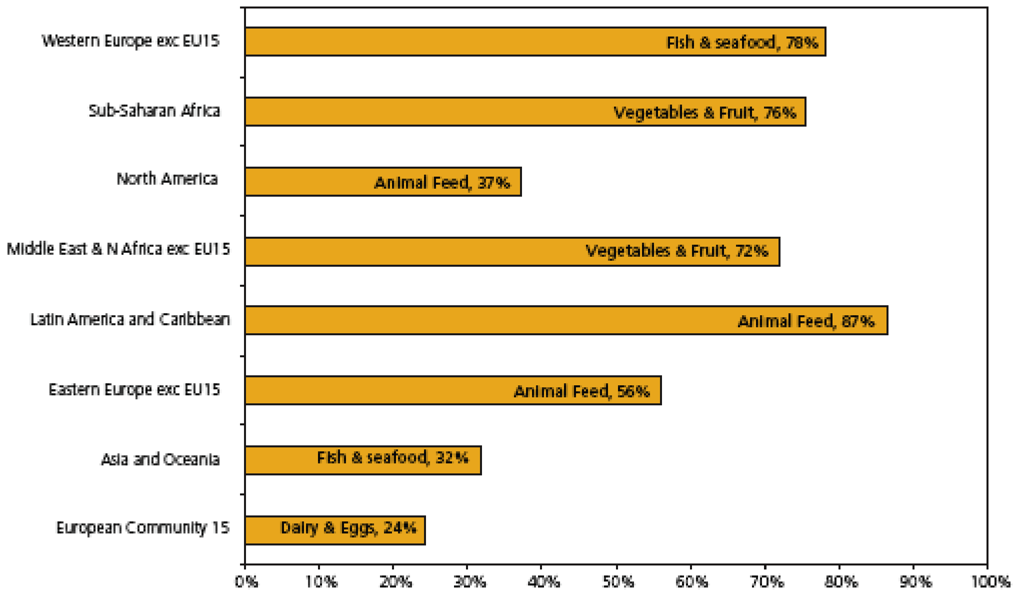
Scotland. The majority (55%) of all food imported into Scotland from overseas comes from the EU 15, and most journeys are completed by road (see Table 9).

Figure 34: Origin of imports of food into Scotland (excluding imports from the rest of the UK), 2008



Source: Food and Drink in Scotland: Key Facts 2009

Figure 35: Top food imports into Scotland by region or origin (imports from the rest of the UK excluded), 2008



Source: Food and Drink in Scotland: Key Facts 2009

Table 9: Goods lifted by UK HGVs, entering or leaving Scotland, 2009 (thousand tonnes)

Country	Goods entering Scotland	Goods leaving Scotland
France	55	240
Netherlands	35	52
Ireland	18	46
Germany	13	38
Belgium & Luxembourg	33	31
Spain	N/A	31
Italy	N/A	24
Total EU	178	472
Total outwith UK	179	480

Source: Scottish Transport Statistics No.29

2.2.3.6 There are two Border Inspection Post (BIP) located in Scotland, namely Peterhead and Prestwick respectively. The former led to a significant cost reduction regarding the import of whitefish from Northern Europe.

Strengths	Opportunities
• Continuous increase in food and drink export, both value and volume; • Concentration of manufacturers in central Scotland and Fife; • Nearly all supermarket distribution centres closely located around rail freight terminal (Coatbridge) and gateway port (Grangemouth);	• Long distance travelling from major port in South East England provide great opportunities of intermodal activities; • EU mainly connection of rail and ferry services may significantly reduce the cost and time of both exports and imports; • Direct deep-sea shipping to Far East and other international market;
Weaknesses	**Threats**
• Reliance on the ports and Channel Tunnel in South East England; • Low usage or rail and coast shipping for connecting with major shipping ports; • Existing port infrastructure do not support to host large container ships; • Major export products need specialised transport equipment; • Non-government support for improving global connection.	• Challenges from India, Japan, Canada on whisky export market; • High proportion of raw material imports; • Economic recession may affect international exports

2.3 Identification of food supply chain components with modal shift potential.

- Whisky bottling in Central Scotland and Fife shows great modal-shift potential by rail and coastal shipping services to South East England instead of extensive using of road transportation;
- A secondary processing and storage centre of fish and meat products around Grangemouth (with both sea and rail access) would offer easy access to RDC of supermarkets and global connections;
- Concentration of RDCs of large retailers and wholesalers in central belt area of Scotland shows a potential intermodal platform for connecting Midland and North Scotland;
- Potential use of ferry service allows Scottish fish products to reach EU market directly and may also be used of retail imports to ensure capacity utilisation in both directions. Coordinating with a DC in the port of Zeebrugge, for example;
- Development of port centric logistics of Grangemouth. It offers not only more opportunities of cargo in- or outward distribution by integrated rail and sea access, but also other value adding logistics services at port.

2.4 Identification of food produce groups which could benefit from ILC technologies.

Against the industry structure of Scottish food and drink, the following groups would be particularly benefited from ILC technologies:

- Fishery catching and farms to primary and secondary processors (fresh and frozen seafood products)
- Slaughterhouse to manufacturers (mainly fresh meat)
- Manufacturers to RDC of supermarkets (chilled and frozen food)

3 Conclusions

The analysis of current food production and consumption pattern, logistics supply chains and trade structures reveal the relevance of the food & drink industry to the Scottish and particularly the regional economies in the SEStran area.

The scan includes a review on the relevance of the food sector in terms of employment, added value, investments, growth, and specialisation with particular focus on the beverages, fish and seafood, and meat sector.

