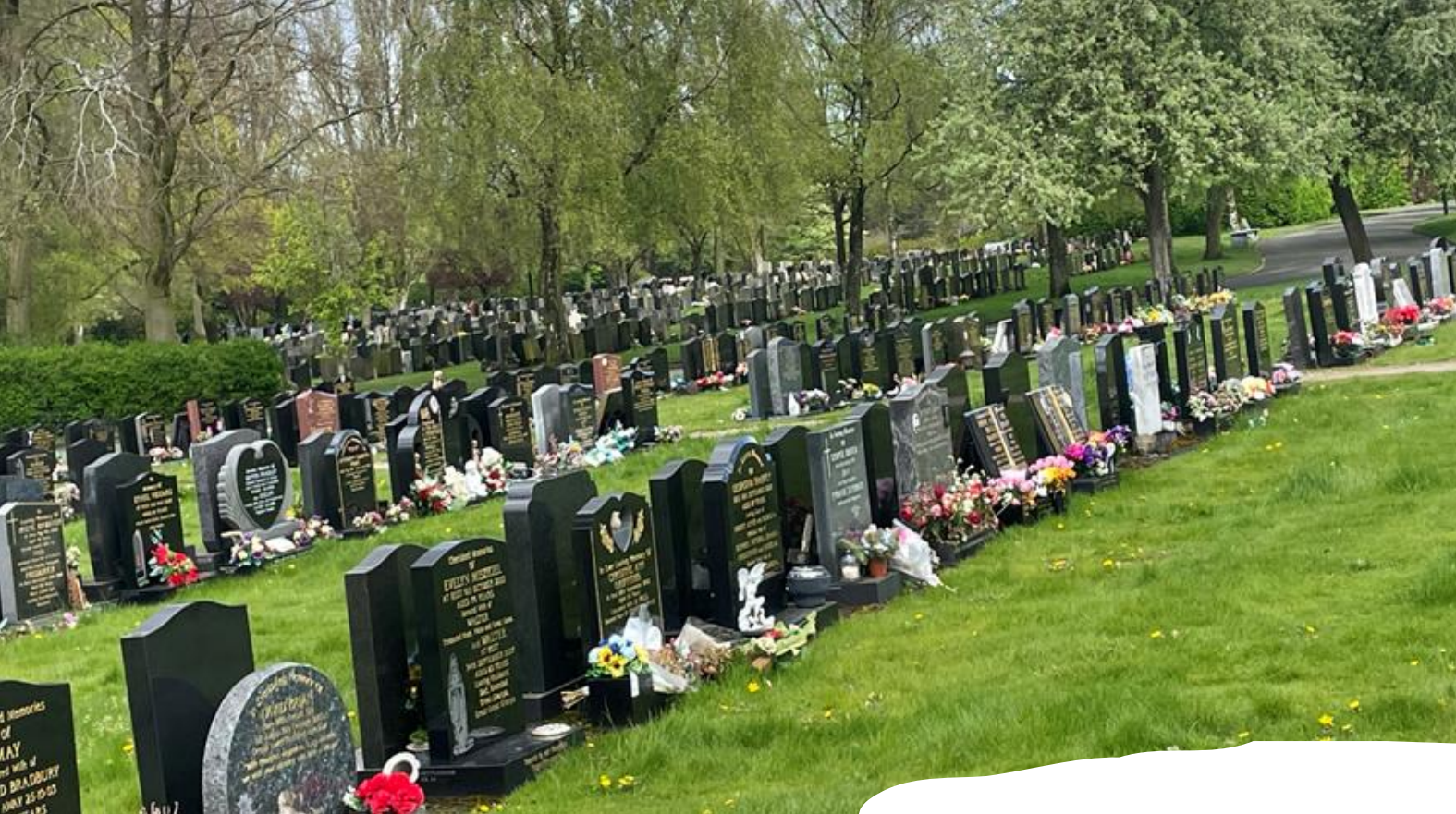




Decarbonisation In The Bereavement Sector. Memorialisation



Decarbonisation in the
bereavement sector

Memorialisation

Decarbonisation in the bereavement sector

Memorialisation

Background

It is assumed that potentially >80% of UK memorials are currently imported from China and India.

Local Authorities are driving the agenda for Carbon Net Zero, the bereavement sector is proactive in its approach to reduction in CO2 emissions from cremation, but memorialisation is another major source of carbon emissions.

The sector is also generally unaware of the ethical and ecological issues associated with imported memorials.

The representational professional bodies notably the National Association of Memorial Masons make scant reference to carbon reduction or environmental impacts in their corporate aims. Nor do they raise the awareness of ethical concerns.



Decarbonisation in the bereavement sector
Memorialisation

Memorial Survey

Decarbonisation in the bereavement sector

Memorialisation

Assumptions

Whilst there will be a range of sizes and designs of memorials a midsize lawn memorial has been used as an average representative size associated with lawn burial. (**Headstone 686 mm X 533 mm X 76 mm; Base 76 mm X 610 X 305 mm**, bulk density conversion **2.4t/t**)

The calculations (from survey data) do not take account of black granite used in cremated remains memorialisation, nor alternative imported grey and blue supplied from China or India due to the potential confusion with what might be British sourced granite.

Therefore, we feel that the figures supplied are conservative estimates of the embedded carbon from imported memorials.



Decarbonisation in the bereavement sector

Memorialisation

Background studies

In 2010/2011 **Herriot Watt University**, from the department now recognised as **The Centre for Innovation in Carbon Capture and Storage (CICCS)**, undertook research in process-based life cycle assessment of dimension stone production in the UK. The research reviewed the Life Cycle Analysis of the production of dimension stone including Sandstone, Slate and Granite and compared it to imported comparative materials from India and China as well as other countries.

