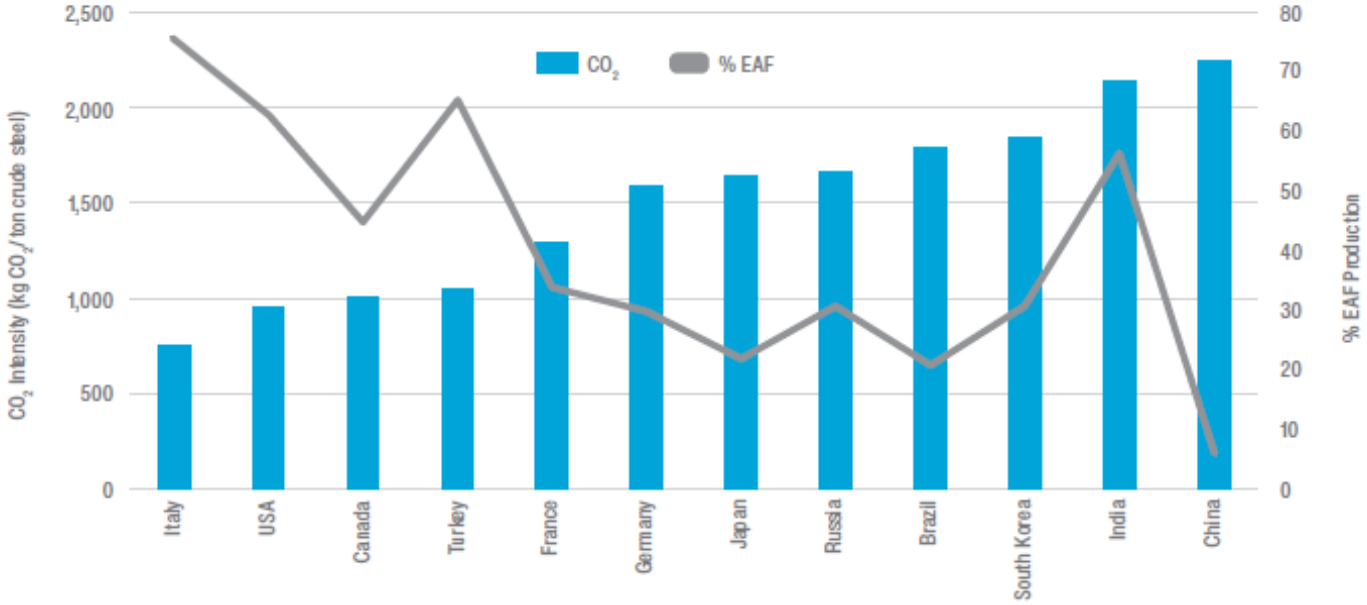
Workshop : Regional Decarbonisation Roadmaps **North-America**

