



Dr Martin Milton
Director of the BIPM



Mr Anthony Donnellan
Director of the BIML

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Measurements supporting the global food system

Food is a major concern for every one of us. Providing access to safe and affordable food remains one of the major challenges for governments worldwide. This is also the goal of farmers and food producers who trade products through distributors and retailers to consumers at international, national and local levels. In 2021, this trade was worth 22 trillion USD and accounted for approximately 20 % of all global trade.

To trade internationally and to access markets for high-value products, producers must be able to show that they meet food standards. Additionally, governments need to ensure safety and fair trade especially in local markets for food. All of this is supported by reliable measurements of the quantity and quality of the primary and processed food products involved.

Our focus for World Metrology Day in 2023 is on the many measurement challenges that must be addressed to make the global food system work. For example:

- the quantity of food bought and sold is measured according to its **mass** or **volume**. These measurements range from the large volumes of grain and wheat traded internationally down to rapid online weighing measurements to ensure pre-packaged goods are labelled correctly;
- the effective storage and packaging of food depends on the accurate control of the **temperature** and **humidity** of its storage environment;

- the quality and authenticity of food is determined by measuring its **chemical composition**. This requires measurements to ensure that it contains the stated levels of vitamins through to measurements of its **isotopic composition** to validate the origin of high-value foods such as honey or wine; and
- the safety of food is ensured by careful measurement to detect the presence of **chemical contamination** such as pesticide residues and heavy metals or **biological contamination** such as mycotoxins.

It is now recognised that the depletion of natural resources and the impact of climate change pose major challenges to the global food system such that the goal of a world with zero hunger and universal access to clean water was included amongst the Sustainable Development Goals set by the United Nations.

We again look forward to celebrating World Metrology Day with our stakeholders around the world.