In 2011 it calculated UK granite had embedded carbon of **107kg per tonne**, of which approx. **70kg** was attributable to processing.

UK's average carbon intensity in 2011 was **441g per Kwh**

Decarbonisation in the bereavement sector

Memorialisation

Background studies

Embedded carbon in granite; available information

Due to the change away from fossil fuels the UK's average carbon intensity **in 2023** is **160g** per **KWh**

This would reduce the 2011 Herriot Watt processing estimate from **70kg** to around **28kg** – reducing the total CO₂e of processing by **42kg per tonne** or in total delivered to site from **107kg to 65kg per tonne**.

Decarbonisation in the bereavement sector

Memorialisation

Background studies

Embedded carbon in granite; available information

India, by comparison, has a carbon intensity of **632g per Kwh** (<https://ember-climate.org/countries-and-regions/countries/india/>).

Therefore, compared to the Herriot Watt 2011 estimates which use the same carbon intensity for UK and India, the **70kg** for processing would actually be **100kg per tonne** in India adding a further **30kg** to the Indian figures.

Decarbonisation in the bereavement sector

Memorialisation

Background studies

With these updated figures, the Herriot Watt comparison for embedded carbon in granite transporting and processing now looks like:

UK	- approx 61kg per tonne	(6.5%)
India	- approx 360kg per tonne	(36%)
China	- approx 420kg per tonne	(42%)

The use of **40% embedded carbon** figure in subsequent calculations in this document is derived from the average CO₂e of Chinese and Indian granite. However further research is needed in this area for specific determination.

Decarbonisation in the bereavement sector

Memorialisation

Background studies

Customer Survey:

A grab sample survey (slide below) was sent to **30 local authorities**, with the purpose to understand the level of imported granite within their cemeteries and their knowledge of the industry and environmental impacts. To date **22 authorities** have responded (21 currently processed).

The graphs and tables below show the analysis of the responses

Decarbonisation in the bereavement sector

Memorialisation

Background studies

Are you aware of the carbon footprint of imported stone?

Do you know what the embedded carbon is for memorials?

Are you provided with certification that memorials are supplied from ethical sources?

Do you request traceability documents for country of origin?

Do you request traceability documents for quarry origin?

Are these certificates tested for accuracy and authenticity?

Decarbonisation in the bereavement sector

Memorialisation

Background studies

Do you impose a carbon contribution for imported stone to encourage local stone?

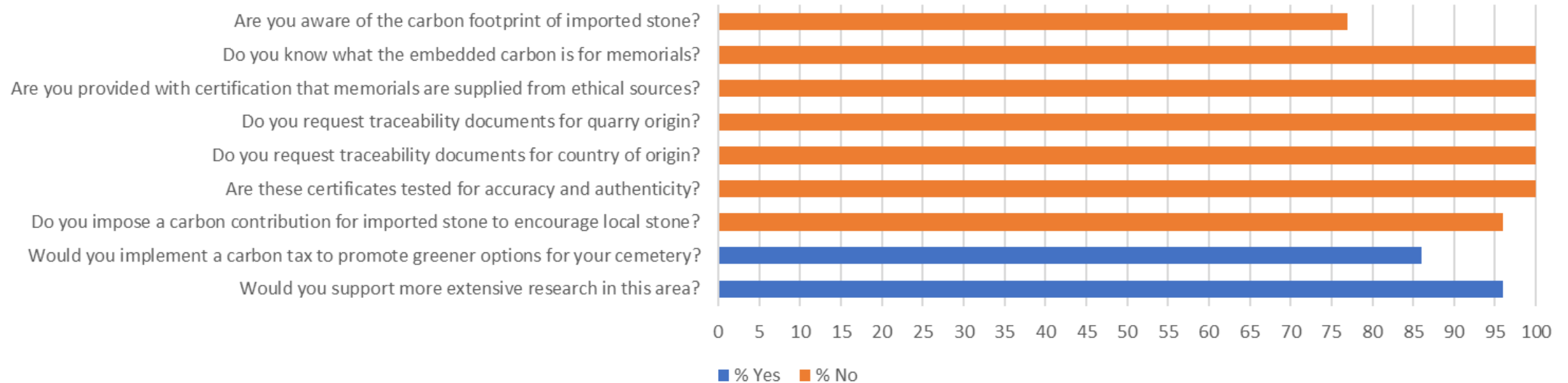
Would you implement a carbon tax to promote greener options for your cemetery?

Would you support more extensive research in this area?

