

Industry

Section summary

On present trends the production of goods and services poses a risk to a sustainable world. Resource-extraction leaves some ecosystems facing existential risk. Energy emissions are a major contributor to the climate crisis.

In 2018-19, however, there were signs that some companies are taking a new approach. Food and agriculture firms are exploring new ways of producing crops that combine high yields with low environmental damage. More firms are using raw materials in a more considered way. And for the first time ever there is real momentum behind meaningful action to reduce waste.

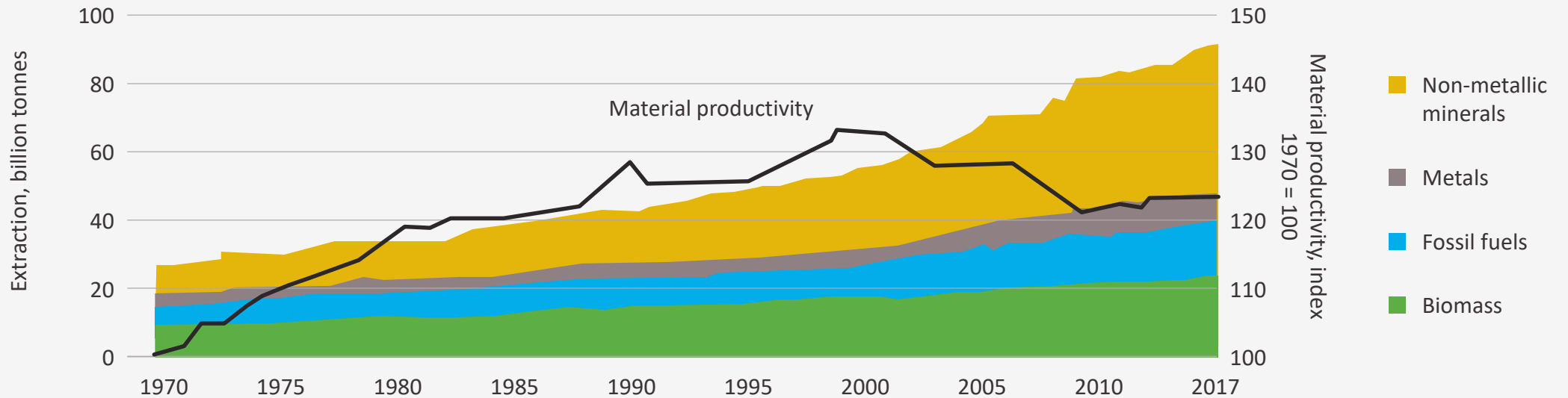


Today's industrial systems are far from sustainable



Material extraction continues to rise

Global material extraction, four main material categories, 1970-2017



Source: International Resource Panel

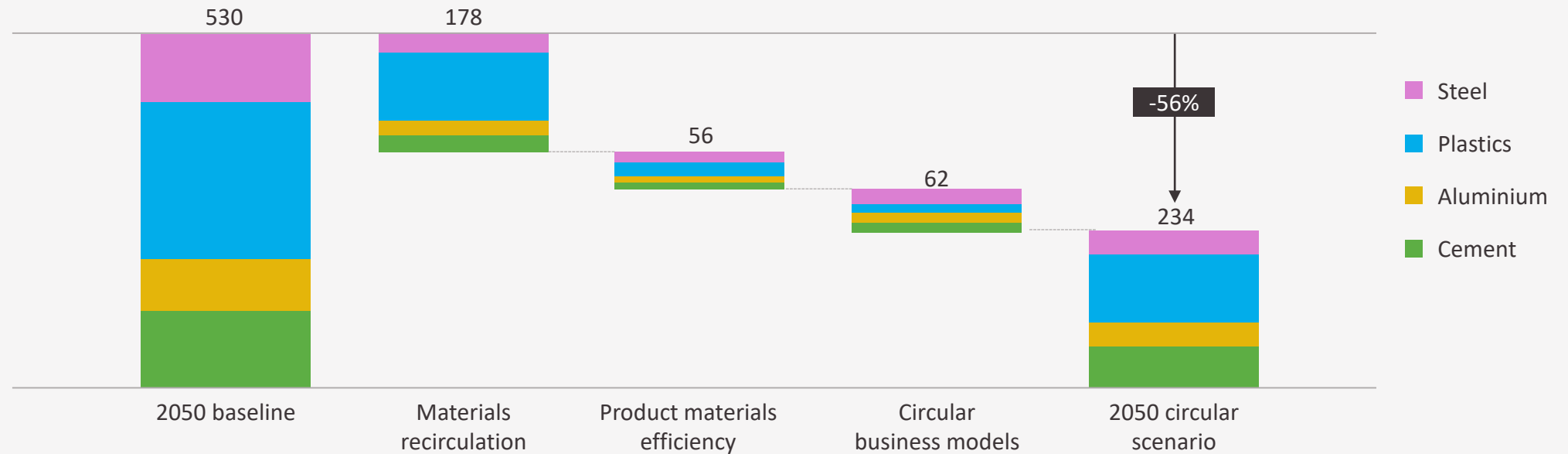


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A more circular approach to production and consumption could cut material use while creating new economic opportunities

EU emissions reduction potential from a more circular economy, 2050 (Mt of carbon dioxide per year)



