

**#WMWeek**

**#ManufacturingAgenda**

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**Recommendations to encourage attraction,  
thrive and leadership of women  
in the manufacturing industry**

SPRI and World Manufacturing Foundation

# EFFRA - European Factories of the Future Research Association

***Women in Manufacturing: Recommendations to encourage attraction, thrive and leadership of women in the manufacturing industry***

October 20<sup>th</sup> - 5:45PM - 7:30 PM

Željko Pazin, Executive Director EFFRA





**EFFRA**

*Community*

*The European  
manufacturing  
research &  
innovation  
community*



# EFFRA`s different roles

- Partner of the EU institutions, but also:
- Source of information for all actors
- Networking between members/actors
- Source of information and feedback for the Commission and Member States (both national and regional levels)
- Platform for bringing together national and regional programmes and initiatives
- Platform to meet, cooperate and explore opportunities for dissemination, exploitation and cross-fertilisation with other activities

Note: EFFRA was the first PPP association that was set up; many PPP associations were based on the EFFRA model





*European  
Commission &  
Member States*



*European Factories of  
the Future Research  
Association*



**Factories of the Future**  
Public Private Partnership

*2010-2020*



*2021-2027*

# Partnership Story line



2009/2010

*FP7*



2013

*FOF 2020*



2014

*Factories 4.0 and Beyond*

2016



2020

*Present*





## *MI E General objectives*

- Ensuring European Leadership & manufacturing excellence; generating new products and markets
- Achieving Circular and climate-neutral manufacturing
- Mastering the digital transformation of manufacturing industry
- Creating attractive added-value manufacturing jobs

## *MI E Specific Objectives*

- Excellent, responsive and smart factories & supply chains
- Circular products & Climate-neutral manufacturing
- New integrated business, product-service and production approaches; new use models
- Human-centred and human-driven manufacturing innovation

## *MI E Key Technologies and Enablers*

- Advance technologies for green, flexible and resilient manufacturing in all sectors
- Build flexible and resilient supply chains
- Ensure uptake of digital technologies for manufacturing
- Support a just, green and digital transition of a wide range of manufacturing sector in various EU regions
- Reduction in use of resources, materials, energy, water, waste
- Reduction of carbon footprint of the whole supply chain
- Developing collaborative manufacturing, business models and approaches close to the customers
- Ensure Human & technology complementarity and excellence in manufacturing
- Support initiatives that empower workforce with new skills and contribute to the development of training programs
- Address socio-economical challenges and strengthen societal engagement
- Contribute to standardization



## ***MIE General objectives***

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## ***MIE Specific Objectives***

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## ***Operational/R&I Objectives***

1. Zero-defect and zero-downtime high precision manufacturing, including predictive quality & non-destructive inspection methods
  2. Manufacturing for miniaturisation and functional integration
  3. Scalable, reconfigurable & flexible first-time right manufacturing
  4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains - Predictive manufacturing capabilities & logistics of the future
  5. Advanced manufacturing processes for smart and complex products
  6. Data highways and data spaces in support of smart factories in dynamic value networks
1. Ultra-efficient, low energy and carbon-neutral manufacturing
  2. De-manufacturing, re-manufacturing and recycling technologies for circular economy
  3. Manufacturing with new and substitute materials
  4. Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks
  5. Digital platforms and data management for circular product and production-systems life-cycles
1. Digital platforms and engineering tools supporting creativity and productivity of manufacturing development
  2. Improving human device interaction using augmented and virtual reality and digital twins.
  3. Human & technology complementarity and excellence in manufacturing
  4. Manufacturing Innovation and change management
  5. Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs
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# Twin-transition calls associated with the Made in Europe – call 2022

## Area: Green, flexible and advanced manufacturing

2022-twin-transition-01-01: Rapid reconfigurable production process chains (IA);

2022-twin-transition-01-04: Excellence in distributed control and modular manufacturing (RIA);

2022-twin-transition-01-02: Products with complex functional surfaces (RIA);

2022-twin-transition-01-05: Intelligent workpiece handling in a full production line (RIA);

## Area: “Advanced digital technologies for manufacturing

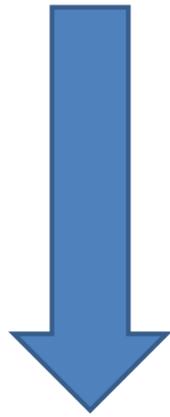
2022-twin-transition-01-06: ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (IA);

2022-twin-transition-01-07: Digital tools to support the engineering of a Circular Economy (RIA);