Decarbonisation in the bereavement sector

Memorialisation

Environmental and Ethical Awareness of Imported Granite



Decarbonisation in the bereavement sector

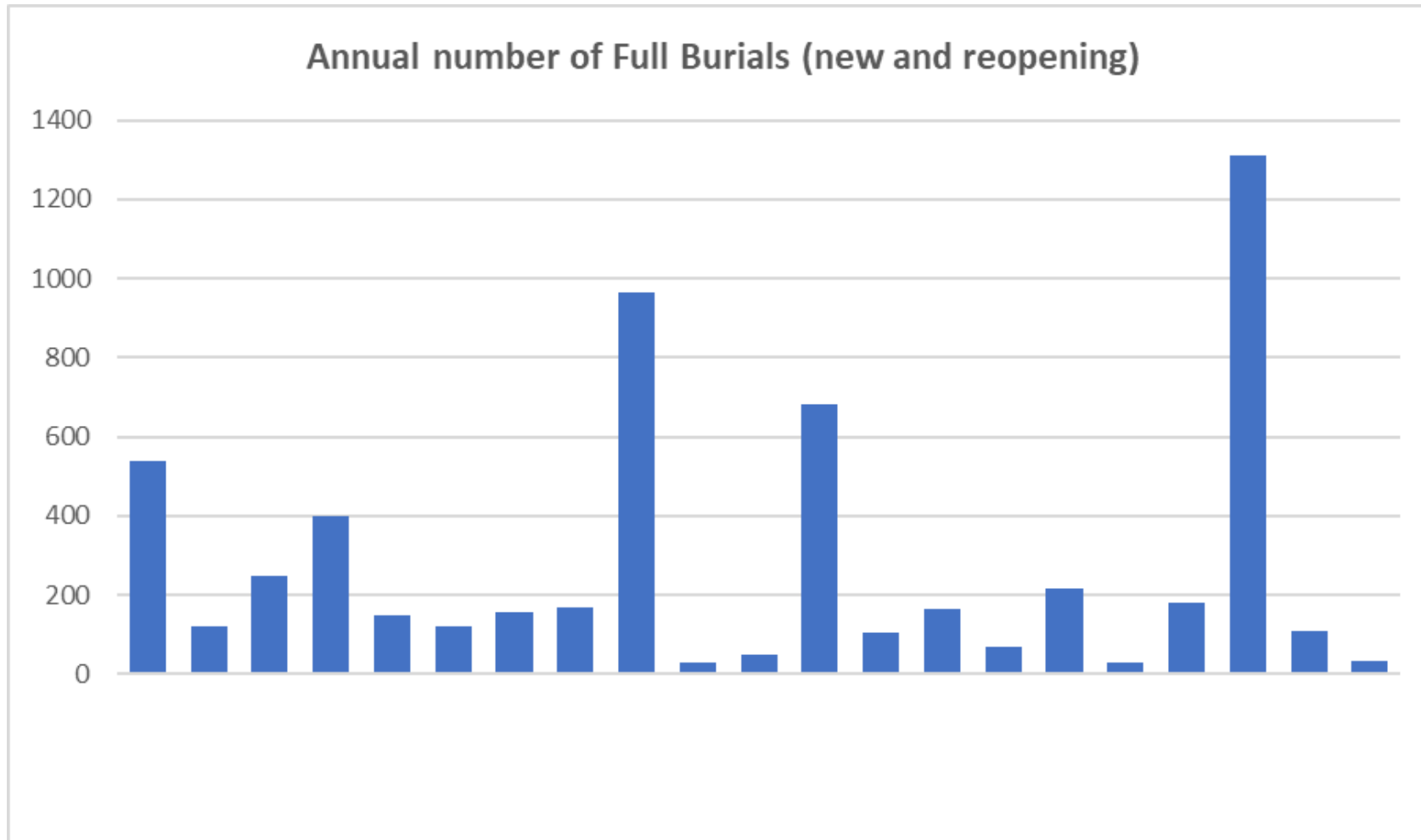
Memorialisation

Participating Authorities.

Stoke BC, Bristol Council, Middlesbrough Council, Huntingdon TC, Leighton Linlade TC, Cheltenham BC, London Borough Croydon, Reading BC, Edinburgh Council, Maldon DC, Worcester DC, Blackpool Council, Leicester BC, Westminster City Council, Hartlepool BC, Bradford City Council, Buckinghamshire Council, Peterborough Council. Redditch DC.

