

PARLIAMENTARY DEBATES

HOUSE OF COMMONS
OFFICIAL REPORT

First Delegated Legislation Committee

DRAFT WEIGHTS AND MEASURES ACT 1985
(DEFINITIONS OF “METRE” AND “KILOGRAM”)
(AMENDMENT) ORDER 2020

Tuesday 2 June 2020

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Saturday 6 June 2020

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The Committee consisted of the following Members:

Chair: MR PHILIP HOLLOBONE

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|---|---|
| † Benton, Scott (<i>Blackpool South</i>) (Con) | † Saxby, Selaine (<i>North Devon</i>) (Con) |
| † Clarkson, Chris (<i>Heywood and Middleton</i>) (Con) | † Scully, Paul (<i>Parliamentary Under-Secretary of State for Business, Energy and Industrial Strategy</i>) |
| Dowd, Peter (<i>Bootle</i>) (Lab) | † Smith, Jeff (<i>Manchester, Withington</i>) (Lab) |
| Elliott, Julie (<i>Sunderland Central</i>) (Lab) | † Stewart, Iain (<i>Parliamentary Under-Secretary of State for Scotland</i>) |
| † Gideon, Jo (<i>Stoke-on-Trent Central</i>) (Con) | † Tarry, Sam (<i>Ilford South</i>) (Lab) |
| † Howell, Paul (<i>Sedgefield</i>) (Con) | Thompson, Owen (<i>Midlothian</i>) (SNP) |
| † Hunt, Tom (<i>Ipswich</i>) (Con) | Yohanna Sallberg, <i>Committee Clerk</i> |
| Jones, Mr Kevan (<i>North Durham</i>) (Lab) | |
| † Mackrory, Cheryllyn (<i>Truro and Falmouth</i>) (Con) | |
| † Mumby-Croft, Holly (<i>Scunthorpe</i>) (Con) | |
| † Onwurah, Chi (<i>Newcastle upon Tyne Central</i>) (Lab) | † attended the Committee |

First Delegated Legislation Committee

Tuesday 2 June 2020

[MR PHILIP HOLLOBONE *in the Chair*]

Draft Weights and Measures Act 1985 (Definitions of “Metre” and “Kilogram”) (Amendment) Order 2020

5 pm

The Parliamentary Under-Secretary of State for Business, Energy and Industrial Strategy (Paul Scully): I beg to move,

That the Committee has considered the draft Weights and Measures Act 1985 (Definitions of “Metre” and “Kilogram”) (Amendment) Order 2020.

It is a pleasure to serve under your chairmanship, Mr Hollobone. The purpose of the draft order, which was laid before the House on 16 March 2020, is to update the Weights and Measures Act 1985 with new definitions for metre and kilogram. It does not represent any change in policy; it simply updates the definitions of those units of measurement in UK law to agree with those agreed internationally. It will ensure that UK legislation is kept up to date and in step with the rest of the world. At the same time, it will implement the definitions on the required implementation date in European Union law.

The values of the units of measurement themselves are not changing: a kilogram will weigh the same as it did before, and a metre will still be the same length. In fact, there will be no direct impact on any businesses or consumers. Consumers will not need to be made aware of the changes, and businesses will need to do nothing as a result of this legislation. However, I will set out some of the background to the changes, to provide the Committee with some context for why the changes were proposed and how they have come about.

The new definitions have their origins in the need for ever more accurate measurements to support new technologies and science. The changes that we are concerned with today—the definitions of kilogram and metre—were part of an international agreement to amend the definitions for seven base units of measurement, made following a decade of discussion, scientific research and testing around the world.

The scientific work came to fruition when the new definitions were agreed and recognised by the International Bureau of Weights and Measures in November 2018. The bureau acts as the co-ordinator of the worldwide measurements system and ensures that the base units of the international system of units—also known as the SI base units—are uniformly accessible. Having consistent and accurate measures is vital for science, international trade and high-technology manufacturing, as well as for the health and safety of people and the protection of the environment.

The UK was a founder member of the bureau, together with France, India and the USA, back in 1875. The bureau now has more than 100 member or associate member

countries, representing every part of the globe. The UK has retained its influence in metrology since the bureau was founded, and today it remains at the forefront of both legal and scientific metrology.

In fact, the redefinition of the kilogram was made possible using technology developed in the UK. The UK’s National Physical Laboratory, which is one of the leading national metrology institutes in the world, played a key part in the redefinition programme through its development of the Kibble balance, which balances gravitational force with an electromagnetic force, allowing the kilogram to be defined by reference to the fixed numerical value of the Planck constant—a constant that will not change over time.