Source: Material Economics

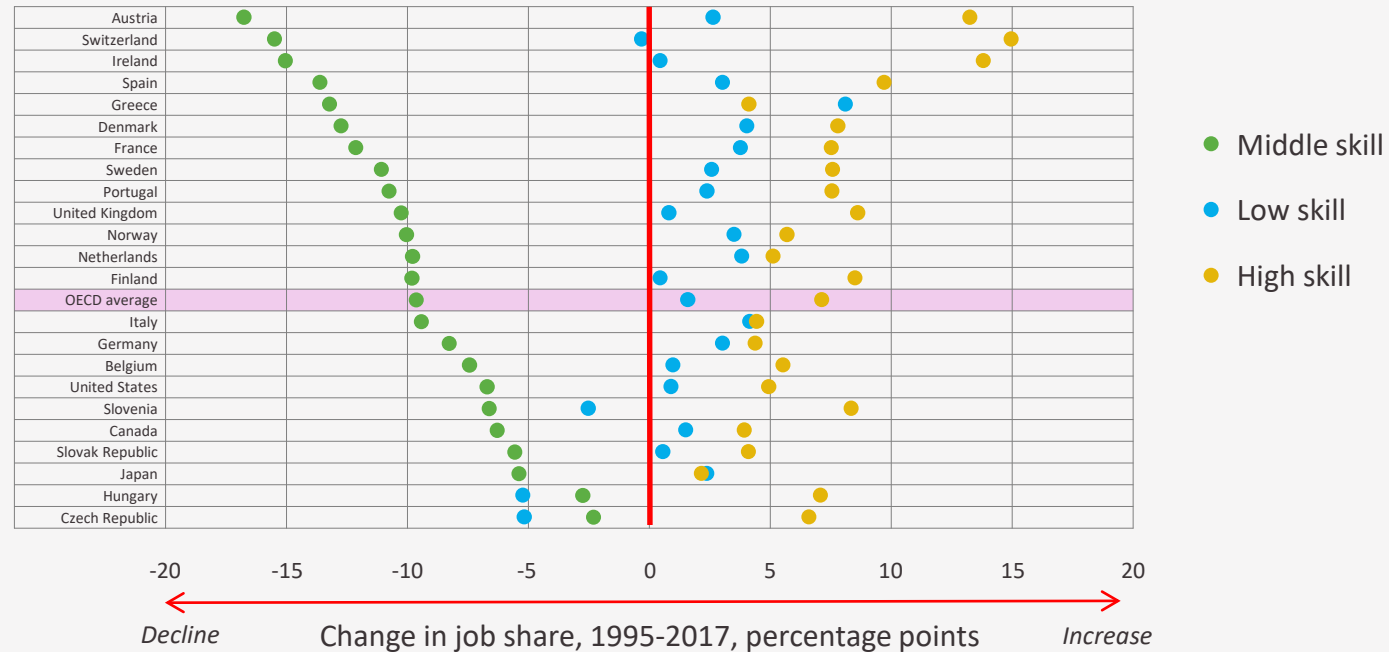


Today's industrial systems are far from sustainable



Any transition away from unsustainable industrial systems must be fair. Middle-skill jobs in manufacturing and industry have been hit hard in recent years, potentially leading to the rise of populism

Job polarisation in OECD countries, 1995-2017. Middle-skill jobs have fallen as a share of overall employment



Source: OECD; Generation

Sustainable industrial systems are characterised by...



A fair transition to
new industrial
models



Food systems
shifting towards
becoming more
sustainable



Better
management of
waste

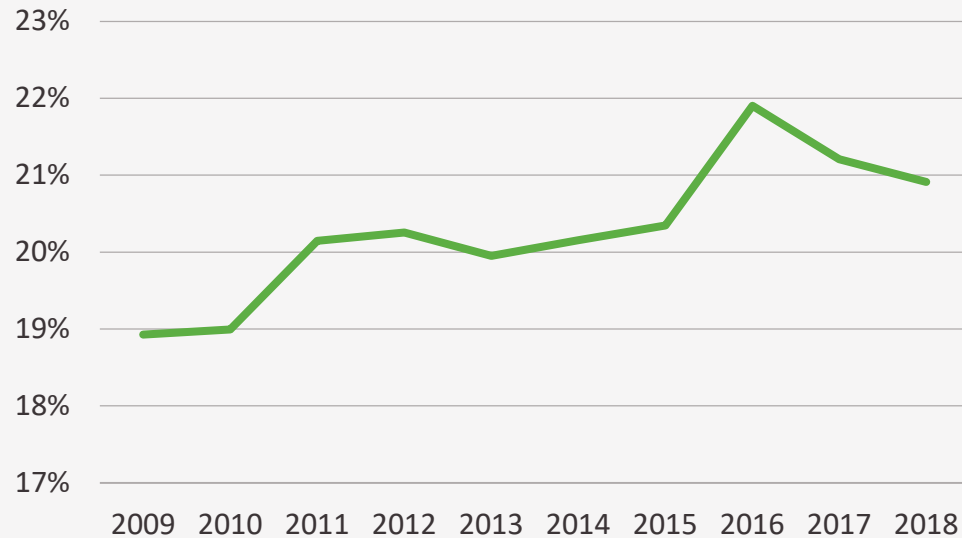


There is a shift towards industrial models which are more productive and less resource-intensive

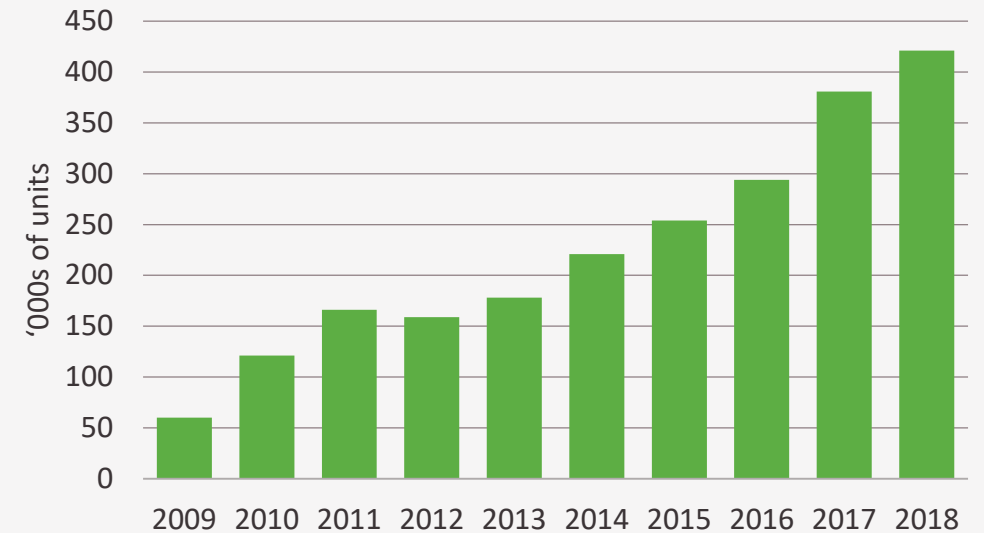


Industrial companies are raising investment, becoming more efficient in the process. As of 2018 over 400,000 industrial robots were shipped across the world

Capital investment in construction and manufacturing as a share of overall investment, OECD, 2009-18



