

NORTHERN IRELAND BUSINESS ENERGY PURCHASES PROVISIONAL ESTIMATES 2016 to 2018

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Summary

Total energy purchases by businesses (£1.4bn) represented 2% of total business turnover (£64.6bn) in 2018 and 2% in both 2017 and 2016

- **Agriculture, Transport and Water Supply businesses have the highest energy purchases as a proportion of turnover. Micro businesses employing less than five people, which comprise around two thirds of businesses, have the highest energy purchases as a proportion of turnover:**
 - Energy purchases as a proportion of turnover was highest in the Agriculture (A) (15%), Transportation and Storage (H) (11%), Water Supply and Sewerage (E) (8%), Other Service (S) (7%) and Education (P) (6%) sectors
 - Grouping industrial sectors, businesses in the Services (H-S) group (4%) had the highest share of turnover accounted for by energy purchases in 2018
 - In terms of business size, micro businesses employing less than five people had the highest energy overheads in terms of share of their turnover and comprise almost two thirds of businesses
- **Transport, Manufacturing and Retail sectors account for almost two thirds of all business energy purchases. Services businesses, as a group, account for almost half of all energy purchases**
- **Motor fuel and electricity account for over four fifths of all energy purchases by businesses. Over half of all motor fuel purchases are accounted for by Services businesses. Energy purchases by Construction businesses are dominated by motor fuel purchases as are those of Services businesses:**
 - Motor Fuel (43%) and Electricity (39%) together accounted for over four fifths of all business energy purchases
 - Energy purchases in the Construction (F) sector are focused on Motor Fuel (81%) followed by Electricity (14%). Energy purchases within Wholesale and Retail (G) are more evenly spread between Motor Fuel (45%) and Electricity (45%). For the Services (H-S) group, almost half (49%) of their energy purchases are on Motor Fuel with 34% of energy purchases on Electricity
 - Grouping industrial sectors, over half (54%) of all business Motor Fuel purchases are by the Services (H-S) group. Total business purchases of Electricity are more evenly split between the Services (H-S) (42%) and the Agriculture and Production groups (A and B-E) (36%). For Mains Gas purchases, the Services (H-S) group accounts for 49% of purchases while Agriculture and Production (A and B-E) account for 37%

Introduction

The Northern Ireland Annual Business Inquiry (NIABI)¹ is a well-established National Statistics resource for measuring the size, performance and structure of the Northern Ireland non-financial business economy. The NIABI is a survey of businesses covering the Production, Construction, Distribution and Service industries plus an element of Agriculture and covers roughly two thirds of the total Northern Ireland economy. Public sector bodies are excluded from the survey. Since 2014, the NIABI has included questions on the value of purchases by businesses of different types of energy. Whilst the total energy purchases information has been used for macro-economic purposes, the detail of the energy expenditure by businesses has, to date, been largely unexplored.

It was on this basis that a measure was proposed for use in the developing Energy Strategy to monitor changes to energy expenditure by businesses over time given the policy imperative to the meeting of the 2050 net zero emission target. That headline measure proposed was business energy purchases as a proportion of business turnover excluding businesses involved in the generation, distribution and supply of energy. Business turnover represents the income received by each business in relation to the sale of goods and/or services from which the business pays for the purchases of goods and materials, energy and water (utilities), services and in the payment of wages.

This paper rehearses some of the provisional findings in relation to annual data from 2016 to 2018. Development work is ongoing in relation to these estimates, a component of which, will be investigating the possibility of developing a methodology for applying Confidence Intervals to the estimates of energy purchases as a proportion of turnover.

It is important to remember that the energy purchases data collected by the NIABI reflect what the businesses as consumers paid for their energy and not the unit cost of that energy nor the level of consumption. This purchases data therefore reflects expenditure and not specifically prices². The purchase value of energy by a business will reflect the combination of energy price and pattern of consumption which in turn may reflect wider changes in the economy. Energy purchases data collected by the NIABI will also exclude any own generation and use of energy.

Monitoring this annual data over time will not only enable a perspective to be taken on the extent to which energy purchases by businesses change over time in relation to their turnover, but will also enable a perspective to be taken on the mix of energy purchased and how businesses may adapt or change their energy purchases moving forward.

