The Global Language of Business

GS1 Australia Feedback – Product Commission Request for Information and Feedback on Opportunities for the Circular Economy in Australia

Summary: This submission shines a light on the critical role that international supply chain data standards (GS1 Standards) play in supporting Australian industry and governments transition to a more circular national economy. Leveraging industry-accepted norms such as the simple and ubiquitous barcode, the submission explains how government and businesses can enhance supply chain traceability and transparency, facilitate and fast-track digital transformation of industries and deliver positive social, environmental and economic outcomes including improved productivity, prosperity and quality of life. Circularity case studies, including the National Framework for Recycled Content Traceability (DCCEEW) and Project iTRACE in the rail sector, showcase successful national implementations of these standards. The submission highlights the need for a national (whole-of-economy) approach, clear government direction and industry collaboration, and building on existing infrastructure to drive positive circular economy outcomes. Key recommendations include government support for raising awareness, building capacity, and ensuring nationally consistent policies. GS1 Australia is committed to supporting government agencies to better understand and leverage Australian and International standards such as GS1 to facilitate a positive and practical transition to a more circular and sustainable economy.

GS1 Australia appreciates the Productivity Commission's request for information and feedback on opportunities for the circular economy in Australia. The circular economy represents a transformative opportunity to shift from the traditional "take-make-dispose" model to a framework that retains the value of materials, reduces waste, and enhances economic productivity across the supply chain.

Australia's path to a circular economy demands that businesses across all sectors simplify and standardise the way information is captured and shared through supply chains. Access to quality and timely information about materials flows and re-use has long been a problem hampering effective government and industry policy design and implementation. Streamlining communication and coordination is critical.

To realise national productivity improvements, Australian industry will benefit from the use of common data standards that support a transition to a more circular economy. That is, internationally accepted, simple to use and industry-adopted approaches to identify products and related materials flows, economic operators and locations (places) to support enhanced supply chain traceability and transparency. This standardisation not only reduces the friction of resource recovery but also enhances material productivity, aligning with the inquiry's objective of maximising output per unit of input.

Global supply chain data standards maintained by GS1 are recognised Australian Standards. They are used by governments throughout the world and are ubiquitous in more than 25 industry sectors including retail/fast-moving consumer goods, healthcare, building and agriculture. The standards provide an interoperable framework that allows businesses to achieve economies of scale in circular activities. Through consistent identification and data exchange standards, more than 2 million global businesses including almost all Australian manufacturers and retailers use GS1 standards (not limited to barcodes) for the exchange of data about the transformation steps that products go through, from raw materials all the way to the consumer.

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These basic building blocks are already well-suited to the circularity challenges of today. These standards enable persistent identification of products across their first (and second or third) life, or the ability to identify each product component and chemical substance and to reconcile those with the finished product's identity. Additionally, standards enable the connection of a single barcode/data carrier on a product to deeper data about the product, such as data attributes like the CO2 emissions calculated per product, or its material composition to aid appropriate recovery options.

What progress is being made in Australia

Case Study 1: Traceability of Recycled Content

The National Framework for Recycled Content Traceability (NFRCT), released by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) in December 2023, provides guidance for businesses on collecting and sharing information about recycled materials, and references use of interoperable global standards. Although GS1's Global Traceability Standard is widely adopted in upstream supply chains, it is less familiar within the waste and resource recovery (WRR) sector. There is a need for clear, practical steps that industry participants can follow to minimise unnecessary costs, risks, and complexities. Industry and government leadership are essential to demonstrate what is possible and offer guidance to support Australia's transition to a circular economy.

Close the Loop (a publicly listed Australian company specialising in plastics recycling), in partnership with GS1 Australia and Recity (a traceability solution provider), is launching an initiative to enhance recycled content traceability, aligning with the newly released NFRCT and offering practical guidance for material handlers. The project focuses on recycling soft plastics from plastic bags—materials that would otherwise end up in landfill—into road construction materials. It builds on successful collaborations among Close the Loop, civil engineers, contractors, State road authorities and Victorian city councils, involving the large-scale use of recycled plastics in asphalt.

