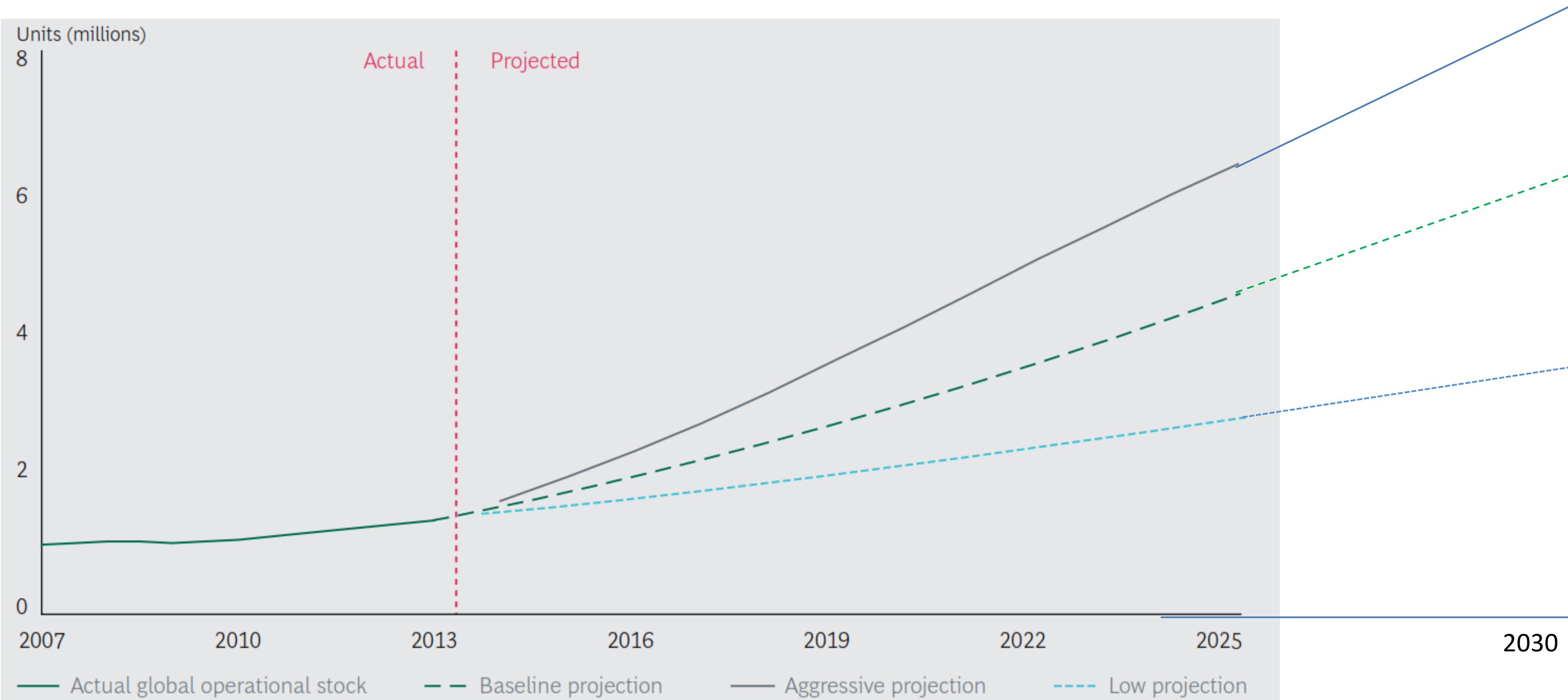
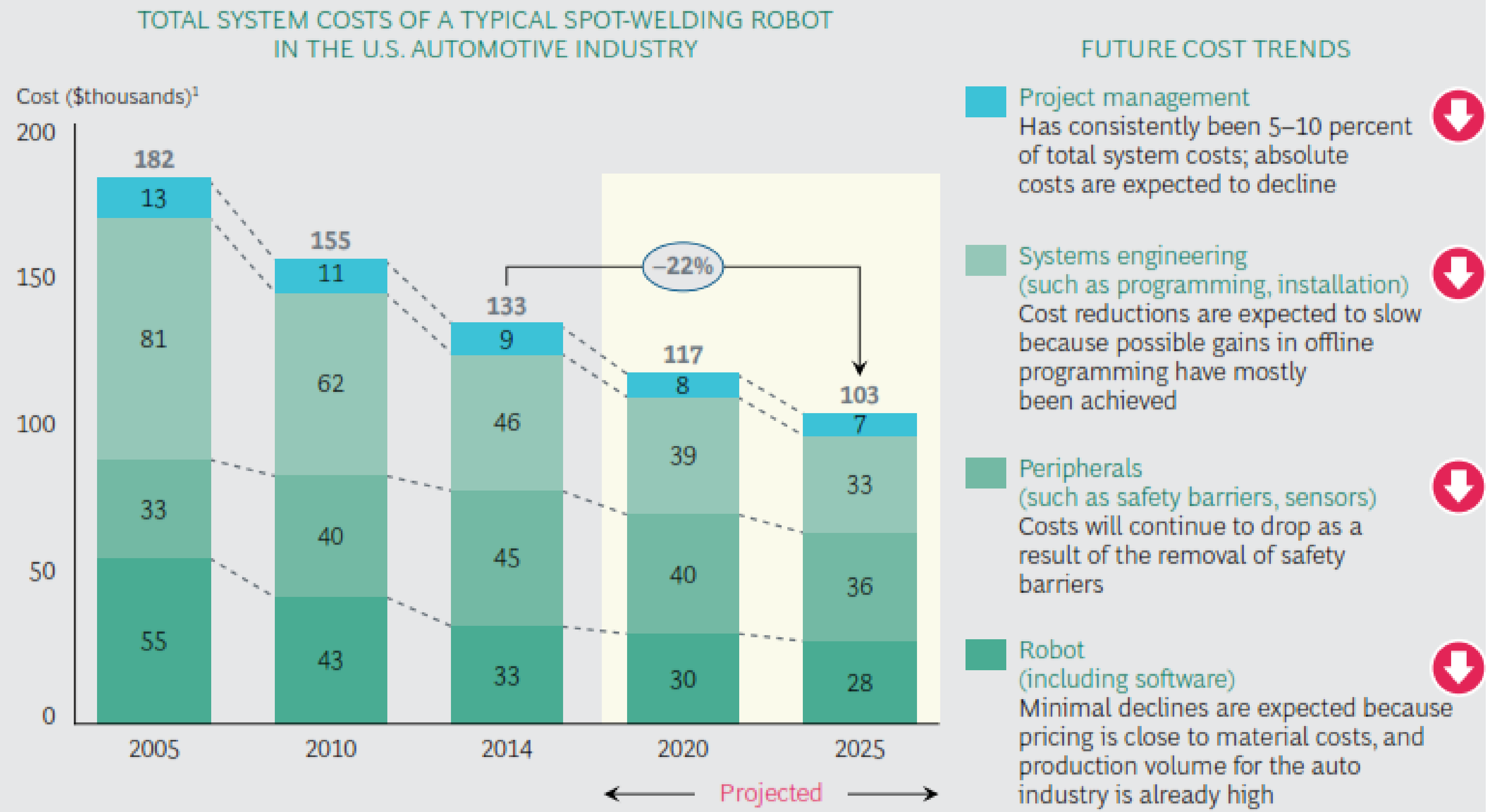