¹ For further information on the NIABI see: [Annual Business Inquiry | Northern Ireland Statistics and Research Agency \(nisra.gov.uk\)](https://www.nisra.gov.uk/annual-business-inquiry)

² The Utility Regulator for Northern Ireland produces a range of regular information on energy prices. For further information see: [Utility Regulator \(uregni.gov.uk\)](https://www.uregni.gov.uk)

Method

The NIABI annually samples approximately 10,000 businesses in Northern Ireland from a population of approximately 56,000 businesses in the sample frame, the Inter-Departmental Business Register (IDBR). The IDBR consists of companies, partnerships, sole proprietors, public authorities, central government departments, local authorities and non-profit making bodies in the UK. Businesses not registered for either Pay As You Earn (PAYE) or Value Added Tax (VAT) are excluded from the sample frame.

Data validation is carried out on the returned forms ensuring internal consistency within the form, checking data falls within expected limits, or by contacting the company for clarification where appropriate. For non-returns above a selected employment threshold, data were imputed using a methodology which takes account of previous returned data and the performance of other similar businesses. This information was then grossed up to the reporting unit population, to ensure that results are representative of the sampled population.

Published annual data are on a current prices basis and no adjustment is made for inflation as would be reflected in a constant prices series.

On a comparable basis, NIABI data is available from 2011 onwards with energy purchases data available from 2014 onwards. However, given that this is a newly established measure, and following initial exploratory work, the following analyses covers the period from 2016 onwards given the amount of additional checks specified in developing these new measures and the difficulties in querying and validating historic data. These developments have resulted in the identification of additional quality and consistency checks for the NIABI in going forwards.

Following initial exploratory analyses, the decision was taken to exclude business involved in the generation, distribution and supply of energy including: Manufacture of coke and refined petroleum products; Electricity, gas, steam and air conditioning supply; Agents involved in the sale of fuels, ores, metals and industrial chemicals; Wholesale of solid, liquid and gaseous fuels and related products; Wholesale of petroleum and petroleum products; Wholesale of fuels and related products (other than petroleum). The rationale for excluding such businesses was that the aim of the measure was to reflect end supply chain changes to energy purchases by businesses as consumers of energy and not on the producers, distributors and suppliers of energy.

Results

Headline results for the purchases of energy by businesses in 2016, 2017 and 2018 are shown in Table 1.

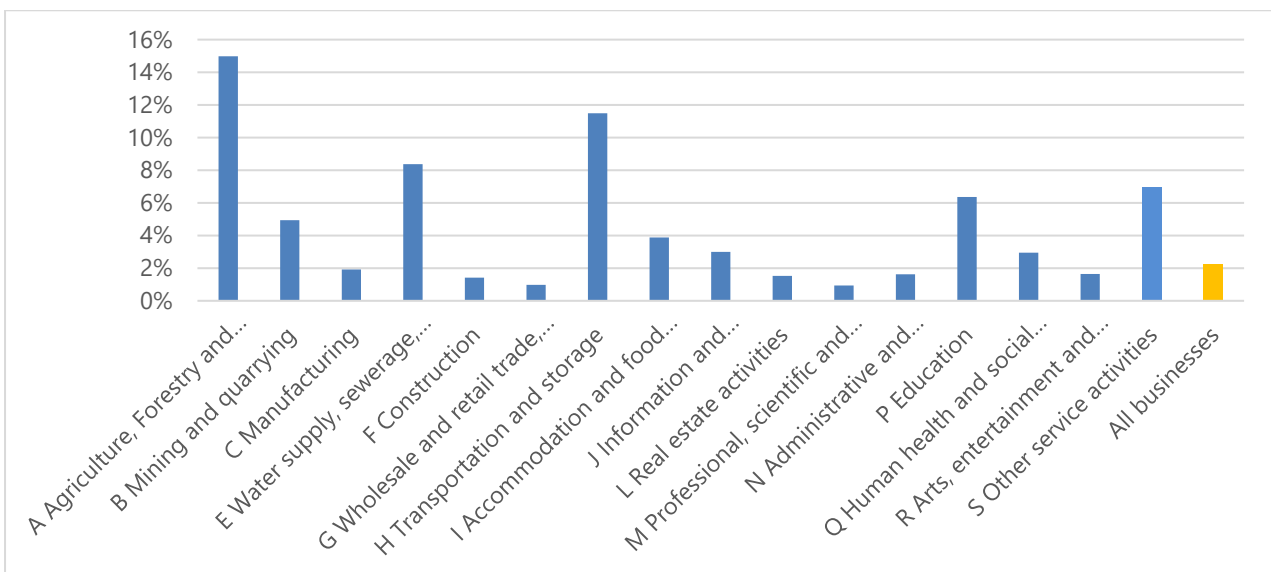
Table 1: Purchases of energy by businesses as a proportion of turnover in 2016, 2017 and 2018

Year	Turnover Ex VAT (£bn)	Total Energy Purchases (£bn)	Energy as % of Turnover
2016	64.1	1.2	2%
2017	63.2	1.3	2%
2018	64.6	1.4	2%

Annual turnover for all businesses included in the analyses were around £64bn. Purchases of energy by businesses in each year over the period were around £1.3bn. Annually, business energy purchases as a proportion of turnover was 2% in 2016, 2017 and 2018.