The project has three objectives:

1. Driving market demand: Providing authenticity and trust in recycled content products to stimulate demand and ensure that recycled content claims are verifiable.
2. Standardised labelling: Collaborating with waste collectors to develop and test a standardised label for logistical units used in collecting, storing, and processing recycled plastics.
3. Trialling a traceability platform: Testing automated processes for data capture (from labels) and data sharing using machine-readable methods, incorporating input from solution providers.

The project is currently underway and represents one of the first implementations of the NFRCT. As an output of the project, a short guidance document will be developed for materials recovery facilities on adopting standardised labelling on bales and other logistical units to support interoperability and uptake of traceability in the sector.

Case Study 2: Project iTRACE

The Australian rail sector does not currently have a standard language to identify and mark material parts and components. The Australian Railway Association (ARA), together with industry, launched Project iTRACE in partnership with GS1 Australia to set a consistent industry standard for automatic data capture (barcoding and/or tagging) and support efficient management of material master data to assist the procurement process of rail components and assets.

Project iTRACE assists all stakeholders effectively identify rail components and assets, electronically capture information about them and share that information with relevant parties – operators,

suppliers and maintainers. It allows national and international product identification and traceability and enables automation and digitisation.

Over the long term, Project i-TRACE will facilitate a step shift in the rail sector, a cohesive supply chain where maintenance, repair, and overhaul (MRO) processes can be automated and standardised, contributing directly to productivity gains, cost savings, and safety improvements. Additionally, these efficiencies foster a more circular approach by minimising waste, supporting life cycle management, and enabling predictive maintenance. This model of traceability and data harmonisation not only strengthens operational effectiveness within rail but also serves as a model for circular economy strategies across industries.

More information about this case study can be found here and here.

Case Study 3: Digital Labelling Benefits for a Circular Economy

GS1 Australia brings decades of experience working with industries on labelling and on-pack information. Digital options like 2D barcodes offer a flexible way to convey detailed, location-specific information while using minimal packaging space—an essential feature for enabling circularity. Widely recognized formats such as QR codes allow these barcodes to hold far more data than traditional 1D barcodes, including batch numbers, expiry dates, and safety information.

Unlike their linear predecessors, 2D barcodes offer benefits across the supply chain, supporting manufacturers, retailers, logistics, solution partners, and consumers. A single scan of a 2D barcode connects partners to essential data for inventory management, traceability, sustainability, consumer engagement, and more. By consolidating information like storage, recycling instructions, and origin off-pack, 2D barcodes reduce on-pack space, excessive packaging, costs, and waste.

A key example is Woolworths' adoption of 2D barcodes. Starting in 2019 with a pilot for fresh meat and poultry, Woolworths embedded batch, supplier, and use-by date information into 2D codes, later expanding across its fresh food categories. By early 2022, over 50% of Woolworths' meat products featured 2D barcodes in over 1,000 stores, with this coverage still growing.

Results have been substantial. Woolworths and participating suppliers have improved food safety, restricted out-of-date product sales, and cut food waste by up to 40%. Store teams can easily identify items nearing expiry and mark them down for sale, preventing disposal. Furthermore, 2D barcodes streamline product recalls, ensuring only affected products are removed from shelves while others remain available. If a recalled product reaches checkout, the barcode alerts the cashier to withhold the sale. Additionally, 2D barcodes have improved productivity in expiry management by up to 21%, enabling system-driven markdowns and minimizing manual relabelling.

Woolworths' experience illustrates how digital innovation and standardised data models drive productivity and circularity benefits. More information about this case study can be found here.

What is needed to enable further progress

GS1 Australia highlights the following success factors from a standards perspective that we believe are critical areas for Government and industry to consider when reviewing what is needed to enable further progress towards a circular economy in Australia:

1. **Alignment with International Standards:** For Australia to effectively compete in global markets and achieve circular economy goals, it is crucial to align with ISO and other international standards that facilitate cross-border material traceability. GS1's alignment with standards, including ISO 15459-3 for product identification, has demonstrated how such frameworks support seamless trade and efficient tracking of recycled materials, minimising regulatory friction and maximising productivity gains across supply chains
2. **Nationally consistent in requirements**: A unified national framework and approach to key policies and actions for industry to drive circularity is crucial to reduce complexity, enhance compliance, and align with international best practices. This consistency is particularly important for businesses operating across state and national boundaries. Diverging regulations, such as state-specific bans on single-use plastics (SUP) and varying Container Deposit Scheme

(CDS) operations, have increased compliance challenges, especially when data reporting requirements vary across jurisdictions.