Perspectives of Scientists on technology and the SDGs
61 scientists
→ 3 tasks
20 countries
45 disciplines
97 scientists
→ 58 briefs
Technology-related SDG targets
(48 of 169 targets)
Significant overall technology performance improvement
19 targets
Universal access to sustainable technology
12 targets
Global effective innovation system for sustainable development
17 targets
Proposals for leveraging technology for the SDGs
Strengthening national systems of innovation to accelerate technology progress
Building institutions that support sustainable technology progress
Plans, roadmaps and integrated assessment
Putting technology at the service of inclusion
Crucial emerging technologies for the SDGs until 2030
Opportunities in all SDG areas
Potential threats
Digital-tech
Bio-tech
Nano-tech
Neuro-tech
Other
Green-tech

Clusters	Opportunities	Threats
Bio-tech	Food crops, human health, pharmaceuticals, materials, environment, fuels.	Military use; irreversible changes to health and environment.
Digital-tech	Development, employment, manufacturing, agriculture, health, cities, finance, absolute “decoupling”, governance, participation, education, citizen science, environmental monitoring, resource efficiency, global data sharing, social networking and collaboration.	Unequal benefits, job losses, skills gaps, social impacts, poor people priced out; global value chain disruption; concerns about privacy, freedom and development; data fraud, theft, cyber-attacks.
Nano-tech	Energy, water, chemical, electronics, medical and pharmaceutical industries; high efficiencies; resources savings; CO_2 mitigation.	Human health (toxicity), environmental impact (nano-waste)
Neuro-tech	Health, safety, security (e.g., electricity theft), higher efficiency, resource saving, new types of jobs, manufacturing, education.	Unequal benefits, deskilling, job losses and polarization, widening technology gaps, military use, conflicts.
Green-tech	Environment, climate, biodiversity, sustainable production and consumption, renewable energy, materials and resources; clean air and water; energy, water and food security; development, employment; health; equality.	New inequalities, job losses; concerns about privacy, freedom and development.
Other	Inclusion, development, health, environment, climate change mitigation, resource availability.	Pollution, inequalities, conflict.