Before that work made the redefinition possible, the kilogram was defined by reference to a piece of titanium and iridium kept in a vault in Paris, the mass of which fluctuated, for example due to dust. All other standards were measured against this international prototype. Now, instead, they can be determined accurately by science. The new definitions of the metre and the kilogram were deemed by the bureau to come into effect on 20 May 2019, along with changes to the definitions of the ampere, the second, the candela, the mole and the kelvin.

In accordance with the European Union withdrawal agreement, the definition changes, if approved, will be implemented on the same date as in EU member states, which is 13 June this year. In order for the UK to stay in step with the rest of the world and to meet our obligations under the withdrawal agreement, we have taken steps to amend our legislation.

In September 2019, the Weights and Measures Act 1985 (Amendment) and Units of Measurement Regulations 1986 (Amendment) Regulations 2019, S.I., 2019, No. 1211, amended the definitions of all seven of the SI base units in the Units of Measurement Regulations and made amendments to certain definitions in the 1985 Act. Those amendments were made following the negative procedure, using powers under section 2(2) of the European Communities Act 1972. They are also timed to come into force on 13 June 2020.

Amending the definitions of metre and kilogram in the Weights and Measures Act requires use of powers provided for under the Act itself. This new statutory instrument will make the amendments necessary to update the definitions in the Weights and Measures Act, to come into effect alongside the earlier statutory instrument on 13 June. This will ensure that the UK statute book is up to date and consistent, and that we are complying with the withdrawal agreement.

Although the new definition will have no impact on businesses or consumers, it is worth reminding ourselves why having an accurate and up-to-date definition really matters. This change ensures that units of measurement definitions are uniform, scientifically robust and will stand the test of time. We all depend on accurate measurement, whether to guarantee that the goods we trade are fairly priced by quantity or to ensure that the parts of manufactured items fit together correctly. The volume of goods sold on the basis of quantity is staggering. In the UK alone, over £342 billion-worth of goods are sold on the basis of the measurement of their quantity, equating to £6.23 billion every week. Additionally, a further £280 billion-worth of goods are traded between businesses by quantity each year.

To conclude, I repeat that there is no policy change here and there will be no impact on businesses or consumers. This is a technical change to update our laws to reflect definitions that have been agreed internationally. In doing so, we will also meet the requirements of the withdrawal agreement. This statutory instrument will ensure that our legal framework is clear, consistent, up to date and based on internationally agreed definitions.

5.6 pm

Chi Onwurah (Newcastle upon Tyne Central) (Lab): It is a great pleasure to serve under your chairmanship, Mr Hollobone, and to take part in this debate. Our country has a proud scientific tradition, from Isaac Newton to Stephen Hawking, and from Ada Lovelace to Rosalind Franklin. Today we have Lesley Yellowlees, Jocelyn Bell Burnell and Newcastle-born Peter Higgs, who discovered the Higgs boson. Britain's scientific giants have bestrode the world, and our science sector continues to lead the world, powering our economy in the process. Isaac Newton famously discovered gravity and, with Cavendish, identified the gravitational constant. He was one of the first fellows of the Royal Society and, like the Royal Society, I welcome these measures to redefine important constants—I say redefine, but in reality it is clarifying the definition in scientific terms.

Social distancing measures—and, at this very moment, parliamentary voting procedures—have ensured that the entire country is now expert in measuring 2-metre distances. I am pleased to note that this amendment will not send millions of us back out with our rulers to recalculate what we were once certain of. In fact, the amendment embeds scientific certainty and is a welcome example of following the science.

As shadow Science Minister, I am pleased to welcome this. Many may ask why or how these measurements are changing. The Minister said something on the subject. In the past, measurements were determined by physical standards, for example a foot or a finger's width—body parts were a common method of measurements. As physical science developed, so did our measurements system.

As the Minister said, the latest definition of a kilogram goes by a piece of metal stored in a Parisian vault, Le Grand K. The problem is that if Le Grand K remains the fixed definition of a kilogram, damage to the cylinder in Paris would have knock-on effects on the value of a kilogram across the world. I do not want to be the one explaining that to wholesalers in my constituency when our markets are just re-opening.

Economics had the gold standard, and weights and measures had a physical standard. The new definition is based on a set of seven defining constants drawn from the fundamental constants of physics and other constants of nature. The kilogram is the last remaining measurement based on a physical standard. As the Minister outlined, scientific experts have spent decades researching and testing measurements. That research eventually led to the International Bureau of Weights and Measures adopting seven new base measurements in 2018. The new measurements were approved to come into effect a year ago. In the EU withdrawal agreement, the UK signed up to following EU member states in adopting the measures in 10 days' time.