Decarbonisation in the bereavement sector

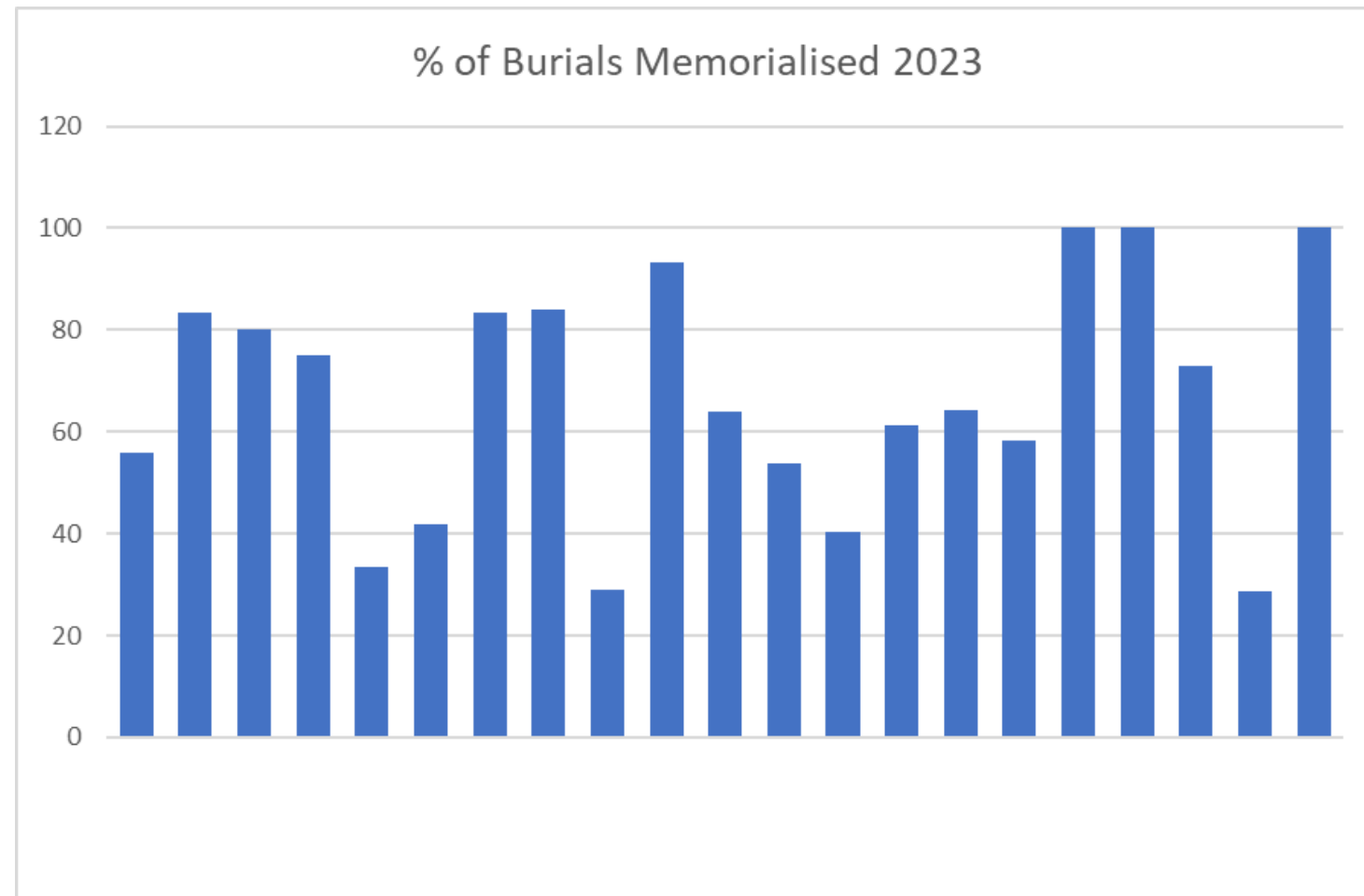
Memorialisation



Decarbonisation in the bereavement sector

Memorialisation

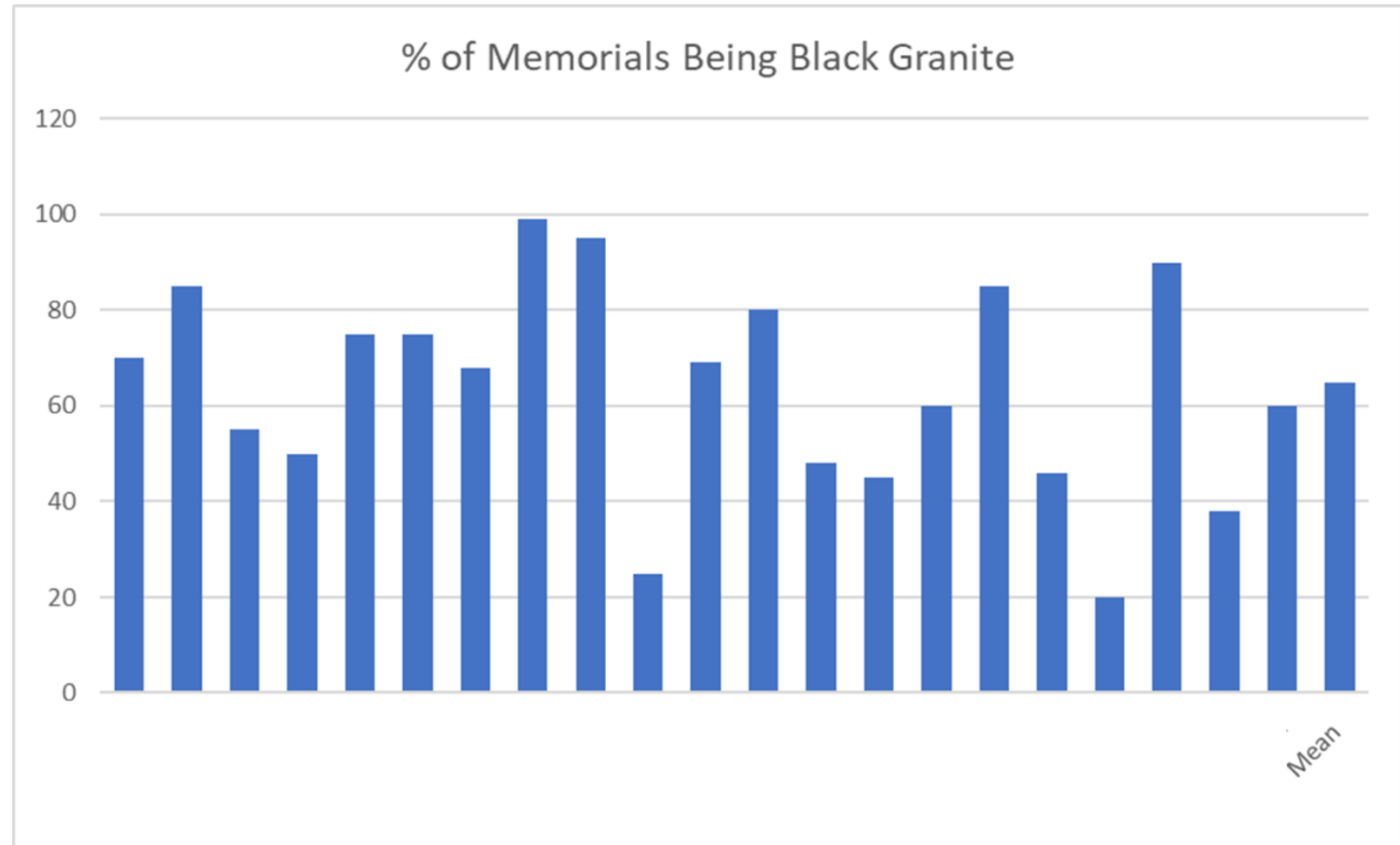
Not all burials are memorialised as a percentage of burials are re-openings of a relative's grave and the memorial is shared