Global stock of operational robots

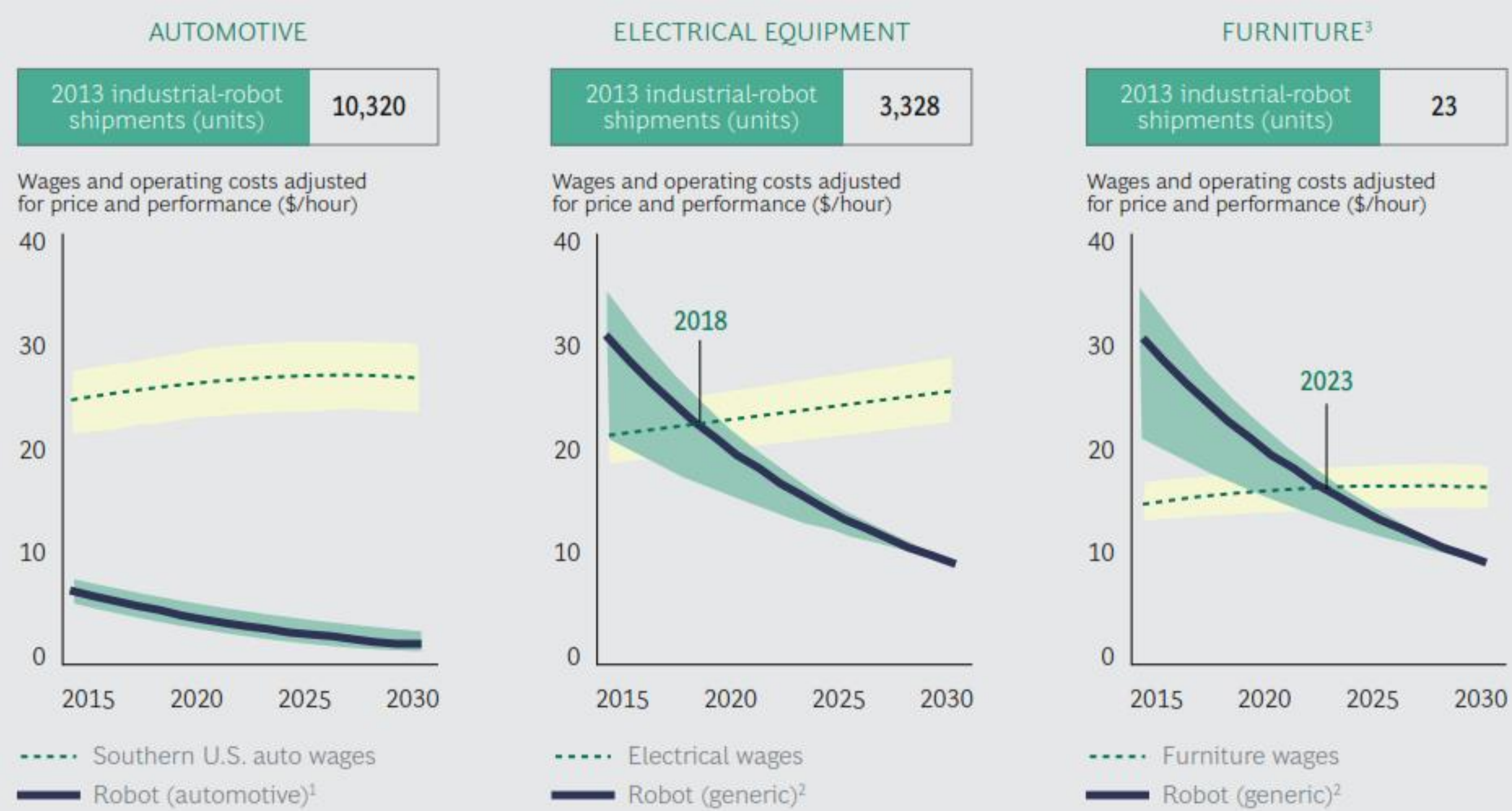


Sources: International Federation of Robotics; BCG analysis.
Note: Market size is estimated from an evaluation of jobs within U.S. industries that may be automated, and the estimate is then extended to global manufacturing output by industry.