Figure 1 details the proportion of turnover within each Standard Industrial Classification Sector³ accounted for by energy purchases in 2018.

Figure 1: Proportion of turnover accounted for by energy purchases by Standard Industrial Classification Sector (2018)



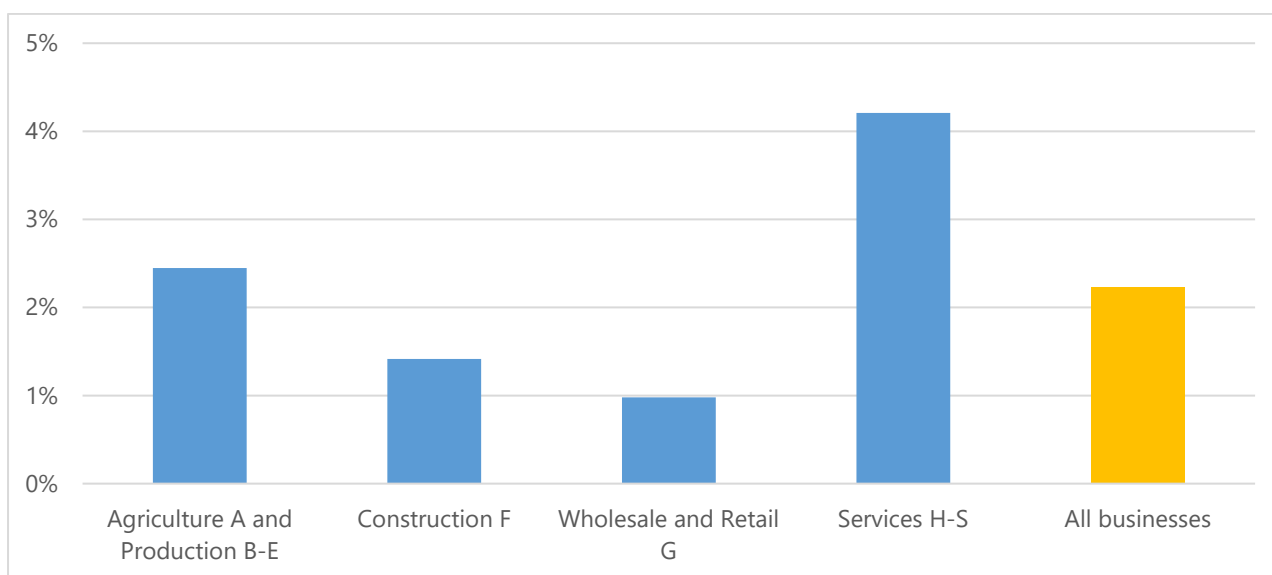
In 2018, and for all businesses, total energy purchases represented a 2% share of total turnover. Businesses within the Agriculture, Forestry and Fishing (A) sector have the highest proportion of turnover accounted for by their energy purchases (15%). Transportation and Storage (H) (11%), Water Supply, sewerage and waste management (E)

³ The Standard Industrial Classification Sectors excluded from the current analyses include: Electricity, gas, steam and air conditioning supply (D); Financial and insurance services (K); and Public administration and defence; compulsory social security (O)

(8%), Other Service activities (S) (7%), Education (P) (6%) and Mining and quarrying (B) (5%) sectors have the next highest energy purchases share of turnover. The share of turnover accounted for by energy purchases within all other sectors were below 5%.

Figure 2 details the share of turnover accounted for by energy purchases within grouped industrial sectors⁴. Whilst overall, 2% of turnover was accounted for by all energy purchases, the Services (H-S) group had the highest share (4%), followed by Agriculture and Production (A, B-E) with 2%, Construction (F) (1%) and Wholesale and Retail (G) (1%).