Decarbonisation in the bereavement sector

Memorialisation

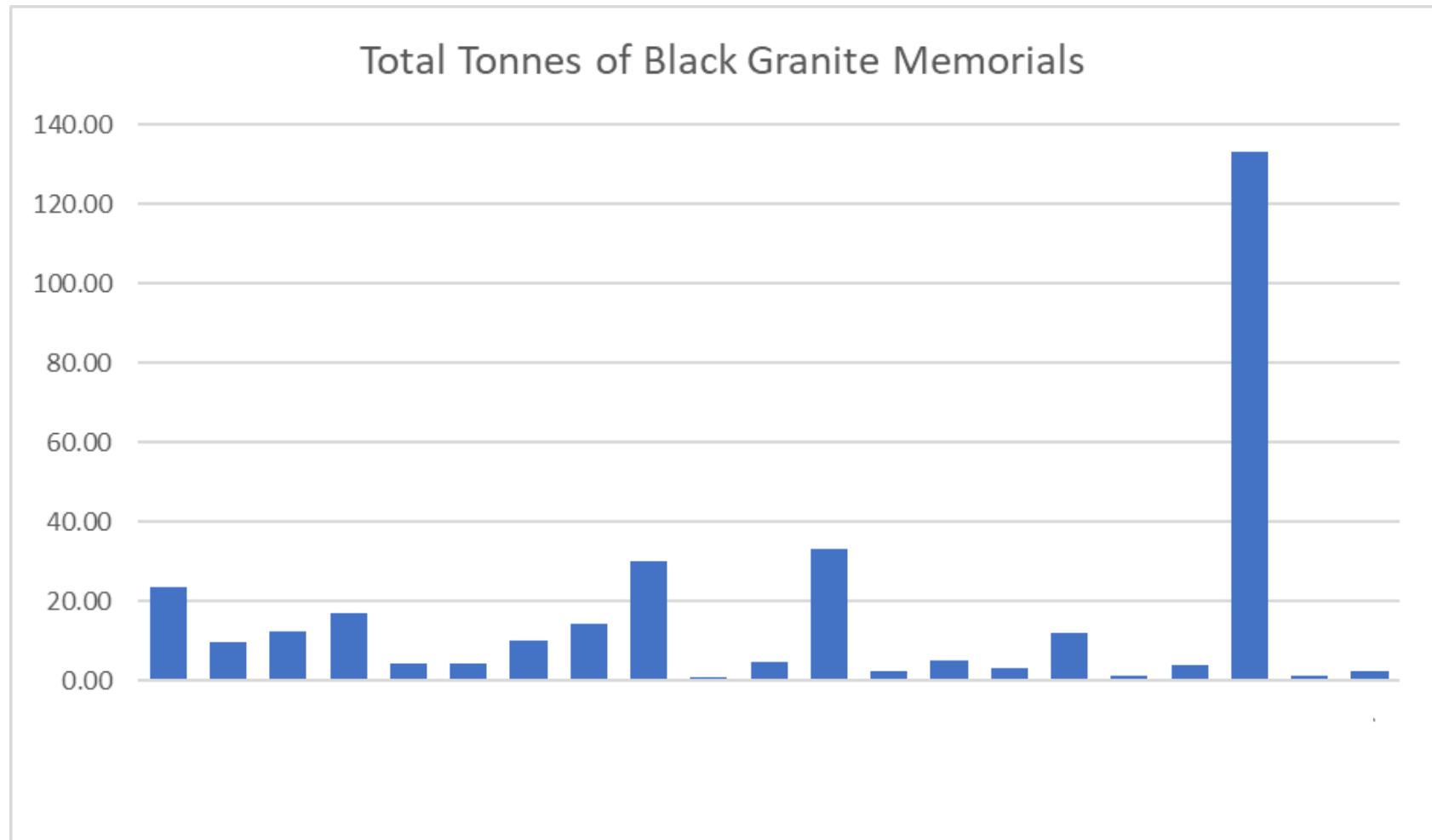
Other memorials made from stones such as blue and grey granite are also likely to be imported but as similar stones exist in the UK, it is difficult for authorities to identify source in the survey.