Supply of industrial robots, global, 2009-18



Source: OECD; International Federation of Robotics; Generation

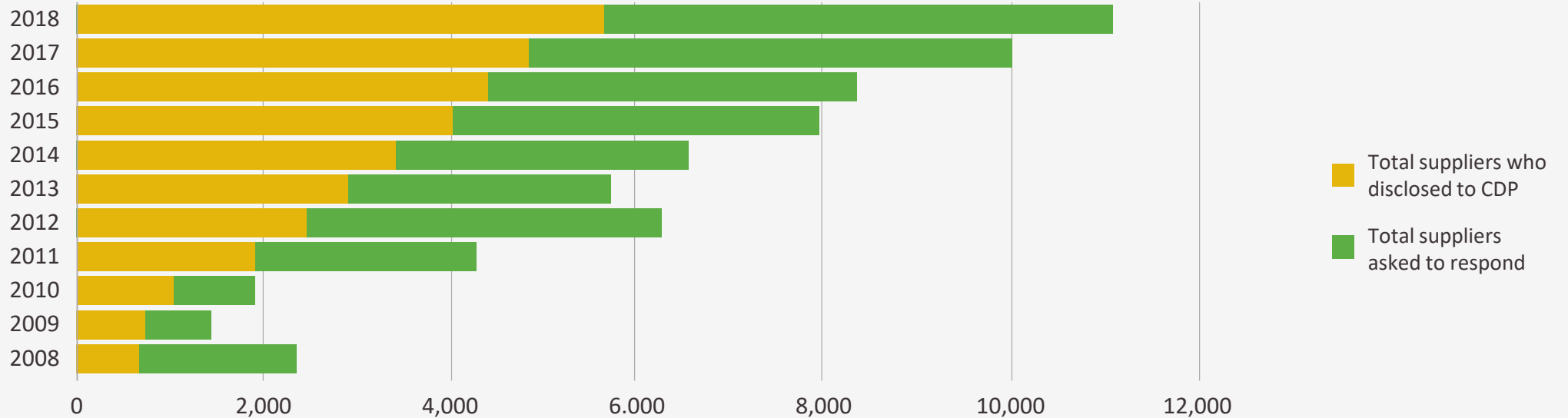


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More firms are making supply-chain disclosures, meaning that they report on efforts to reduce their usage of water and production of greenhouse gases

CDP supply-chain disclosures, global, 2008-18*



Source: Carbon Disclosure Project

* To date, 47 members of the CDP Supply Chain programme have either set or committed to set their own science-based target, with most of these including a scope 3 goal to reduce supply chain emissions

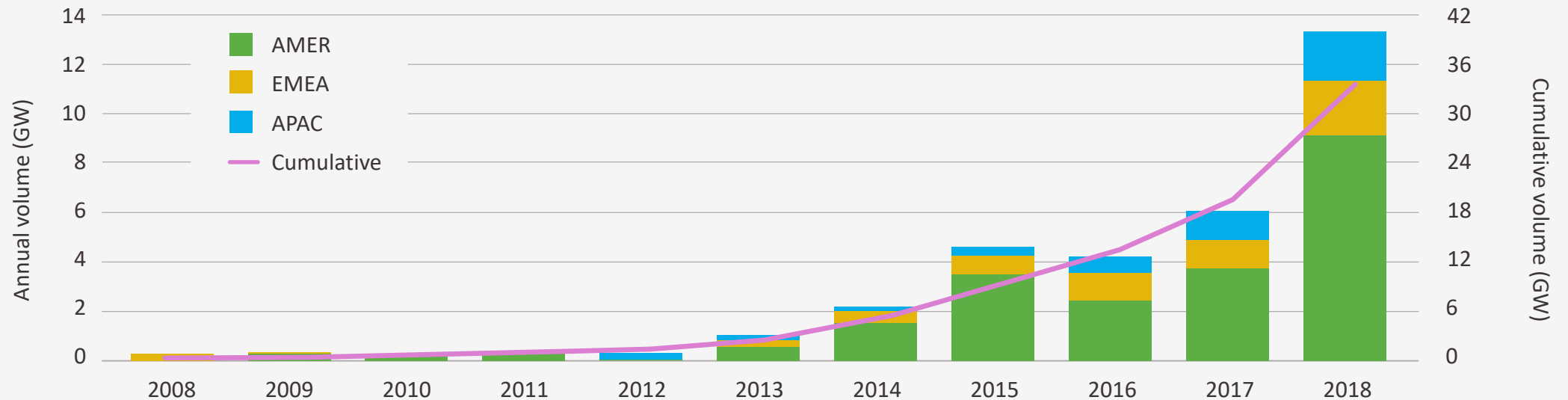


There is a shift towards industrial models which are more productive and less resource-intensive



And more firms are using clean power in their supply chains. Close to 200 RE100** companies have made a commitment to go 100% renewable

Corporate purchases of clean power, 2008-18*



Source: Bloomberg New Energy Finance

AMER = Americas; EMEA = Europe, Middle East and North Africa; APAC = Asia Pacific

* The 2018 figure is an amount comparable to the generation capacity of the Netherlands

** RE100 is a global corporate leadership initiative bringing together influential businesses committed to 100% renewable electricity.

