

## The Starting Situation for the Standardisation of the SI system

In 1798, the French Revolution demanded standardised units of measurement alongside the use of the decimal system. This led both to the introduction of the *mètre des Archives*, which was defined as one ten-millionth of the shortest distance from the North Pole to the equator passing through Paris, and also to the creation of the *International Prototype Kilogram*, which was intended to correspond to the mass of one litre or cubic decimetre of water at a temperature of 4° C.

In 1875 these two artefacts formed the basis of the international agreement at the Metre Convention, initially signed by 17 founder states – including France, Russia and the German Empire – in order to create standardised units for the future. Since 2015, the Metre Convention has 60 member states, as well as another 40 states and global organisations. However, the use of metric units has not yet become fully established around the globe. For example, in the USA lengths, masses and temperatures are still measured in miles, ounces and degrees Fahrenheit.

The last two decades, with their scientific and technical developments, demonstrated that inadequacies in the definition of units – of the kilogram in particular – were having increasingly noticeable negative effects. Deviations in the prototype kilogram led to intolerable changes in all other measurements that depended on the kilogram.

The simplified SI system introduced in 2019 uses unchangeable – according to current knowledge – natural constants for science and technology on the basis of measurements and calculations – independent of arbitrary and imprecise dimensions.

### **Note:**

The video “What are International Units of Measurement?” gives a general overview of the SI system and its historical development:

<https://www.mediatheque.lindau-nobel.org/videos/38525/si-units-i-en>