Food logistics are found to be strongly dependent on road transport. Nevertheless new initiatives and trials have been identified where industry actors esp. Supermarkets are trying to shift transport flows to rail in an initiative to greening their supply chains. While the main distribution centres from supermarkets are located within the SEStran area, these are still primarily served from principal RDC's in England. Direct imports of supermarket goods to Scottish ports such as Grangemouth are relatively

As shown above the SEStran area plays different and also significant roles in food logistics. By way of example principle actors from the Whisky industry are located within the area. The locations of these industry players are used as production, consolidation and global distribution centres. This setup induces significant traffic flows in the SEStran area, which are primarily road based.

For the fish and seafood industry the SEStran area can be categorised as a transit area between primary and secondary production processes. Fish and seafood are farmed and landed in the north of Scotland and are usually transported for secondary processes to locations in England and even other secondary countries. Similar pattern can be observed in the meat sector.

A main finding from the scan is the high dependence on long distance road transport of food industry logistics chains. Base on this a main opportunity has been identified in the modal shift from road to sea and rail. More detailed analysis and in depth interviews with industry representatives are necessary to further exploit his topic and potential.

The use of RFID technology is present in the food industry, however in depth research in this area in Scotland remains to be developed.

In general while the present analysis gives a good impression on the current status and development of the food industry and the related logistics a significant gap in statistics at regional level within Scotland has been identified. Since the beverage, meat and fish and seafood sector have been identified as of relevance and future growth potential in depth interviews with the industry stakeholder s and logistics providers in these sectors are now required to specifically identify modal shift potentials and the use of ILC technology.

Appendix

Scottish export and imports of food and drink by sub-sectors, 2009

(Thousands tonnes)

SITC	Scotland Exports	Scotland Imports	UK Total Exports	UK Total Imports	% of UK Exports	% of UK Imports
00 Live Animals Other Than Animals Of Division 03	206	203	12,872	67,467	1.6%	0.3%
01 Meat & Meat Preparations	32765	38188	690,297	2,008,880	4.7%	1.9%
02 Dairy Products & Birds Eggs	57989	70460	895,909	1,327,636	6.5%	5.3%
03 Fish, Crustaceans, Molluscs & Aq. Inverts & Preps Thereof	220647	70090	479,700	720,665	46.0%	9.7%
04 Cereals & Cereal Preparations	61894	267370	4,610,717	4,255,665	1.3%	6.3%
05 Vegetables & Fruit	53162	110988	1,198,292	8,760,225	4.4%	1.3%
06 Sugar, Sugar Preparations & Honey	13872	54746	697,397	2,543,429	2.0%	2.2%
07 Coffee, Tea, Cocoa, Spices & Manufactures Thereof	5469	2468	225,682	921,879	2.4%	0.3%
08 Feeding Stuff For Animals (Not Inc. Un-milled Cereals)	109657	1193984	1,039,457	5,452,236	10.5%	21.9%
09 Miscellaneous Edible Products & Preparations	12792	49027	453,607	1,228,882	2.8%	4.0%
11 Beverages	698059	58444	1,891,342	3,218,049	36.9%	1.8%

Source: www.uktradeinfo.com

References:

1. Annual Business Survey, Office of National Statistics, http://www.statistics.gov.uk/abs/
2. Food and Drink in Scotland: Key Facts 2010, The Scottish Government, http://www.scotland.gov.uk/Publications/2010/11/18094010/0
3. Food and Drink in Scotland: Key Facts 2009, The Scottish Government, http://www.scotland.gov.uk/Publications/2009/06/24144522/0
4. Scottish Annual Business Statistics 2008, The Scottish Government, http://www.scotland.gov.uk/Topics/Statistics/Browse/Business/SABS/SABSreport08
5. Scottish Primary Food and Drink Produce Processed in Scotland, Scottish Government, http://www.scotland.gov.uk/Publications/2008/06/18104558/0
6. The Economic Impact of Scotland Whisky Production in Scotland, Scottish Whisky Association, http://www.scotch-whisky.org.uk/swa/files/EconomicImpactReportMay2010.pdf
7. The Scottish whisky Industry, The Scottish Parliament, http://www.scottish.parliament.uk/business/research/briefings-09/SB09-76.pdf
8. http://www.seafoodscotland.org
9. Scottish Agriculture output, input and income statistics, The Scottish Government, http://www.scotland.gov.uk/Publications/2009/04/20093324/0
10. http://www.foodanddrinkeurope.com/Financial/Scottish-government-investment-to-improve-domestic-supply-chain
11. Reducing the External Cost of the Domestic Transportation of Food by the Food Industry, Defra, http://www.defra.gov.uk/evidence/economics/foodfarm/reports/Costfoodtransport/Defra-17May2007.pdf
12. Scottish Transport Statistics No.29, The Scottish Government, http://www.scotland.gov.uk/Publications/2010/12/17120002/0
13. Region Trade Statistics, HMRC, https://www.uktradeinfo.com
14. http://www.scotch-whisky.org.uk
15. Freight in Scotland – Freight Statistics Project, The Scottish Government, http://www.scotland.gov.uk/Publications/2009/08/03104646/0
16. Monios, J. and Wilmsmeier, G. (2011). Port Centric Logistics, Dryports and “Offshore Logistics Hubs” – Strategies to Overcome Double Peripherality?, Paper presented at the Association of American Geographers annual conference, Seattle, April 2011.
17. Woodburn, A. (2007). The role for rail in port-based container freight flows in Britain, Maritime Policy and Management, 34(4), pp.311-330.