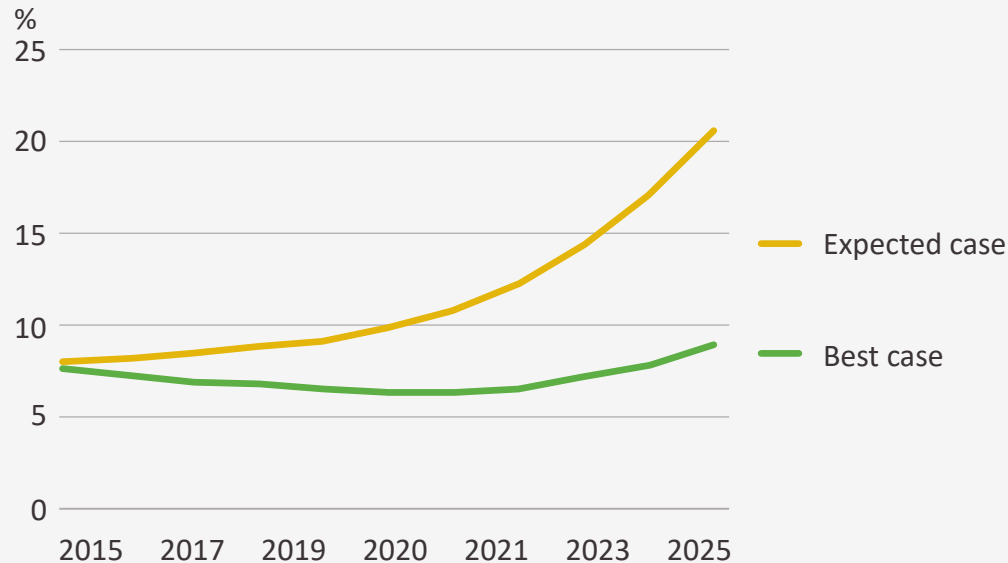


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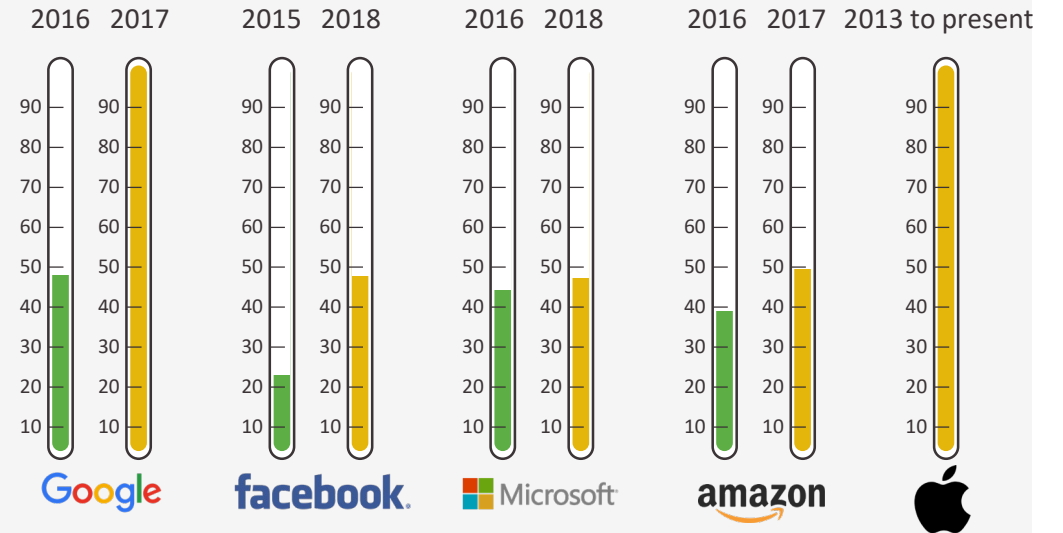


Data-centres need large amounts of energy. Yet more of them are powered by renewables

Projected share of global electricity usage taken up by computing, 2015-25, two scenarios



Share of data-centre power produced by renewable energy, selected firms, over time



Source: Huawei; IHS Markit; Generation

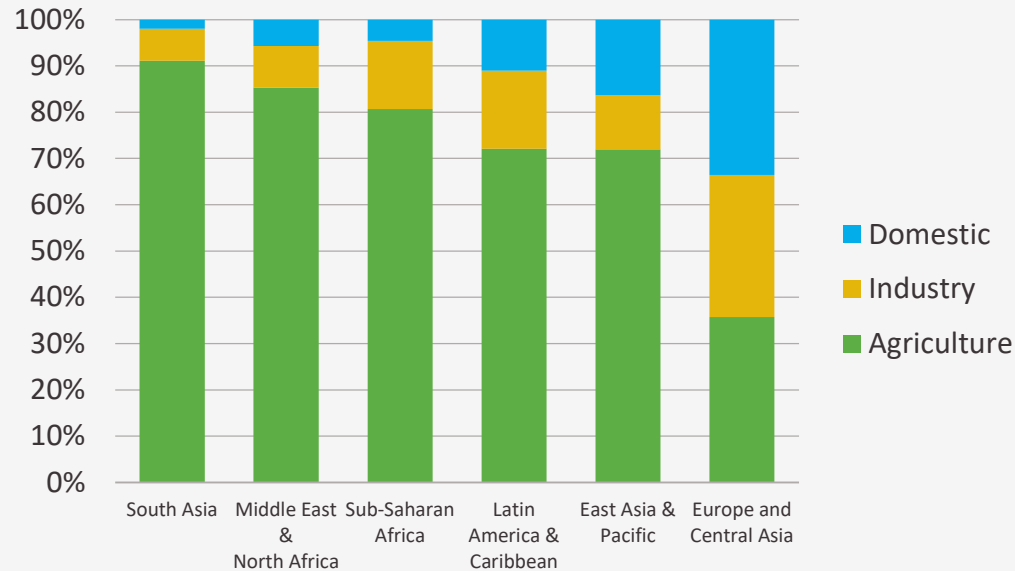


Food systems are shifting towards becoming more healthy and sustainable

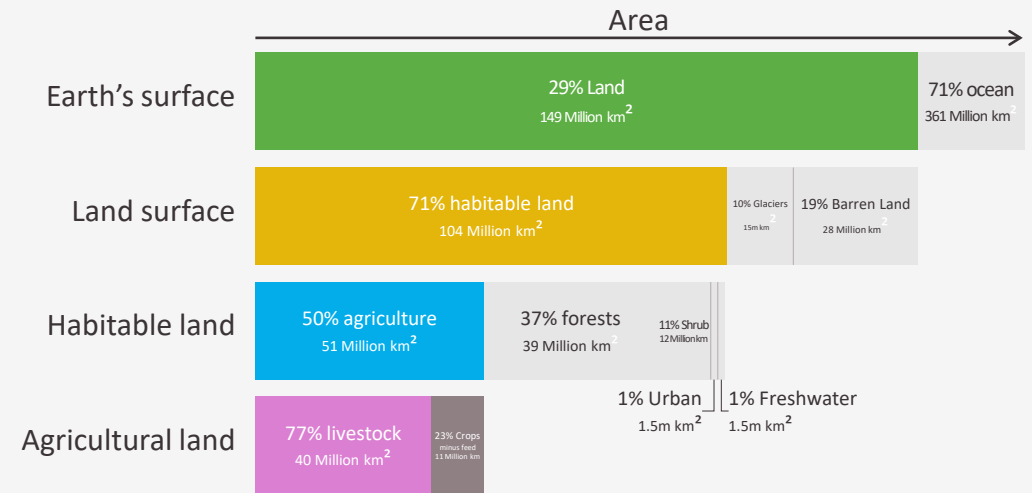


Agriculture consumes around two thirds of all fresh water globally and half of all habitable land