Figure 2: Energy purchases share of turnover by grouped Standard Industrial Classification Sector (2018)

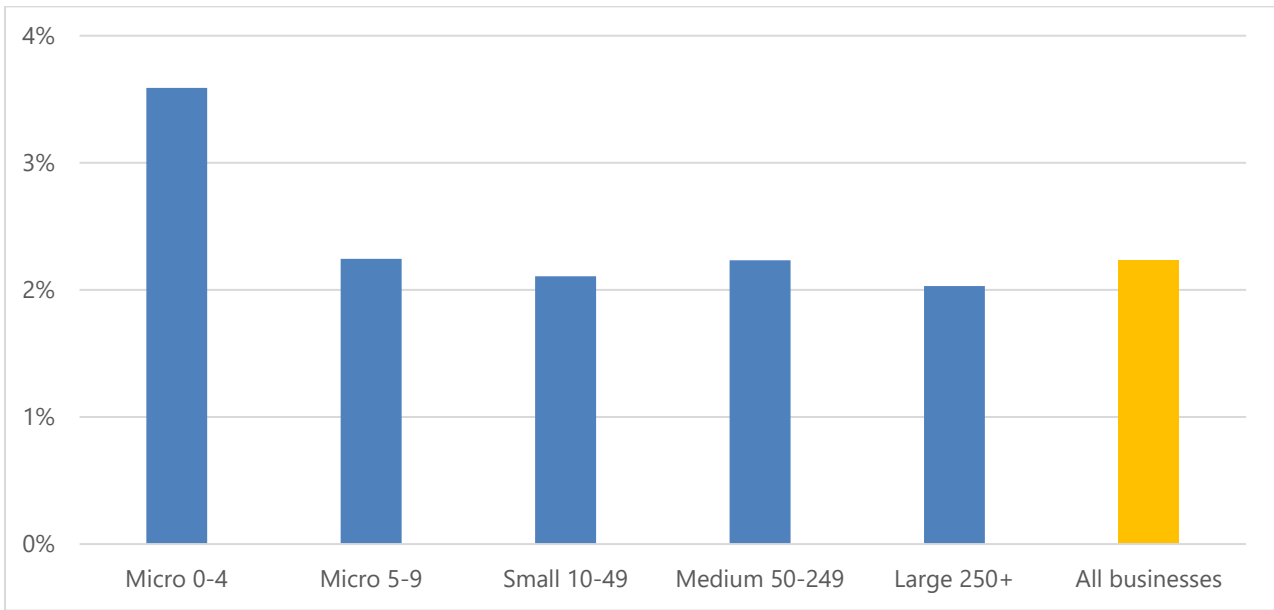


Businesses in the Services (H-S) group have the highest share of their turnover accounted for by energy purchases at around twice the level for all businesses in the economy as a whole.

Figure 3 details the share of turnover accounted for by energy purchases within business size bands. Most business size groups had similar percentages of turnover accounted for by all energy purchases at 2%, however the Micro business group with 0-4 employees had a higher percentage share at nearly 4% of turnover. These Micro businesses account for 61% of the businesses in the NIABI and comprise a 12% share of total energy purchases. Conversely, large businesses with over 250 employees account for less than a 1% share of all businesses in the NIABI, but account for over a third of total energy purchases.

⁴ See Annex 1 for a full list of Standard Industrial Classification (SIC) main sectors and their mapping to grouped SIC

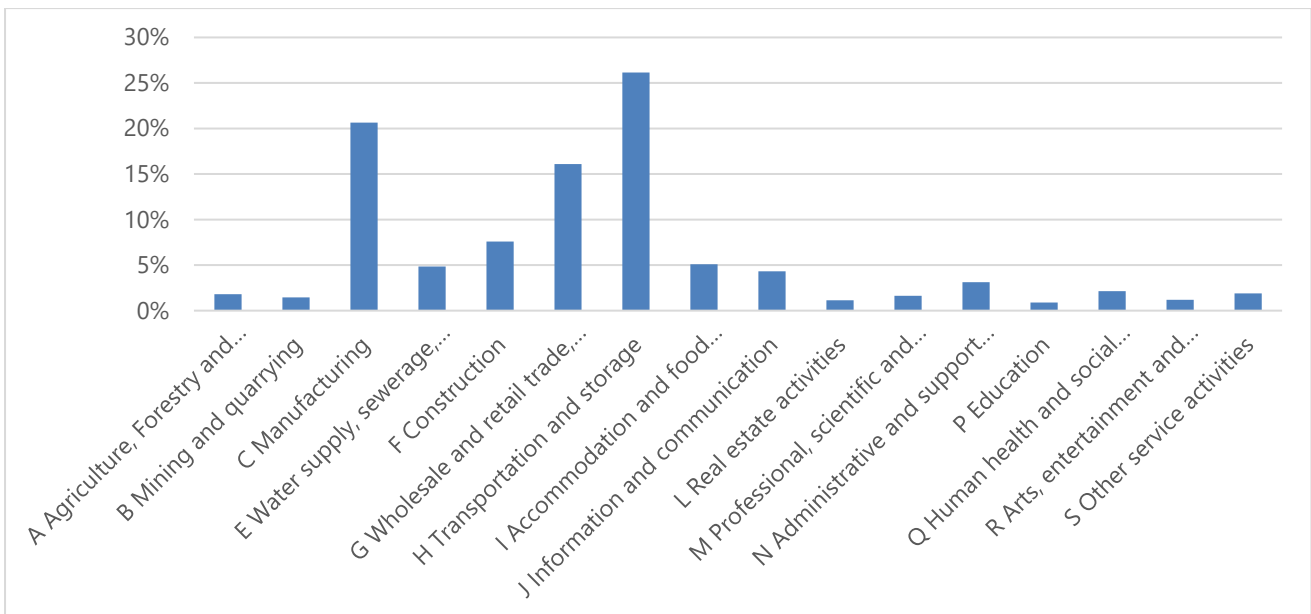
Figure 3: Energy purchases share of turnover accounted for by business size (2018)