Decarbonisation in the bereavement sector

Memorialisation

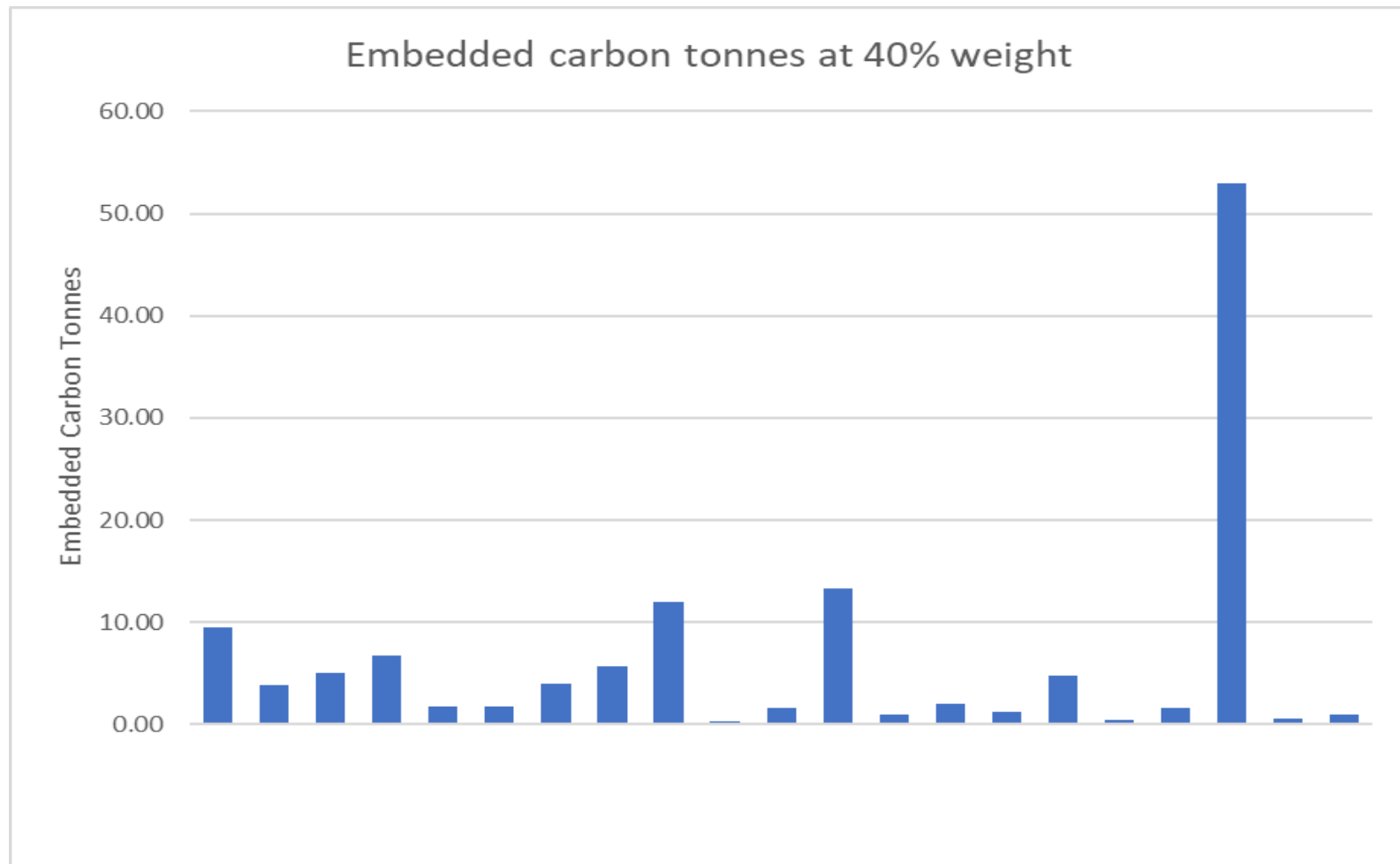
To understand the amount of embedded carbon we have to convert the memorials to weight by multiplying the volume by the bulk density



Decarbonisation in the bereavement sector

Memorialisation

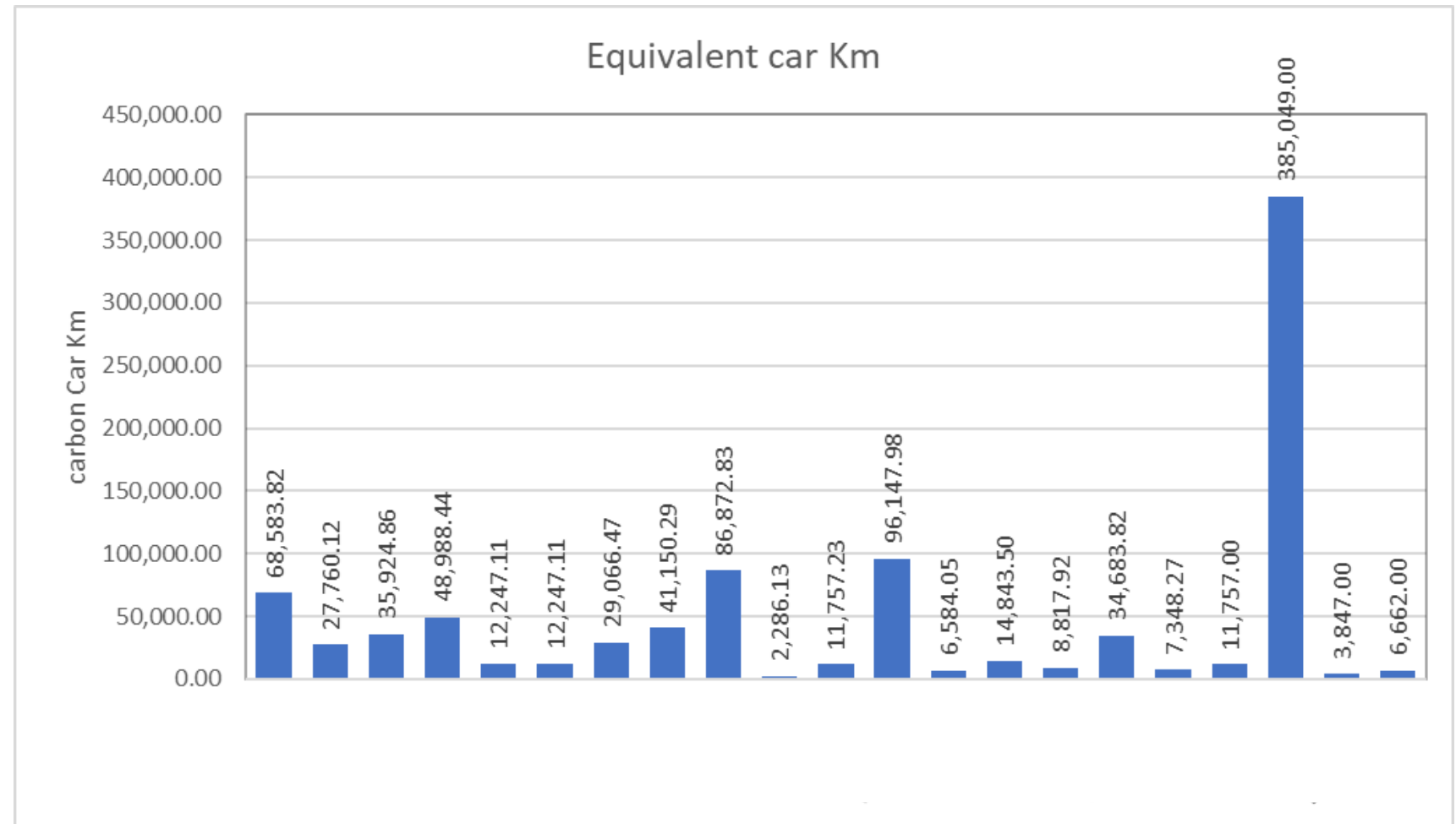
Embedded carbon is based on 40% of weight of memorial as per Herriot Watt Calculations.