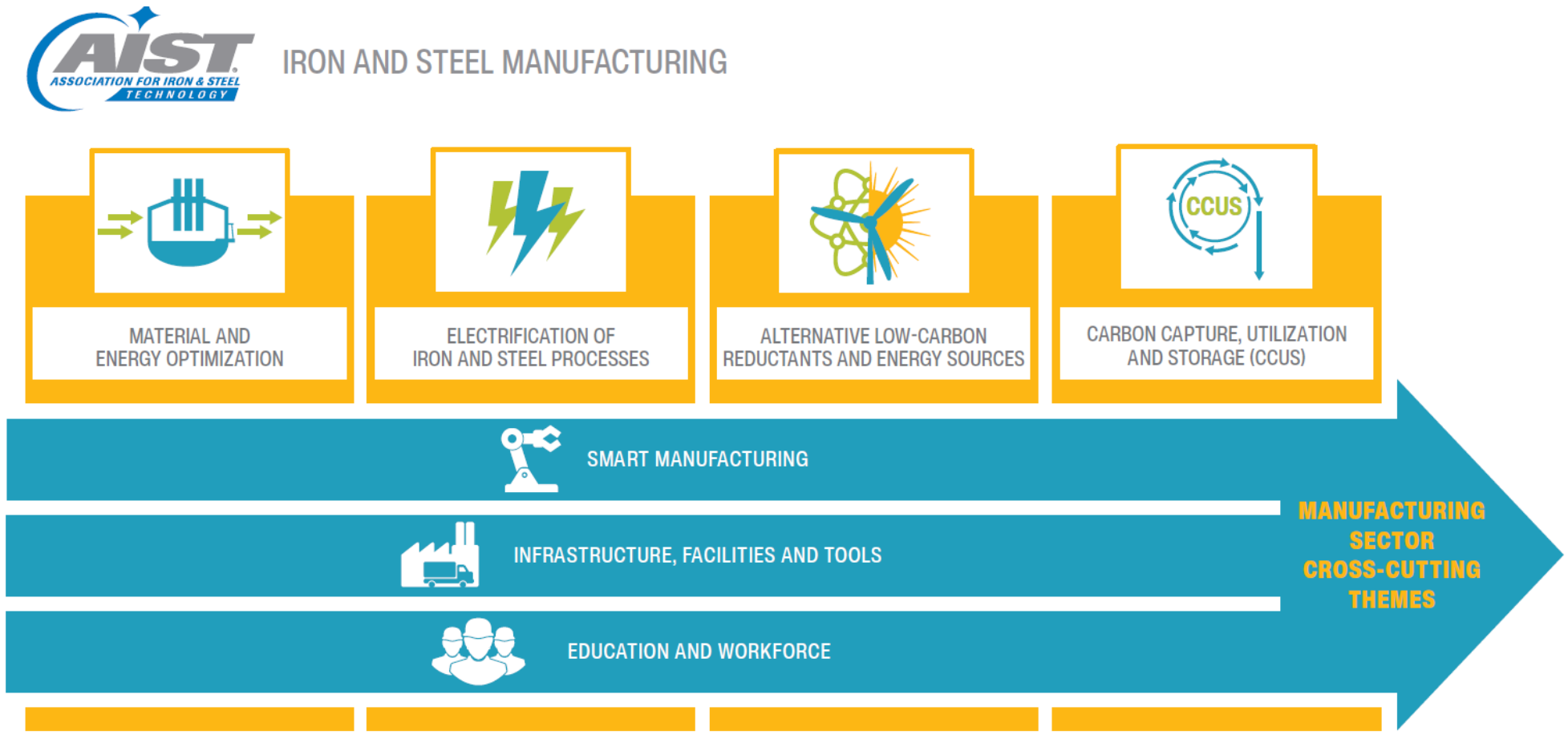
North-America Status

- The U.S. steel industry 68% of steel made via electric arc furnaces (EAF) using recycled scrap, resulting in lower CO_2 emissions compared to the global average, where 71% is produced via the more carbon-intensive blast furnace–basic oxygen furnace (BF–BOF) route.*



*Association for Iron & Steel Technology. (2025). Roadmap for Iron and Steel Manufacturing: Revolutionizing U.S. Global Leadership for a Sustainable Industrial Supply Chain. (NIST Manufacturing USA Technology Roadmap Grant Program, Federal Award Number: 70NANB22H048). Published July 15, 2025.

North-America Roadmap*



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North-America Roadmap : Timeline*

- Short-term (next 5–10 years): Focus on optimizing scrap, energy efficiency, smart manufacturing, and scaling up electric induction furnaces.
- Medium-term (10–15 years): Scale up hydrogen-based DRI, green electricity EAF, and CCUS demonstration projects.
- Long-term (15–25 years): Commercialize breakthrough technologies like molten oxide electrolysis and net-zero carbon syngas

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North-America: Trend

- Shift to EAF: Over 68% of U.S. steel is now produced via EAF, reflecting a major shift from traditional blast furnace routes.
- Geographic Spread: Most new investments are in the southern and midwestern U.S., close to scrap sources and renewable energy.
- Green Power Integration: Several facilities (e.g., Nucor, Steel Dynamics, EVRAZ Pueblo) have signed power purchase agreements for solar and wind energy to further reduce carbon intensity.
- Capacity Expansion: Both greenfield (new) and brownfield (expansion) projects are increasing total EAF capacity and flexibility.

Calvert EAF, US– New 1.5Mt EAF ramp up continuing

- One of the most advanced steel making facilities in North America, complemented by new state-of-the-art EAF
- New 1.5Mt EAF commissioned; 1st slabs produced Jun'25 with facility now ramping up
- 100% ArcelorMittal ownership → significantly bolsters our competitiveness in the strategically important US market

North-America: Projects

Industry envisioned projects can be consulted via AIST website, but likely to be outdated due to changed presidential administration:

https://www.aist.org/Resources/Roadmap-for-Iron-Steel-Manufacturing

- Type of **demonstration projects** are hydrogen DRI, electric melting, induction reheat furnaces, low-emissions iron ore briquette production
- Regional hydrogen hubs and **CCUS** projects are being developed, with U.S. steelmakers participating in partnerships and pilot projects
- **CCS**: As of July 2024, the U.S. had 19 operational CCS facilities (across all sectors), with a combined capacity to capture over 22 million metric tons of CO_2 per year—about 0.4% of total U.S. annual CO_2 emissions. Most CCS facilities are at natural gas processing plants, ethanol plants, and ammonia/fertilizer plants. Steel sector CCS is still in early stages: U.S. steel producers are exploring CCS as a mitigation strategy, mainly through pilot projects, partnerships, and participation in DOE-funded hydrogen hubs.