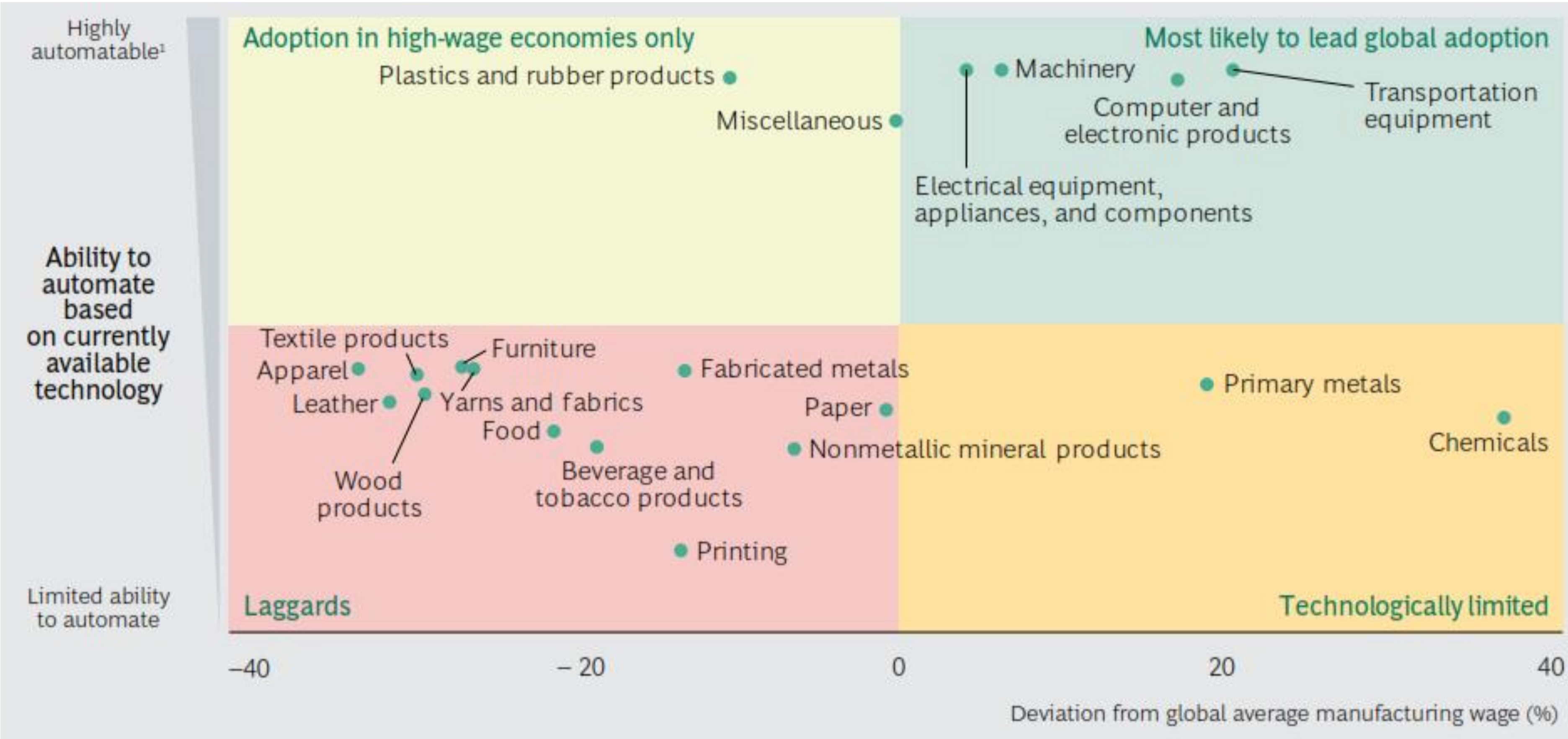
Sources: ABB, *Economic Justification for Industrial Robotic Systems*, 2007; International Federation of Robotics, *World Robotics: Industrial Robots*; expert interviews; BCG analysis.
Note: Because of rounding, not all numbers add up to the totals shown.
[1]Values are in nominal U.S. dollars.

