Swedish platform for Industry 4.0

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Programme Director

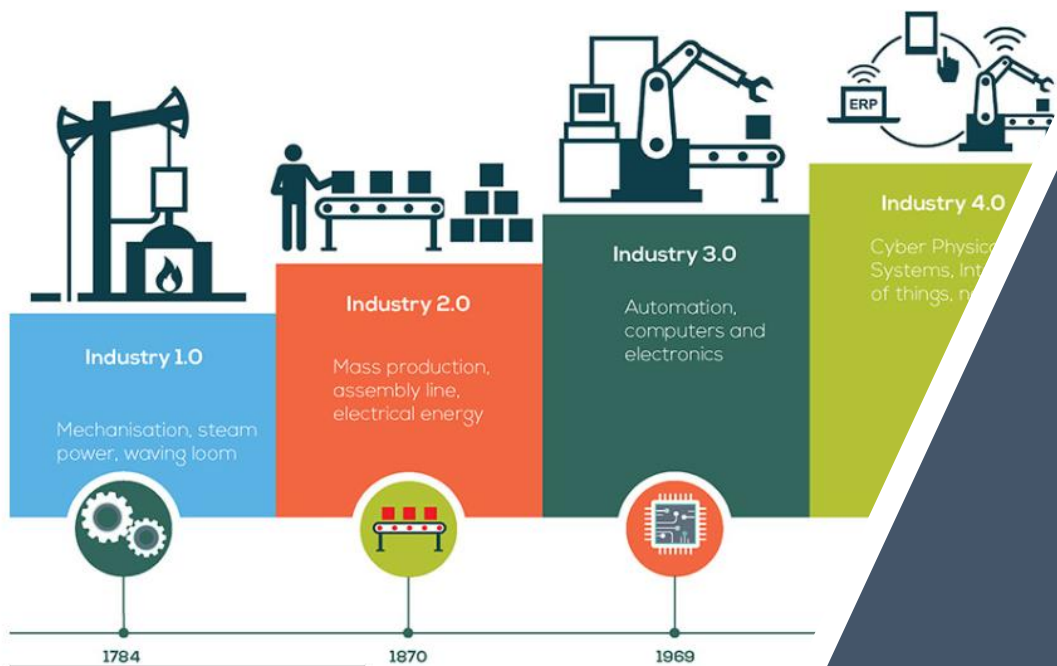# The Swedish Manufacturing Industry

72%
Export Goods

1 000 000 jobs

42%
R&D

90%
SME:s

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Major trends affecting Swedish manufacturing industry

New ambitious climate goals...

SANDVIK

MAKE THE SH/FT

WE BUILD CIRCULARITY — More than 90% circular

WE SHIFT CLIMATE — Halve the CO$_2$ impact

WE CHAMPION PEOPLE — Zero harm to people

WE PLAY FAIR — Always do the right thing

- 90% circular business models
- Decrease CO2 by 50%
- No personal injuries
- Ethics and transsparency

"Carbon Law"

-50% every decade

100%
50%
25%
0%

2015 2020 2025 2030 2035 2040 2045 2050 2055

13 CLIMATE ACTION

SCANIA
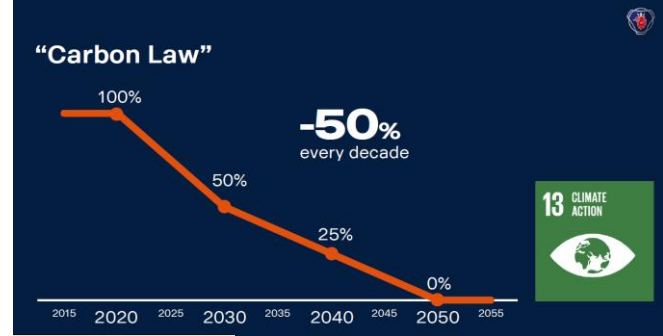
- 25% CO2 decrease
- 15% cost cut thru electrification
- Educate all staff in sustainability
- Continous improvements

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Vision: Increased competitiveness and sustainability in Swedish manufacturing indsutry
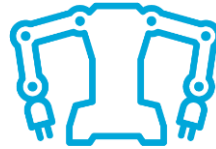
Goal: Increase collaboration between industry, academia and research institutes

Facts: Produktion2030 is a national innovation program, funded by **Vinnova**. Timeline: 2013 – 2025. Budget: 50 MEuro

Produktion2030: priority challenges in manufacturing indsutry

Resource-efficient production

Flexible production

Virtual production development

Humans in the production system

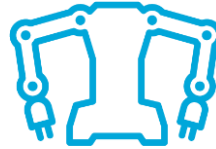**Circular production systems and maintenance**

Integrated product and production development

Areas of strength in Produktion2030

Resource-efficient production

Industry challenge: To minimise the resource consumption and environmental impact of production systems and products.