Looking specifically at 2018, Figure 4 shows the share of all business energy purchases by businesses within Standard Industrial Classification Sectors (SIC).

Energy purchases by businesses within the Transportation and Storage (H) sector accounted for 26% of all business energy expenditure followed by Manufacturing (C) 21% and Wholesale and Retail (G) 16%. Together, businesses within these sectors account for almost two thirds of all business energy purchases.

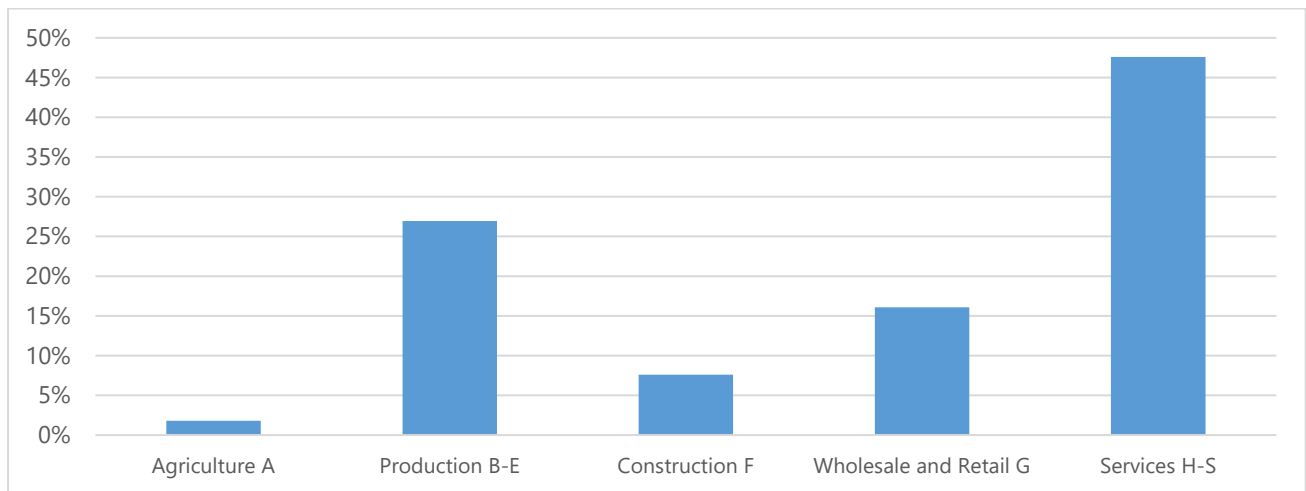
Figure 4: Share of total energy purchased by Standard Industrial Classification Sector (2018)



Whilst Construction (F) (8%), Accommodation and Food Service Activities (I) (5%) and Water Supply, sewerage and waste management (E) (5%) together accounted for just under one fifth of total business energy purchases, the remaining sectors each accounted for less than 5% of total energy purchases.

To provide a more condensed overview of energy purchases by businesses, Figure 5 groups the Standard Industrial Classification Sectors as detailed in Figure 4 into five main groups.

Figure 5: Share of total energy purchased by grouped Standard Industrial Classification Sector (2018)