The statutory instrument is important because it will update the Weights and Measures Act 1985 with the new definitions for metre and kilogram, as approved by

the IBWM, which consists of 102 countries. A kilogram will now be defined based on the most precise measurement ever, the Planck constant, which scientists have spent decades measuring to 10 parts per billion. The Planck constant can be expressed in terms of the SI units kilogram, metre and second.

Since metre and second are already defined by constants of nature, the value of a kilogram can be obtained without relying on comparisons with a metal block. A metre is defined by taking the fixed numerical value of the speed of light in a vacuum, c , to be 299,792,458 when expressed in the unit metres per second. It is very technical but accurate and rooted in scientific certainty.

The UK's National Physical Laboratory, a world-leading metrology institute, played a key part in the redefinition of the kilogram. The changes ensure that units of measurement definitions are scientifically robust and globally accessible. I have spoken with the Royal Society, which in 2011 held an international meeting calling for change to the definition of the kilogram. It welcomes the news and applauds the contribution made by UK science.

If anyone is worried about what this draft order means for their lives, it is important to note that, as the Minister said, it will have no direct impact on businesses or consumers. The changes ensure uniformity across the world. Despite the changes, a kilogram will still have the same mass and a metre will still be the same length, so socially distanced outdoor exercise regimes can continue as successfully as they have been.

This is a useful technical instrument, but I have a couple of questions. The order's explanatory memorandum states:

"It partly implements Commission Directive 2019/1258".

If that is the case, what parts of the Commission directive are not being implemented, and why? Can the Minister reassure us that the UK will continue to reflect the European Union's metrological definitions after the transition period? That is an important point for our scientists.

As the Minister outlined, part of the redefinition took place in the Weights and Measures Act 1985 (Amendment) and Units of Measurement Regulations 1986 (Amendment) Regulations 2019. Having looked at those regulations, I am not clear why we are doing it in two separate instruments, or whether there will be any issues in their interaction in practice.

Overall, the measure is a positive move that I and the stakeholders in the scientific community I have spoken to welcome. I hope that it reflects the Government's commitment to embracing internationally recognised standards and aligning with our European neighbours, rather than moving away from them. Scientific evidence and certainty are key to the UK overcoming coronavirus and building a post-Brexit future, but so is collaboration.

I am glad that we are committed to abiding by European Union regulations as set out in the withdrawal agreement, as will be the case on 13 June when we adopt the new definitions of metre and kilogram, as that will necessarily support ongoing collaboration. It is a shame that this could not have been done a few weeks earlier, on World Metrology Day, but I will not hold the Minister responsible for that.

[Chi Onwurah]

The draft order will make UK legislation consistent and up to date, reflecting the new scientific definitions that underpin the legal and scientific metrology framework around the world, and Opposition Members are happy to support it.

5.15 pm

Paul Scully: I thank the hon. Member for Newcastle upon Tyne Central for her contribution, and I thank the Committee for its consideration of the draft order. As we heard in both contributions, it is important to emphasise that there is no change in policy, or to the actual weight of the kilogram or length of the metre, because there are people up and down the country—whether they are going to market or are in precision engineering—for whom weights and measures are important, as we have outlined. It is worth reiterating that this change has been made on an international basis and with due care and consideration. The fact that we may resign Le Grand K to a pub quiz question is a good thing, because we will have this constant definition that will move us forward.

The hon. Lady asked a couple of questions about why we are partially implementing the Commission directive. Back in September 2019, in order partially to implement the directive at that point, the UK updated the definitions of the seven SI base units in the Units of Measurement Regulations 1986 and certain definitions in the Weights and Measures Act 1985. The draft order will complete the implementation of the directive by updating the definitions of metre and kilogram. I do

not want her to be concerned that we are not fulfilling our duty on that directive as part of the withdrawal agreement.

The hon. Lady also asked what we will now do with European definitions. Bear in mind that as we leave the EU and the need for the withdrawal agreement, as we move towards the next phase of our relationship, the definition of these weights and measures will be dealt with in totality as an international standard. In the same way as all EU member states will work with us and with all those countries across the globe to maintain those standards, it is important—in order to be competitive around the world, and obviously within the EU—that we have that international collaboration, and that it is not limited only to the EU.

We are moving towards the metre no longer being defined by two notches on a physical bar, as it is at the moment, and we can be certain that there will be no degrading of Le Grand K or any dust on any of those physical structures, so people can rest assured that if they buy a kilogram of fruit or vegetables, or if they need precision engineering, that measurement will be consistent here and across the world. This is simply a technical change to update how those measures are defined, maintaining our pace with international developments and ensuring that we meet our obligations under the withdrawal agreement. I therefore hope that the Committee will agree to the draft order.

Question put and agreed to.

5.19 pm

Committee rose.