70% of freshwater is used for agriculture



Global surface area allocation for food production



Source: World Bank; Our World in Data; FAO



Food systems are shifting towards becoming more healthy and sustainable



Smarter solutions are needed to reduce the footprint of food. Ag-tech is providing insights on soil health and yields, and helping monitoring and verification of agriculture and forestry

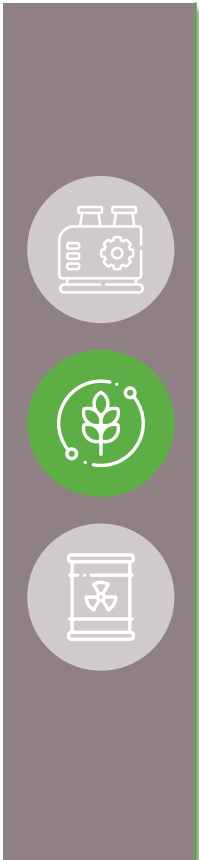
Five use-cases of AI and robotics in agriculture

 <p>Analysing satellite images</p> 	 <p>In-field monitoring</p> 	 <p>Assessing crop/soil health</p> 	 <p>Predictive analytics</p> 	 <p>Agricultural robots</p> 
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Source: CB Insights

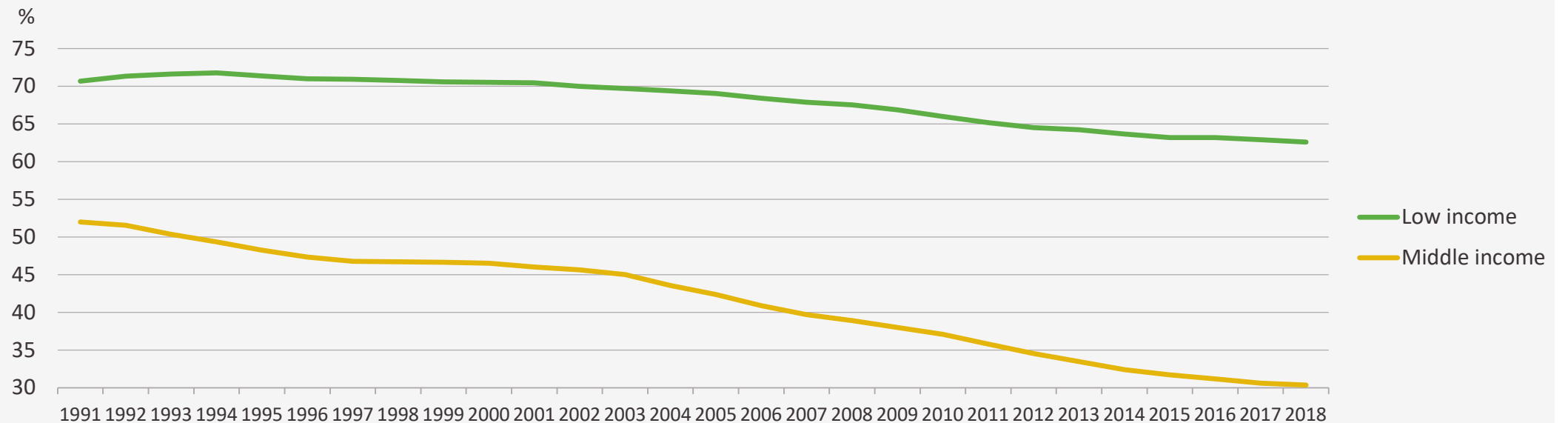


Food systems are shifting towards becoming more healthy and sustainable



The shift towards high-productivity agriculture could have benefits but also risks putting people out of work, especially those in poor countries

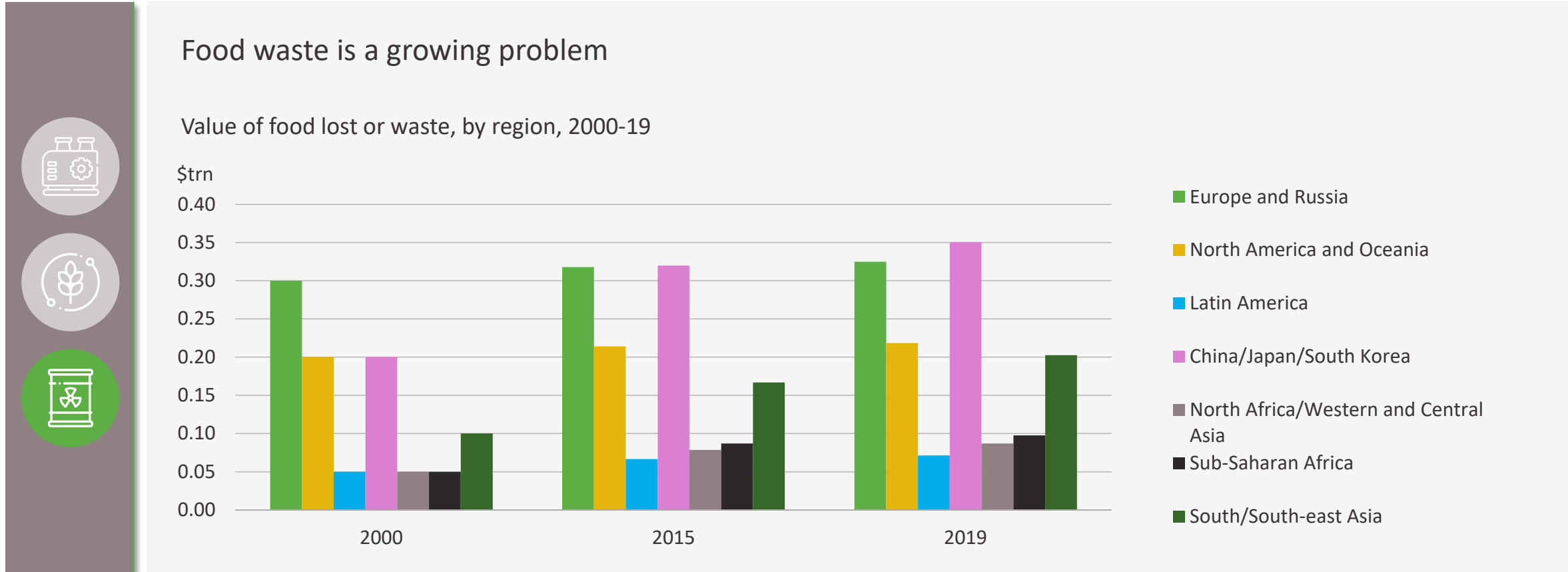
Share of labour force employed in agriculture, global, by country income group, 1991-2018