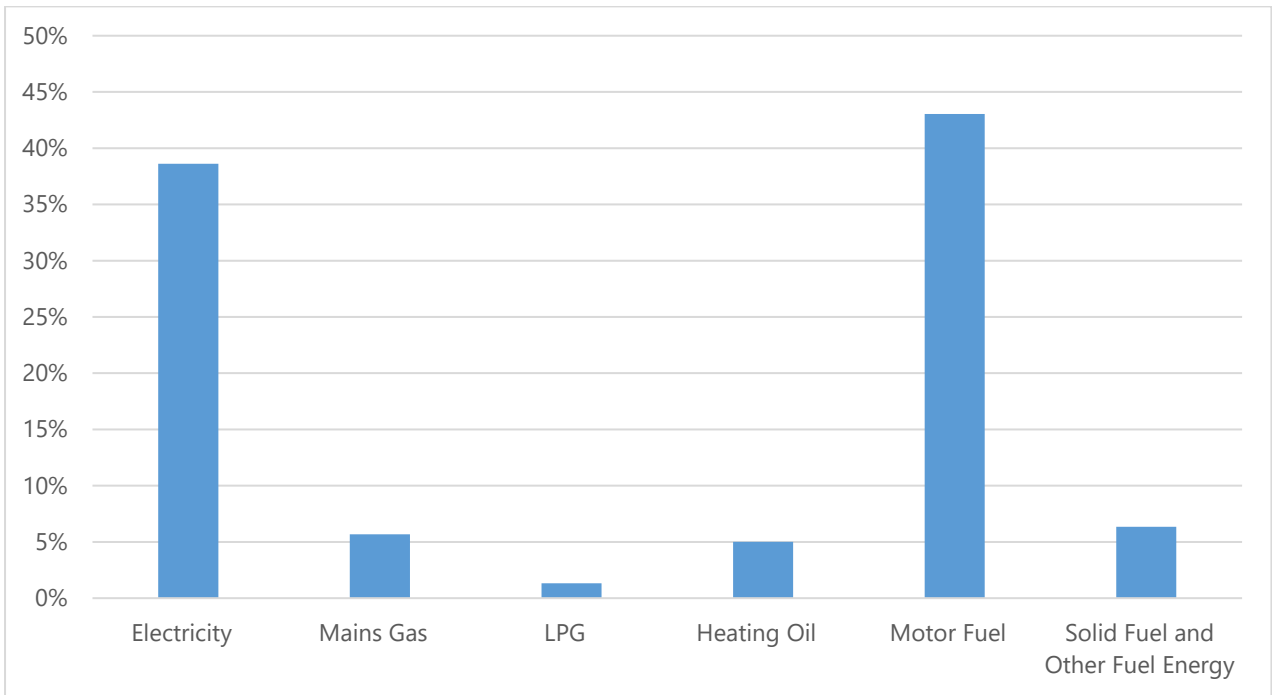


Businesses in the Services (H-S) group account for almost half (48%) of all energy purchases, followed by Production (B-E) (27%), Wholesale and Retail (G) (16%), Construction (F) (8%), and Agriculture (A) (2%).

The share of total energy purchases accounted for by businesses in the Services (H-S) group (48%), is very similar to the share of these businesses in the NIABI as a whole (49%). However, the share of energy purchased by businesses in the Production (B-E) group (27%) is three times higher than the share of these businesses in the NIABI as a whole (9%). By contrast, businesses in the Construction (F) sector purchase 8% of total energy purchases but account for nearly one fifth (19%) of businesses in the NIABI.

Figure 6 details the share of total energy purchases accounted for by the type of energy purchased in 2018.

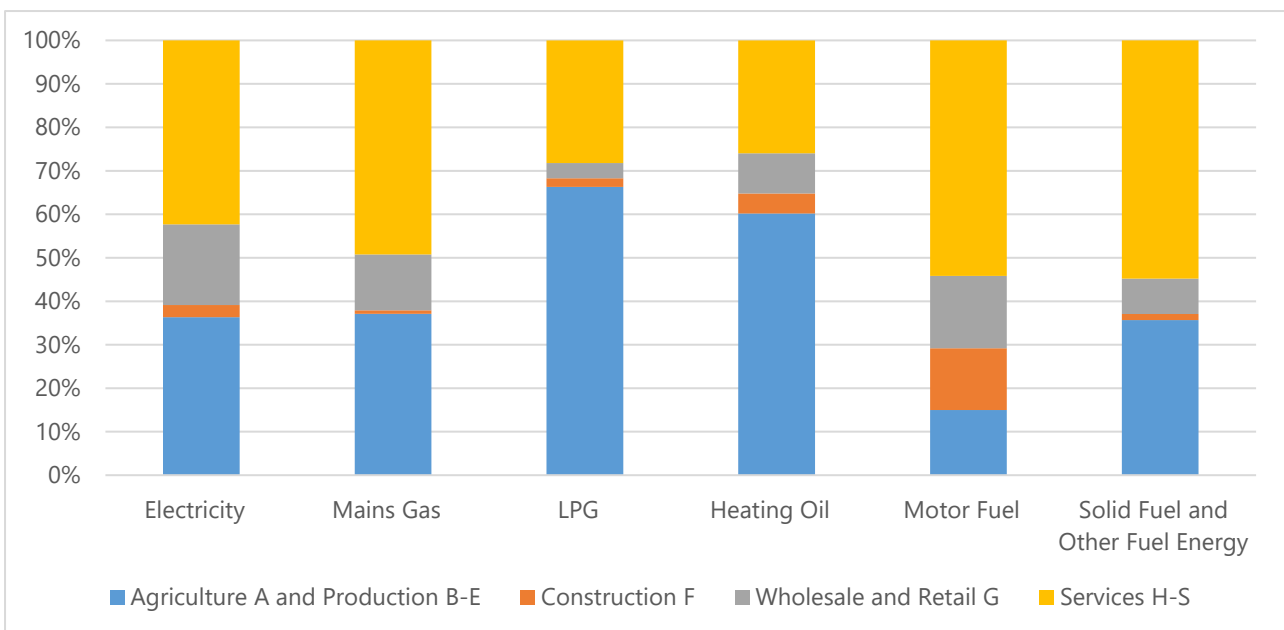
Figure 6: Total energy purchases by type of energy (2018)