Flexible production

Industry challenge: To further develop manufacturing processes to keep pace with the products of the future.

Virtual production development

Industry challenge: To convert information and data into knowledge and input for decision-making in virtual and physical production systems.

Humans in the production system

Industry challenge: To strengthen cooperation between humans and automation in order to enhance people's performance and increase productivity and flexibility.

Circular production systems and maintenance

Industry challenge: To develop competence and service-based products.

Integrated product and production development

Industry challenge: To strengthen product development processes and tools for innovative product development.

Produktion2030: four instruments

Projects:

Testbed projects

Innovation projects

Idea projects

Education:

PhD School

Engineer 4.0

SME:s

Technology Workshops

SME-based courses

Analysis & Internationalisation

EU networks and platforms
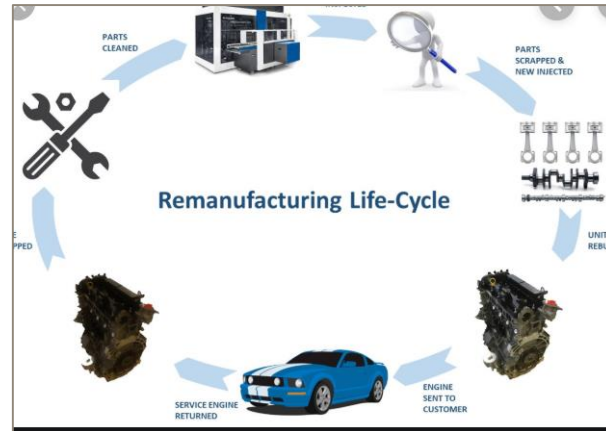
International collaborations

International production

TRL: 7-8

TRL: 5-7

TRL: 3-4

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Examples from Produktion2030

Projects

Testbed @ABB, Västerås, Sweden

Testbed @ABB:

Process Automation for Discrete Manufacturing, PADME

Education

1. Produktion2030 PhD school

- 19 universities
- 200 students
- Focus on collaboration with industry

- Produktion2030 developed >30 new courses:
    - Internationell produktion
    - Produktdesign för cirkulära affärsmodeller
    - Produktionsinnovation

"Har lärt mig mycket, både på en personlig och professionell nivå."

Narges Asadi, PhD och Quality & OpEx Specialist på ABB Robotics.

Education

2. Engineer 4.0

- 12 Course modules in Industry 4.0
- Dual use:
  - university teaching
  - industry adult education/life long learning

Education Area
Smart Products and Industrial Internet of Things
Cyber Physical Systems and Digital Twins
Connectivity, 5G and Cloud Communication
Autonomous Robots
Additive Manufacturing
Human Robot Collaboration
Big Data, Machine Learning and Sensors
Management of Manufacturing Digitalization
Virtualization, Augmented Reality and Virtual Reality Interfaces
Standards and interoperability in Digitized Industry
Cyber Security, Industrial Data Protection and Data integrity
Global Production, Digital Supply Chains and Horizontal integration

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Small and medium sized enterprizes (SME:s)