Source: World Bank



Innovation is needed to tackle the problem of waste



Source: BCG; Generation



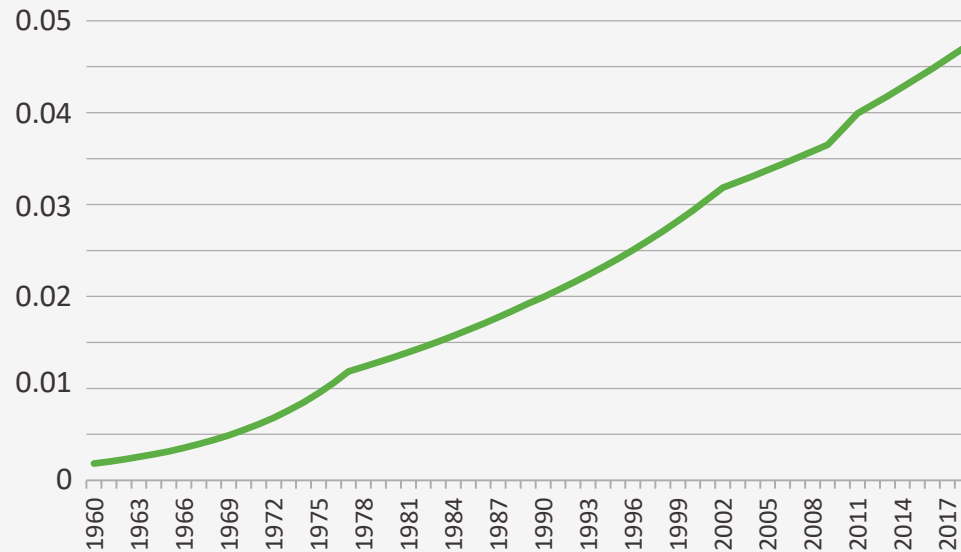
Innovation is needed to tackle the problem of waste



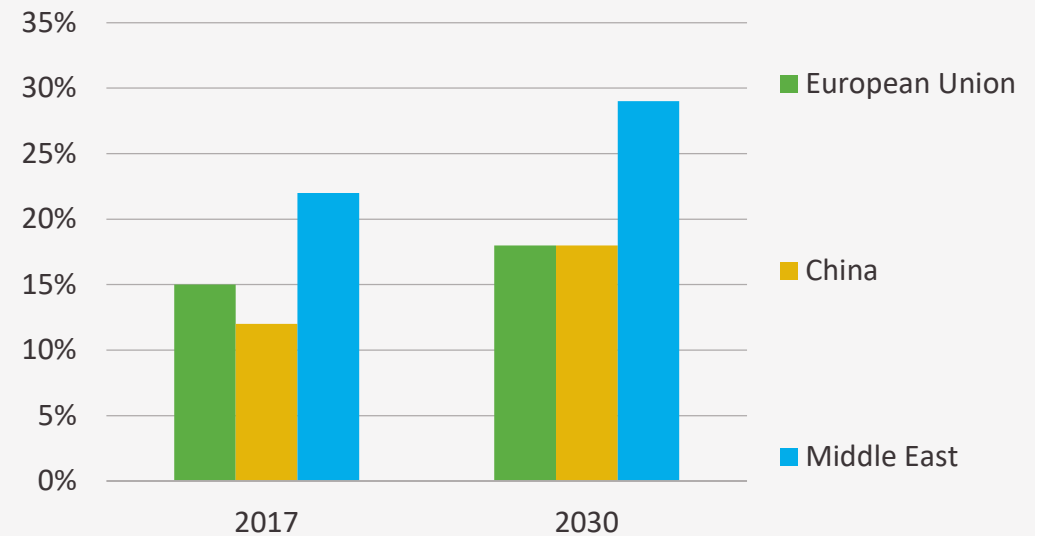
Plastic use continues to grow at unsustainable rates, despite awareness of the issue of plastics pollution

Global plastics production, 1950-2018

Tonnes per person



Projected share of total oil demand from plastics production, by world region, 2017-30



Source: Plastics Europe; IEA



Innovation is needed to tackle the problem of waste



Many companies are making strides to reduce plastics usage and waste

Participation of the largest (by revenue) fast-moving consumer goods (FMCG) firms, plastic packaging producers, and retail companies in the Global Commitment*, 2019 estimate

FMCG

1 Nestlé
2 Procter & Gamble
3 PepsiCo
4 Unilever
5 AB Inbev
6 JBS
7 Tyson Foods
8 The Coca-Cola Company
9 L'Oréal
10 Mars, Incorporated

Plastic Packaging

1 Reynolds
2 Amcor
3 Berry Global
4 Sealed Air Corporation
5 RPC Group
6 Bemis
7 ALPA Group
8 Interplast
9 Aptargroup Inc.
10 Silgan

Retail

1 WalMart Inc.
2 Costco
3 The Kroger Co.
4 Schwarz Group
5 Walgreens Boots Alliance
6 Amazon.com, Inc.
7 Home Depot, Inc.
8 Aldi
9 Carrefour
10 CVS Health
11 Tesco PLC
12 Aeon Co., Ltd
13 Target
14 Ahold Delhaize
15 Lowe's Companies, Inc.

- Has signed the Global Commitment
- Has not signed the Global Commitment

SOURCE: Ellen MacArthur Foundation, March 2019.

*Companies making this commitment pledge to eliminate the plastic items we don't need; innovate so all plastics we do need are designed to be safely reused, recycled, or composted; and circulate everything we use to keep it in the economy and out of the environment.