Robotics already economically viable in many US sectors



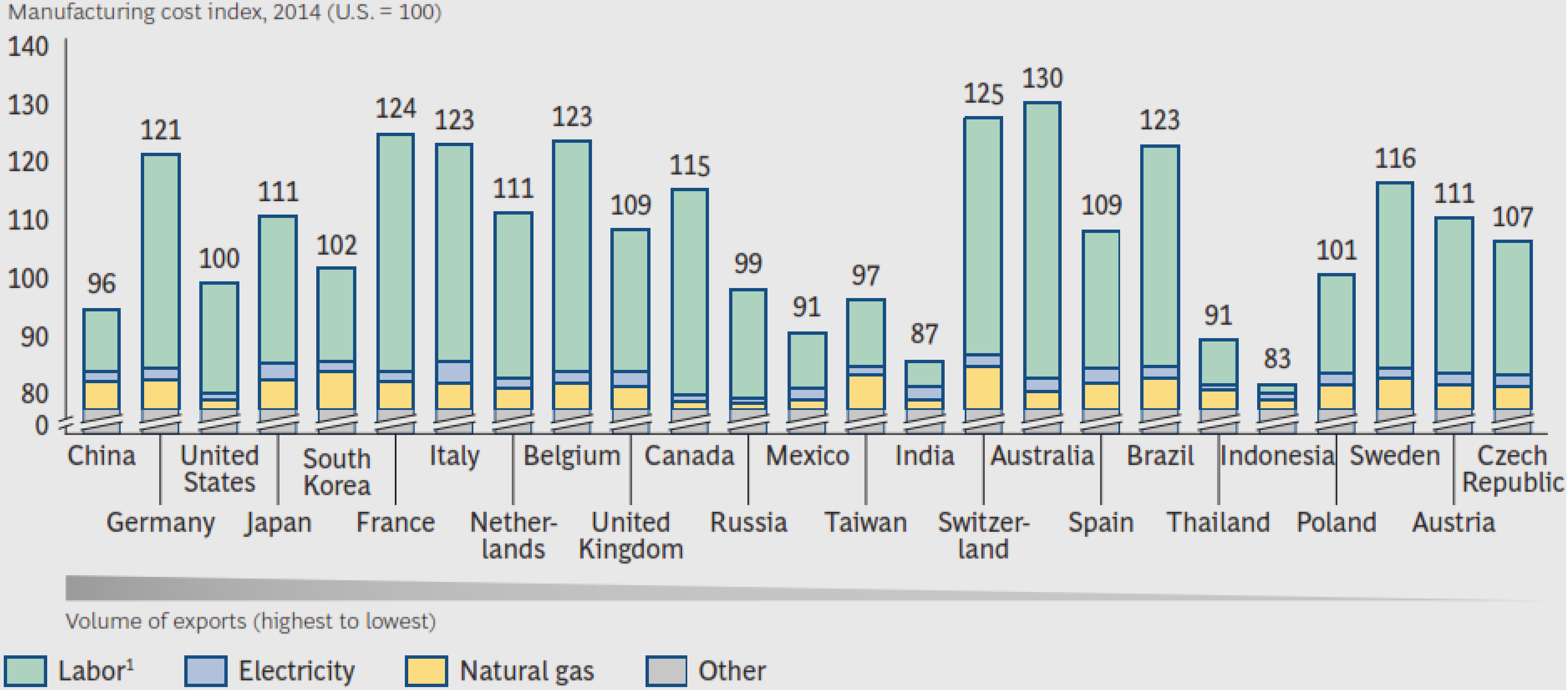
Sources: U.S. Bureau of Labor Statistics; Industrial Federation of Robotics, *World Robotics: Industrial Robots*; expert interviews; BCG analysis.
Note: Assumes an 8 percent rate of improvement in price and performance. Hourly rates for labor include benefits and overhead, an increase of about 50 percent over base hourly pay. All values shown in nominal 2014 U.S. dollars.
[1]The cost is for a typical spot-welding robot system in the U.S. automotive industry.
[2]An example of a generic robotics system is ABB's IRB 2400.
[3]Includes other wood products.