- Project results - > Tech workshops
- Generating new projects and new collaborations
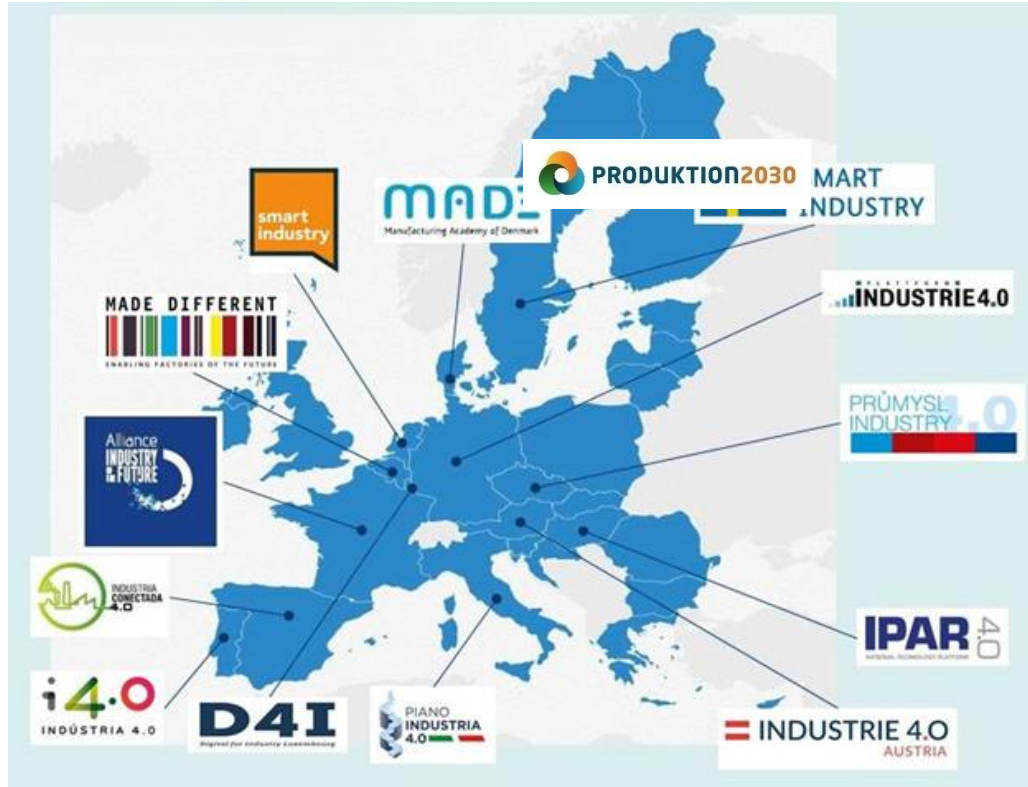
Analysis and internationalization

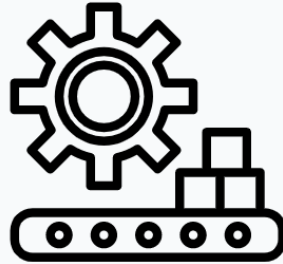# Analysis and internationalization

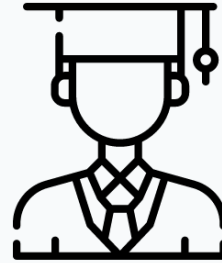Produktion2030 part of a European platform for Industry 4.0

Results: 2013 - 2018

19
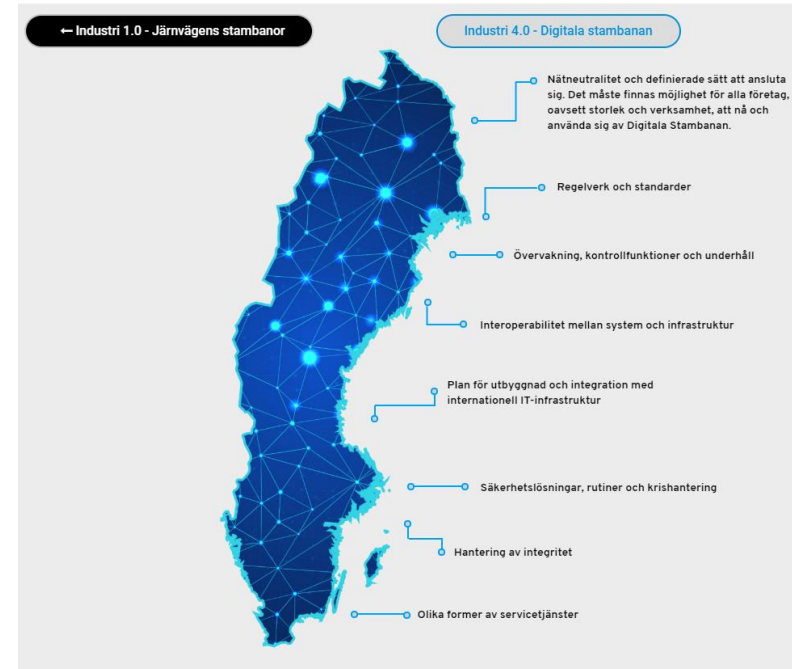universities

>500
manufacturing
companies

230
PhD students

300
SME:s

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What lies ahead: 2019 - …

New focus areas in Produktion2030:
- Standardisation
- Platforms - digitalizing value chains
- Testbeds – digital and connected
- Training and life long learning

Thank you!

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PRODUKTION 2030