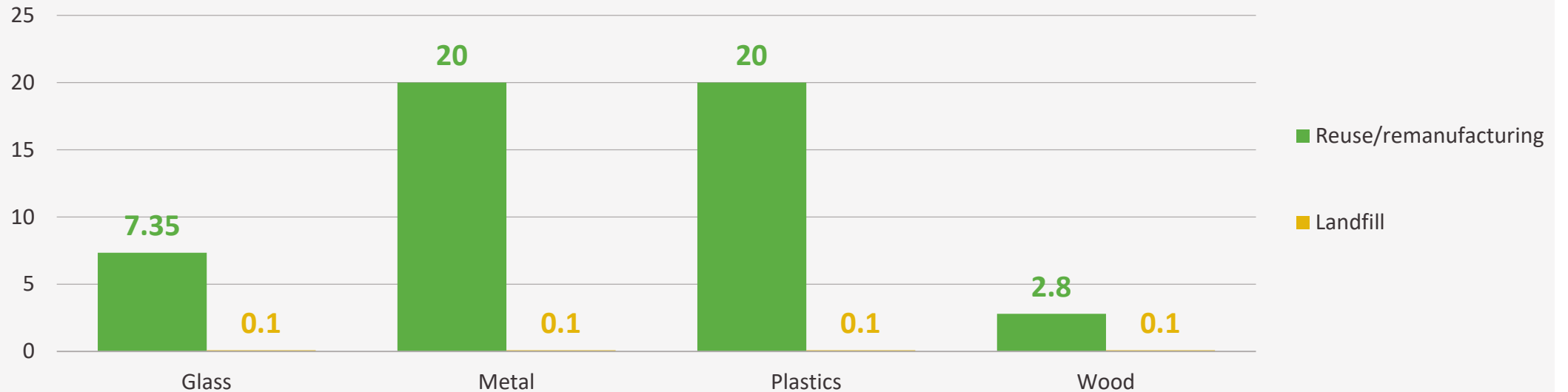


Innovation is needed to tackle the problem of waste



A shift towards more sustainable waste management will boost jobs, as more people are employed to turn waste products into productive resources

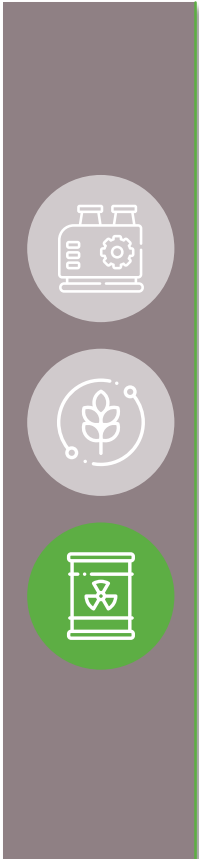
Number of jobs created, per tonne of waste, 2019 estimate



Source: Tellus Institute and Sound Resource Management; *The Economist*; Generation

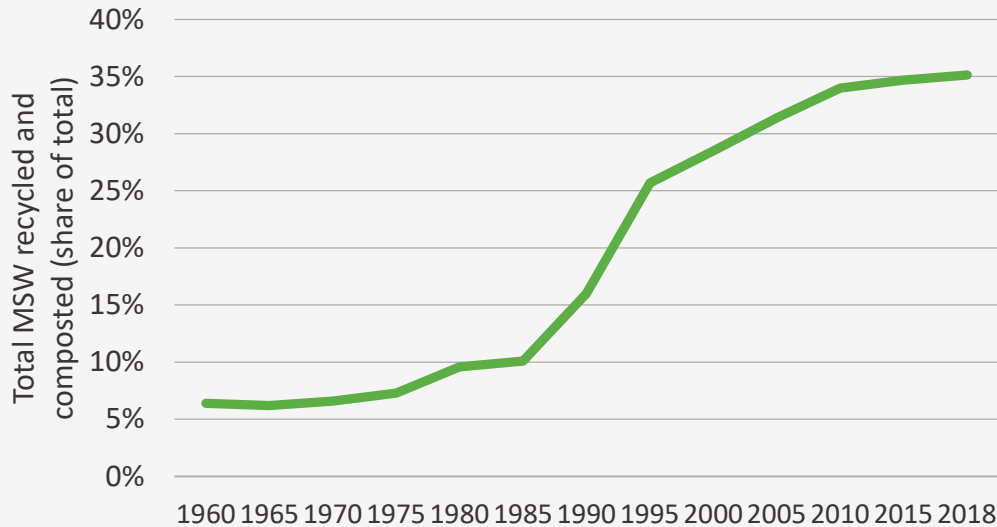


Innovation is needed to tackle the problem of waste

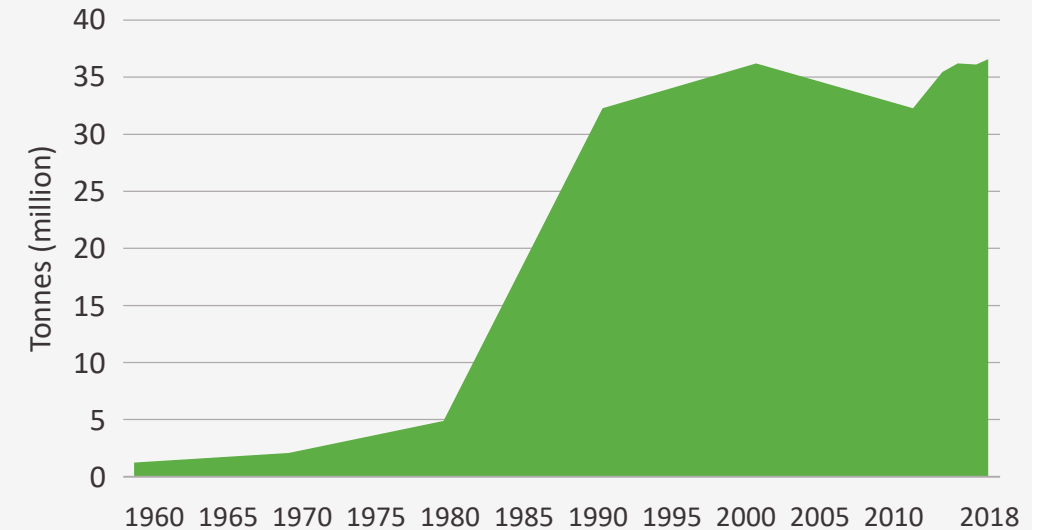


Rates of recycling and reuse have been on a long-term increase, but still only represent 35% for total municipal solid waste in the US

Municipal solid waste* (MSW) recycled and composted, US, 1960-2018



Combustion with energy recovery, US, 1960-2018



Source: Environmental Protection Agency; Generation
 * This is more commonly known as “trash” or “garbage”