Of all energy purchased, Motor Fuel (43%) and Electricity (39%) together accounted for over four fifths of all business energy purchases. Purchases of Solid Fuel and Other Fuel Energy (6%), Mains Gas (6%), Heating Oil (5%) and Liquid Petroleum Gas (1%) comprised the remainder.

Combining the type of energy purchased within grouped industrial sector provides more detail on how the purchase of energy type is distributed between the grouped sectors (Figure 7).

Figure 7: Energy type purchases by grouped Standard Industrial Classification Sector (2018)



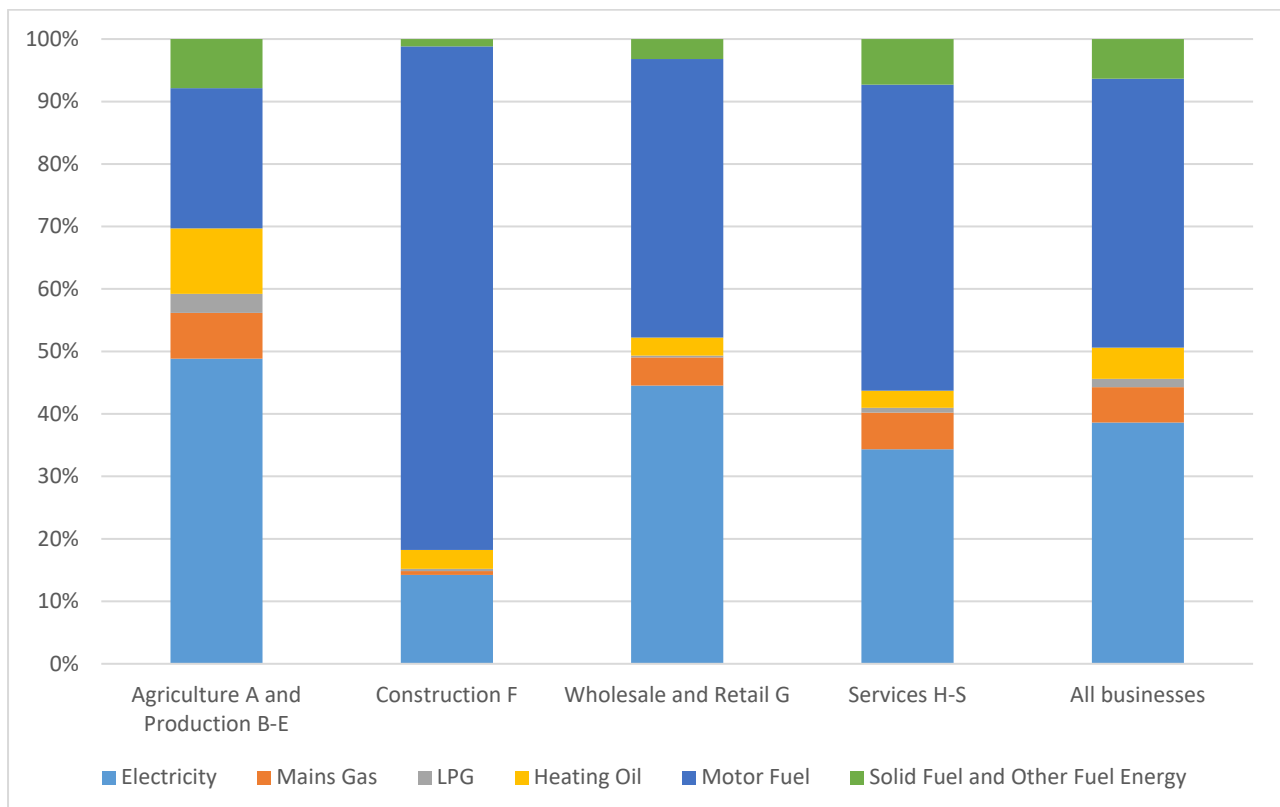
The most concentrated type of energy purchased within grouped sectors are Liquid Petroleum Gas (66%) and Heating Oil (60%) by businesses in the Agriculture and Production (A and B-E) group. The Services (H-S) group account for over a quarter of purchases of Liquid Petroleum Gas and Heating Oil.