Decarbonisation in the bereavement sector

Memorialisation

The embedded carbon totals are converted to equivalent car Km. This being **138 gms carbon per car Km.**



Decarbonisation in the bereavement sector

Memorialisation

Results

	Totals (21 authorities)
Total number of annual burials	6,386.00
Total number of memorials	3,921.00
Number of black granite memorials	2,901.00
Total Kg of memorials	327,890.00
Embedded carbon Kg at 40% weight	131,156.00
Equivalent car Km	947,658.00

Decarbonisation in the bereavement sector

Memorialisation

Stats for UK	Assumptions
Deaths in UK 2021	667,500
Cremations 2021	525,100
Annual Burials	142,400
Annual natural burials (15% estimate)	21,360
Annual cemetery burials	121,000
Estimated (%) of cemetery burials memorialised	62%
Estimated number of cemetery burials memorialised	75,020
Average (%) black granite memorials	63%
Estimated number black granite memorials	47,262
Weight of memorials total (allows Headstone 686 mm X 533 mm X 76 mm = 0.0278 m3 Base 76 mm X 610 X 305 mm = 0.0141 m3 . Total 0.0278 + 0.0141 = 0.0429 m3) Bulk density granite 2700 kg/m3 x 0.0429 = 115Kg (0.115 mt) per memorial	0.115 MT
Weight of all black granite memorials in tonnes	5,435 MT
Kg carbon at 40% for imported granite	2,174,000 k g
Carbon Km Equivalent for imported granite	15,753,623 km

Decarbonisation in the bereavement sector

Memorialisation

Using the same data as in previous slide for but replacing the imported stone with local stone and using the figure for processing the stone and delivered to site as 65 kg CO₂e (6.5%).

Weight of all black granite memorials in metric tonnes	5,435 MT
Kg carbon at 6.5% for UK quarried UK processed granite	333,365 Kg
Carbon Km Equivalent for UK quarried UK processed granite	2,415,688 Km
Carbon Km Equivalent saving by quarrying and processing in UK	13,337,935 Km

These data only allow for imported black granite 2' 6" headstones and not for other imported stone and cremated remains memorials.

Ethical Consideration of Imported Memorials



Images from The Dark Side of Granite

Ethical considerations of imported memorials

The UK are one of the world's biggest importers of granite from India and China



Ethical considerations of imported memorials

India

EXPORTS

In 2021, India exported \$839M in granite, making it the first largest exporter of granite in the world. The main destinations of granite exports from India are: China (\$419M), **United Kingdom (\$165M)**, Bangladesh (\$44.5M), Chinese Taipei (\$22.1M), and Poland (\$20.8M). The fastest growing export markets for granite off India between 2020 and 2021 were **United Kingdom (\$47.3M)**, Italy (\$9.95M), and Poland (\$8.63M).

Ethical considerations of imported memorials

China

EXPORTS

In 2021, China exported granite to the value of **\$53.4M**, making it the tenth largest exporter of granite in the world. The main destinations of granite exports from China are: Chinese Taipei (\$12M), Hong Kong (\$6.95M), **United Kingdom (\$6.41M)**, South Korea (\$4.88M), and Thailand (\$2.55M).

Source OEC

Ethical considerations of imported memorials

Research

In August 2017 the publication **The Dark Side of Granite** was a review of Modern slavery, child labour and unsafe work in Indian granite quarries, it was researched and authored by Stop Child Labour, India Committee of the Netherlands and Kerk in Actie.

The report focused on 22 quarries in the states of Pradesh, Telangana and Karnataka in South India these three states account for 75% of the granite production in India.

The following data is abstracts from their report, and other sources such as Xertifix an NGO based in Germany, whose aim is to audit producers and users to reduce the levels of unethical practices in the processing, supply, and marketing of materials and services.