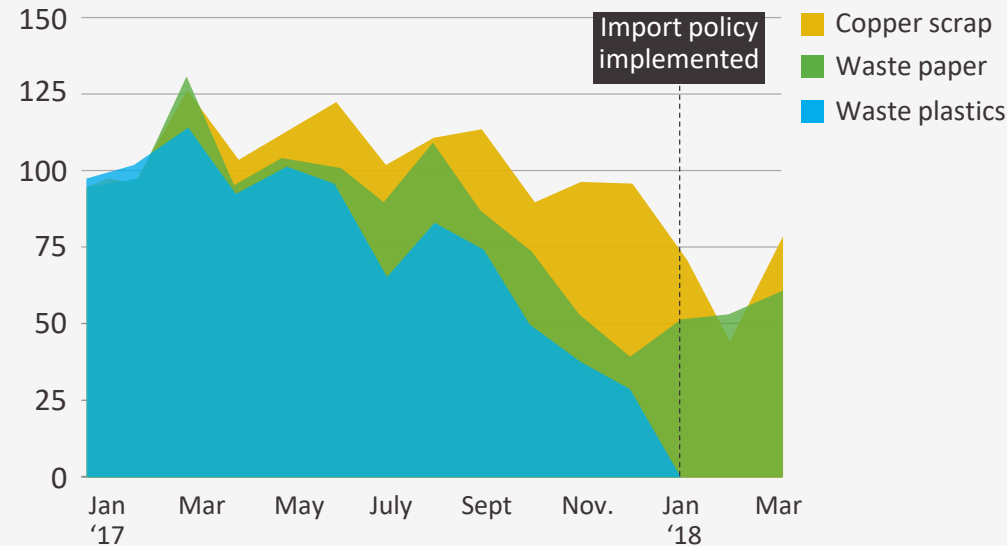
Innovation is needed to tackle the problem of waste



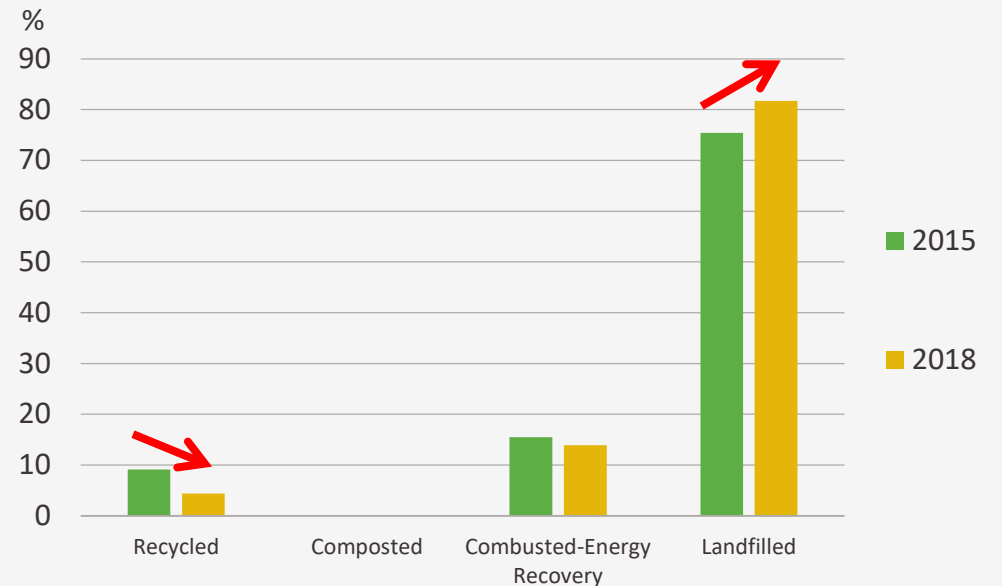
But there are signs that China's ban on plastic imports is causing recycling trends to go into reverse*

Chinese imports of scrap material, Jan 2017 - March 2018

2016 monthly average = 100



Recycling rates of plastic, US, 2015 and 2018



Source: Global Trade Atlas; Plastic Pollution Coalition; Generation
 * Other Asian countries are also exploring banning plastic imports

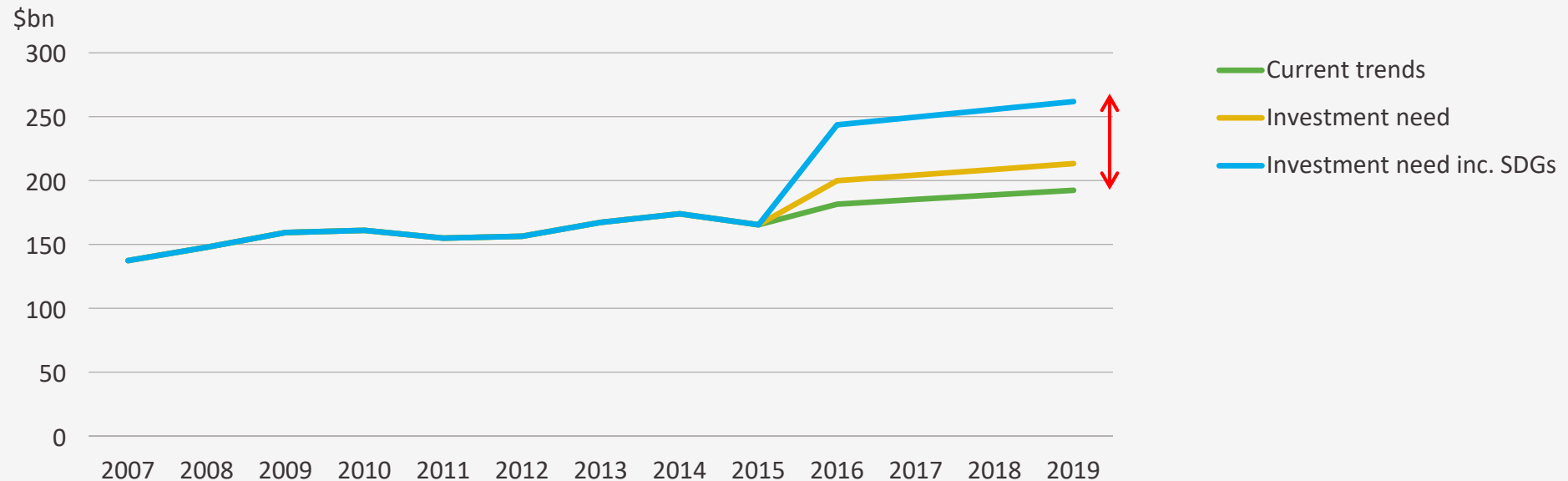


Innovation is needed to tackle the problem of waste



Some countries are investing heavily in waste management, though the world is at least \$50 billion a year short of what is required to meet sustainability goals

Infrastructure water and waste investment at current trends and need



Source: Global Infrastructure Hub