High wages and automatable tasks -> more robots



Sources: U.S. Bureau of Labor Statistics, "International Labor Comparison of Hourly Compensation Costs in Manufacturing Industries, 2012"; BCG analysis.
Note: Petroleum and coal manufacturing are not depicted because of a high and variable wage premium, consistent with immovable, resource-intensive industries.

Manufacturing cost index in 2014 (US=100)



Sources: U.S. Economic Census; U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; International Labour Organization; Euromonitor International; Economist Intelligence Unit; BCG analysis.
Note: The index covers four direct costs only. No difference is assumed for other costs, such as raw-material inputs and machine and tool depreciation. Cost structure is calculated as a weighted average across all industries.
[1]Adjusted for productivity.

Expert Group Meeting on Exponential Technological Change, Automation, and Their Policy Implications for Sustainable Development

- **Organized** by DESA, ECLAC and Government of Mexico (Mexico City, 6-8 Dec. 2017)
- **Participation:**
  - 49 experts, senior officials, representatives of civil society and private sector organizations, and UN system (DESA, ECLAC, UNIDO, UNU and UNCTAD).
  - Austria, Chile, China, Kenya, Mexico, the Netherlands, Spain, Tanzania, UK and USA.
  - Extensive written inputs before the meeting
- **Objectives:**
  a) take stock of knowledge,
  b) identify areas for collaboration,
  c) provide guidance/inputs for in-depth assessment of automation impacts on sustainable development.

Meeting sessions

- **Past and current developments and patterns of change:**
  - Exponential technological change
  - Emerging technologies and their applications
- **Future developments**
  - Potential broad impacts on development and sustainability in key areas
  - Future scenarios for the development, dissemination and adoption of automation technologies until 2030
- **Specific impacts of automation technologies on:**
  - employment
  - structural transformation, sustainable industrialization and catch-up
  - inequality
- **Key recommendations**

Key recommendations of the Meeting

a) **Full engagement of scientists, economists, other experts, the private sector and other stakeholders**

b) **Several technology and innovation policy issues at the national level that need particular attention**

c) **Systematic technology facilitation needed at all levels**

d) **Open standards, certifications, and knowledge sharing.**

e) **UN discussion/forum**, in particular:

- Solutions-focused, multi-stakeholder discussions of disruptive emerging automation technologies should be regular item of STI Forum and the HLPF.
- “Group of friends” of UN Member States

f) **Contributions by TFM partners**

- IATT and 10-MG to mobilize their communities to make emerging body of knowledge accessible to policy makers and to strengthen international cooperation

Key recommendations of the Meeting (continued…)

g) **UN encouraged to support open-access, online repositories of data on emerging techs, early warning systems and futures studies.**

h) **All relevant partners to support capacity building on tech facilitation of emerging techs, especially automation techs**

i) **Carry out technology assessments**

- All TFM partners encouraged to cooperate on an in-depth technology assessment of exponential technological change, especially on automation technologies and their SD policy implications.
- Results could be discussed at STI Forum, HLPF and other forums

j) **Social and political impacts**

- Misinformation might lead to social and political unrest.

Our suggestions for the 10-Member Group

1. **Emerging technologies consultations:** Work with IATT on instituting an annual consultation process on emerging technologies for the SDGs, bringing together and building on existing initiatives (ICSU, WBCSD, GSDR, UNEP, etc.)
2. **Automation technologies:** Engage in the new Mexico-led initiative on automation technologies and their SD impacts, in particular with regard to the in-depth assessment. Provide these inputs to GSDR group of 15.
3. **Other areas:** Consider engaging their communities in other areas, as requested by Member States.
4. **Provide regular space for these topics in STI Forum and HLPF.**
5. Consider automation and other clusters as alternative **entry points in online platform design**.

Thank you

http://sustainabledevelopment.un.org/TFM

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