<https://www.effra.eu/calls-proposals>

# Made in Europe Consultation 2023-2024



<https://www.effra.eu/consultation-made-europe-2023-2024>

The screenshot shows the website's navigation bar with links for HOME, ABOUT, MADE IN EUROPE, PORTAL, STIMULATING INNOVATION, MEMBERSHIP, and PRESS. The main heading reads "Consultation Made in Europe 2023-2024 - consultation is extended until the 29th of September". Below this is a large graphic featuring the EFFRA logo, the MADE IN EUROPE logo, and the text "Made in Europe Consultation 2023/2024 Open until 29 September 2021". The graphic includes illustrations of a person, a robot, and industrial equipment. Below the graphic, a note states: "Please note that the consultation is extended until the 29th of September." The main text explains that users can find a document with recommendations or discussion topics for the work programme 2023-2024. It notes that contributions should be within the framework of the MIE SRIA Specific and R&I Objectives as explained below. This page concerns the consultation on the work programme of Horizon Europe 2023-2024 with respect to manufacturing research & innovation, in particular with regard to the Made in Europe Partnership. More background to the Made In Europe Partnership can be found here. Similar to the consultation that took place in the summer of 2020, you can prioritise and comment the four Specific Objectives and the associated Research & Innovation objectives that are included in the Made in Europe SRIA. However, you are now requested to prioritise and comment the Specific and the Research & Innovation Objectives considering the call topics that have been published by the European Commission.



# Challenges & Opportunities

**Climate Change** needs to be tackled. European society & policymakers are demanding a minimal/zero environmental impact of manufacturing activities (for both, processes and products)

Other regions in the world are heavily **investing** in manufacturing support programmes.

**New Business Models** are offering new opportunities but are also challenging today's way of doing business

The **Covid** Pandemic demonstrated the vulnerability of European industry; **Europe needs a more resilient industry**; at the same time, there is uncertainty about how economic recovery will look like

**International competition** is high, especially coming from Asia.

**Changes of policy frameworks**, markets and **customer preference** are inducing a structural change in manufacturing value chains (shift to electromobility, higher recycling targets etc).

**New technologies** offer immense opportunities which accelerate **innovation & transformation**.

The **fast-moving transition towards smart autonomous systems** and the increased use of **Artificial Intelligence** is profoundly changing the interaction between humans and machines.

Companies are preoccupied with a shortage of **skilled personnel** and with an ageing workforce.

Today, **natural resources and energy need** to be imported from abroad; many critical components too. There is also a wish for ensuring a high level of technological sovereignty, for **Europe to become less dependent on Asia & America**.

**Gender Balance and cultural barriers**



# THANK YOU

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 @EFFRA\_Live

 EFFRA.EU



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# World Manufacturing Forum

Creating change for women in  
manufacturing





# Gender Equality

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A fundamental value to ensure competitiveness and economic recovery