Over half (54%) of Motor Fuel purchases are accounted for by businesses in the Services (H-S) group. Similarly, over half (55%) of Solid Fuel and Other Fuel Energy purchases are accounted for by services sector businesses.

Total purchases of electricity are more evenly split between the Services (H-S) (42%) and Agriculture and Production (A and B-E) groups (36%). The same broad picture is true for Mains Gas purchases, of which the Services group accounts for 49% while the Agriculture and Production group account for 37%. For Solid Fuel and Other Fuel Energy, Agriculture and Production (A and B-E) accounts for 36%, whilst the Services (H-S) group accounts for 55% of purchases.

An alternative perspective on sectoral and energy type purchases is to look at the share of each group's purchases of energy and the average for all businesses (Figure 8).

Figure 8: Grouped Standard Industrial Classification Sector share of energy purchases (2018)



For the Agriculture and Production (A and B-E) group, 49% of their energy purchases are of electricity followed by Motor Fuel (22%) and Heating Oil (10%). Energy purchases in the Construction (F) sector are focused on Motor Fuel (81%) followed by Electricity (14%).

Energy purchases within Wholesale and Retail (G) are more evenly spread between Motor Fuel (45%) and Electricity (45%). For the Services (H-S) group, almost half (49%) of their energy purchases are on Motor Fuel with 34% of energy purchases of Electricity.

Compared to the average energy purchases of all businesses, energy purchases by Construction (F) businesses are highly concentrated on Motor Fuel whilst the energy purchases of Agriculture and Production (A and B-E) businesses and Wholesale and Retail (G) businesses are more concentrated on electricity.

Conclusions

In the round, total energy purchased by businesses represented a 2% share of their total turnover in the years 2016, 2017 and 2018. Not only did the share of turnover accounted for by energy purchases vary by industrial sector and business size, so did the share and type of all energy purchased.

In terms of shares of turnover, energy purchases by businesses in the Agriculture, Forestry and Fishing sector represented the highest energy overheads although such businesses account for a small share of all energy purchased by businesses. In terms of business size, micro businesses employing less than five had the highest energy overheads in terms of share of their turnover and comprise almost two thirds of all businesses in the NIABI.

As a broad group, Services businesses had the highest energy overheads in terms of the share of their turnover accounted for by energy purchases, double that for all businesses in the economy as a whole.

Energy purchases by businesses within the Transportation and Storage (H), Manufacturing (C) and Wholesale and Retail (G) sectors together represented almost two thirds of all business energy purchases indicating the sectoral concentration of energy purchases across the economy.

As a broad grouping, Services businesses accounted for almost half of all energy purchases.

Energy purchases of electricity and motor fuel represented over four fifths of all types of energy purchases with clear differences apparent between industrial sector groups in the pattern of their type of energy purchases.

Together, these provisional estimates of energy purchases by business have provided, for the first time, an insight into the level of overhead represented by energy purchases to business. In addition, these estimates have provided an indication as to the pattern of energy purchases across industrial sectors within the economy.

Further developmental work will be taken forward over the coming years informed by the addition of new annual data together with additional analytical work. A component of this developmental work will be investigating the potential for calculation of confidence intervals around the estimates.

Annex 1: Standard Industrial Classifications (SIC) and Grouped SIC used in analysis

Standard Industrial Classification	Grouped Classification 1	Grouped Classification 2
A Agriculture, Forestry and Fishing	Agriculture	Agriculture and Production
B Mining and quarrying	Production	
C Manufacturing		
E Water supply, sewerage, waste management and remediation activities		
F Construction	Construction	Construction
G Wholesale and retail trade, repair of motor vehicles and motorcycles	Wholesale and Retail	Wholesale and Retail
H Transportation and storage	Services	Services
I Accommodation and food service activities		
J Information and communication		
L Real estate activities		
M Professional, scientific and technical activities		
N Administrative and support service activities		
P Education		
Q Human health and social work activities		
R Arts, entertainment and recreation		
S Other service activities		