Ethical considerations of imported memorials



Germany and the UK are the biggest importers of granite in Europe. Sourcing their supply either directly from these regions in India, or indirectly through secondary processing in China.

Ethical considerations of imported memorials

Bonded labour

More than 70% of the workforce in the investigated granite quarries were casual labourers employed on a daily wage or piece rate basis.

To ensure sufficient manpower the quarry operators look to make long term commitments from workers by paying loans and wage advances with interest rates between 24% and 36%.

With this type of arrangement, the quarry owners have the means to bind the workers to the quarries, this is debt bondage.

Ethical considerations of imported memorials

Child labour.

Whilst child labour has significantly reduced since the early 2000's, the research from the investigated sites showed that nearly 80% of waste stone processing in a number of these quarries is undertaken by women and children.

Children below 14 years account for nearly 3% of the waste stone processing workforce and 5% of this workforce is between 15 and 18 years old.



Ethical considerations of imported memorials

Health and safety .

PPE:

Nearly 62% of the workers interviewed for the report stated that they were not provided any safety equipment such as a helmet, goggles, boots, respirator/mask and gloves, except during labour department inspections.

Safety equipment was found to be mainly reserved for permanent workers.



Photo: Benjamin Pütter

Ethical considerations of imported memorials

Health and safety .

Dust:

Exposure of workers to respirable crystalline silica is associated with elevated rates of lung cancer. The strongest link between human lung cancer and exposure to respirable crystalline silica has been seen in studies of quarry and granite workers.



Photo: Benjamin Pütter



Ethical considerations of imported memorials

The UK government has a clear stance against forced labour, including child and bonded labour, in its trade relationships. The key points:

Modern Slavery Act: The UK has enacted the Modern Slavery Act 2015, which deals with slavery, servitude, forced or compulsory labour, and human trafficking.

It requires all large businesses to produce an annual statement setting out the steps they have taken to prevent modern slavery in their business and supply chains.

Transparency in Supply Chains: The Transparency in Supply Chains provision in the Modern Slavery Act seeks to address the role of businesses in preventing modern slavery from occurring in their supply chains and organisations.

Ethical considerations of imported memorials

G7 Trade Ministers' Statement on Forced Labour:

The G7 Trade Ministers, including the UK, have issued a joint statement expressing concern about the use of all forms of forced labour in global supply chains. They affirm that there is no place for forced labour in the rules-based multilateral trading system.

The UK government is committed to upholding human rights and international labour standards, and it expects businesses to do the same.

It encourages businesses to take serious and effective steps to identify and root out contemporary slavery, which can exist in any supply chain, in any industry.

A background image of green foliage, including leaves and stems, with a soft, out-of-focus effect. The colors range from deep green to light lime green.

Ethical considerations of imported memorials

Responsibility of Cemetery Operators and Providers

From the information collected from Local Government cemetery operators, there appears to be very little evidence to suggest that local councils are aware of the carbon and ethical implications of the memorials they are installing.

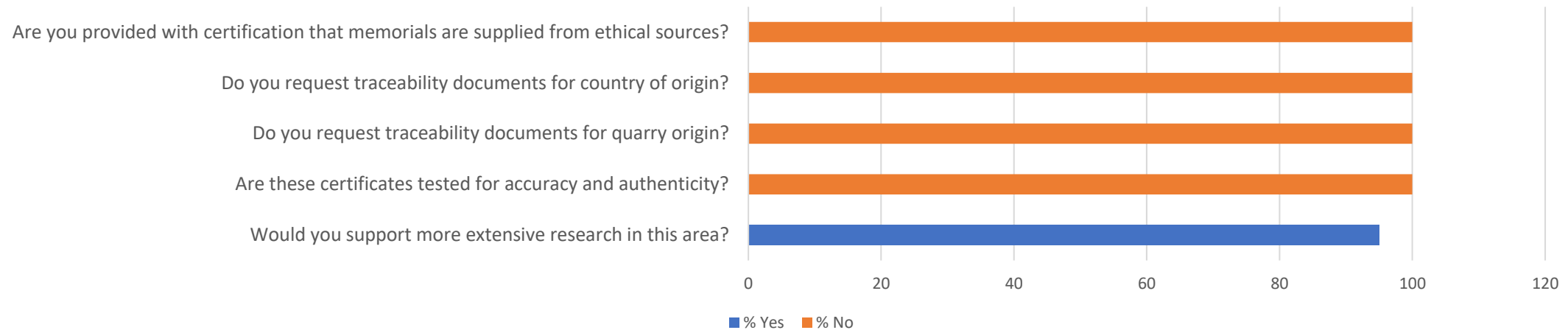
NAMM who is nationally recognised as the trusted consultative body have very little reference to the environmental and ethical implications on the sourcing of memorials.

Larger national funeral organisations whilst highlighting reduction in carbon from coffins and electrification of fleet vehicles in their green policies, make no mention of the significant source of embedded carbon and the ethical issues associated with the imported memorials they sell.

Ethical considerations of imported memorials

Local councils are the primary end destination of imported granite memorials from India and China

Ethical Awareness



The table above illustrates the response from twenty local authorities who collectively install >5,000 memorials annually, to the question of do they know the source of their granite memorials?

A background image of green foliage, including leaves and stems, with a soft, blurred effect. The colors range from dark green to light green and yellow-green.

Ethical considerations of imported memorials

If the government is looking to encourage businesses and government authorities to take serious and effective steps to identify and root out contemporary slavery, child labour and bonded labour which exists in this supply chain.

Then the memorial industry in all sectors appears to be failing!