3. **Collaboration with Industry Leaders and Peak Bodies**: Involving large industry players and peak bodies is critical for building the necessary momentum in adopting circular economy practices. Industry leaders, including GS1 members across the supply chain, play a pivotal role in setting benchmarks that smaller businesses can follow, reducing entry barriers and allowing broader participation in circular initiatives.
4. **Leveraging International Learning and Insight:** Australia can fast-track its circular economy initiatives by leveraging insights from global case studies and proven interventions, saving resources and avoiding redundancy. GS1's participation in global networks enables access to successful models that can be adapted to Australian contexts, enhancing productivity by building on established best practices.
5. **Supporting Awareness and Building Capacity:** Increasing awareness about the productivity benefits of circular economy practices is essential. GS1 encourages government to support and engage with standards organisations and product conformity bodies, like Standards Australia and NATA, to develop implementation guidelines that simplify circular economy integration for businesses. This would enhance productivity by reducing the learning curve for companies entering circular initiatives.
6. **Building on Existing Global and National Registry Infrastructure**: Transitioning to a circular economy in Australia presents unique and practical opportunity to build on established industry processes and *soft national infrastructure*[1], including international and Australian product registries and location data (for materials handling). This involves 100's of millions of products and location registries used in transport, distribution, and freight industries to support the development of innovative solutions required to address recycled material traceability efficiency and cost-effectiveness. By building upon these foundations, we can expedite progress in this critical area while minimising disruptions to existing supply chain operations.

We would like to express our appreciation for the opportunity to provide feedback on this important Inquiry. GS1 Australia looks forward to further engagement as the Inquiry's recommendations are developed in collaboration with industry and government stakeholders. We are available for further discussions and are eager to contribute additional insights as needed.

If you have further queries, please do not hesitate to contact GS1 Australia's Sustainability and Circularity Manager, Dharshi Hasthanayake or Peter Carter, General Manager Public Policy and Government Engagement

Thank you for considering our feedback.

Sincerely,

Peter Carter

General Manager Public Policy and Government Engagement
GS1 Australia

[1] *Soft infrastructure* is all the services (and supporting data systems and standards) that are required to maintain the economic, health, cultural and social standards of a population, as opposed to the hard infrastructure, which is the physical infrastructure of roads, bridges etc.

About GS1 Standards and GS1 Australia

GS1 is an international, not-for-profit industry-led supply chain standards-setting body with a global federation of 118 member organisations operating in 141 countries. Representing millions of businesses worldwide, GS1 facilitates the use of global data standards to identify, capture, and share information about goods moving through global supply chains. Renowned for its ubiquitous barcode system in retail trade, GS1 supports simple, efficient, safe, sustainable, and fair-trade practices.

GS1 in Australia started operations in the early 70s and today has 22,000 business members across 21 sectors, including large multinational corporations, smaller enterprises, and government entities. The organisation promotes trade process alignment using global data standards including unambiguous, unique global identifiers represented in barcodes for retail products and logistical units like cartons, pallets, and shipments. Additionally, GS1 manages data standards for various entities, including business identity, locations, assets, shipments, documents, and more.

Collaborating with industry associations, governments, and international trade facilitation agencies like UN/CEFACT, WTO, and WCO, GS1 strives for standardisation, harmonisation, and digitalisation of trade systems. The organisation maintains semantic libraries and information architecture to facilitate electronic trade messaging and data exchange. GS1 Standards have also been adopted by governments in many economies as part of their regulatory frameworks for traceability, supply chain management and trade. For example, in New Zealand simplified import and export declarations, US, China and Canadian customs processes.

GS1 also supports industry and governments in their implementation of standards through a range of tools and services including:

1. Education and training services to build skills and knowledge in traceability and related standards.
2. Development of traceability guidelines and implementation tools.
3. Development and management of national and global registries supporting traceability through accurate master data related to products and locations involved in traceability.
4. Engagement with technology vendors to develop an ecosystem of interoperable solutions, based on GS1 standards, that is available to industry.

GS1 standards are technology agnostic and allow the implementation of data sharing across value chains in a manner that is interoperable. They enable each participant in the supply chain to make their own, independent commercial decisions in choosing technology and solution partners.