# We Can Do It



## Current State

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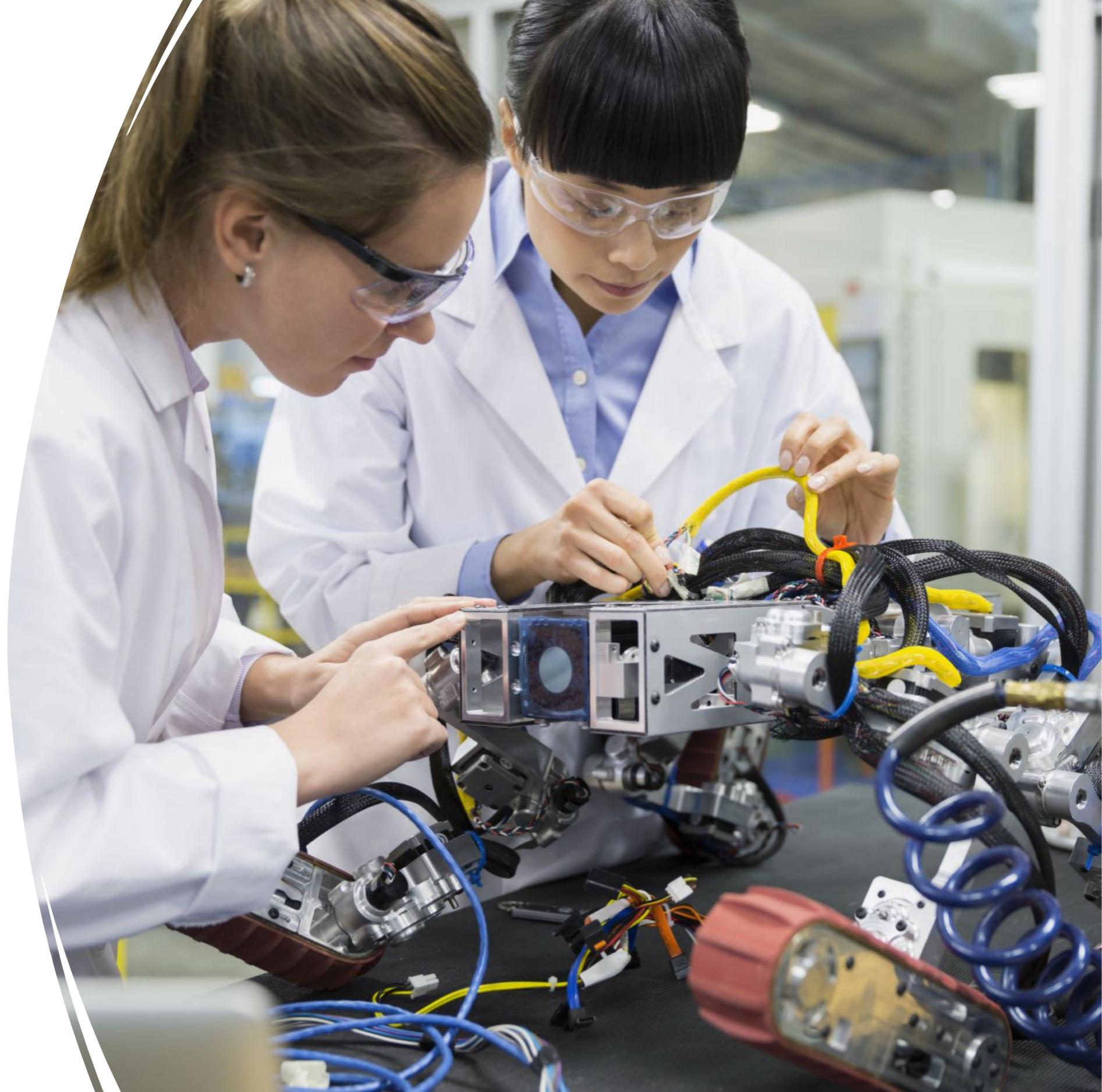
- Women are 52% of the Canadian population, and 48% of the workforce, but hold less than 28% of the high paying jobs in the manufacturing sector
- In Canada, manufacturing makes up 10% of GDP and 10% of employment and pays well above average wages in the country
- Women are less than 15% of senior management in technology companies and less than 2% of CEO's

# This needs to change

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We need to engage the full population to solve the most pressing problems on the planet

Women don't need to be passive users; we need to be at the table helping make products better and more sustainable





# Create a People first EDI Strategy

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“What gets measured, gets managed”. EDI and workforce innovation KPI’s

- Are we measuring the right things?
- Parental leave culture metrics
- Mentorship, Sponsorship & Role Models metrics
- Diversity hiring & promotion, gender pay metrics
- Build an EDI scorecard and use it to hold leaders accountable

What does progress look like in your organization?

Take the pledge “Diversity Matters”

[www.womeninmanufacturing.ca](http://www.womeninmanufacturing.ca)

# What are we doing in Canada?

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## National Early Learning and Child Care Plan

- The addition of 240,000 workers in the labour force will raise real GDP by as much as 1.2 per cent over the next two decades.
- Quebec Provincial Evidence: women and children under three have some of the highest employment rates in the world. Studies show that childcare alone has raised Quebec's GDP by 1.7 per cent

## 50/30 Board Representation

## Targeted training fund for displaced workers and women

## Women in the Economy & Women in Manufacturing





## CME Women in Manufacturing

womeninmanufacturing.ca

- As of February 2020, increased number of women in manufacturing by 41,200 (number static for 3 decades)
- At height of COVID lost 115,000 women in manufacturing
- Diversity Toolkit for manufacturers
- HERStories, conference, provincial councils
- A national childcare program that is attuned to the specific needs of our sector could attract up to 50,000 working moms to manufacturing

# Next Steps

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CME is working with the Government of Canada to:

- Improve access to childcare that accommodates parents working in manufacturing environments
- Influence improvements to curriculum reform
- Better showcase advanced manufacturing to students (Open Doors and online resources for educators)
- Create peer council networks for women leaders
- Offer leadership training and business services webinars geared to women





If You Can See Me  
You Can Be Me...  
Carry the torch for  
**CHANGE**



@rhonda\_barnet



Rhonda Barnet

**#WeCanDoIt #WeWILLdoit #LetsGoDoIt  
#WomenInManufacturing**



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# Back to the Future

*Emerging topics for long term  
resilience in manufacturing*

# WOMEN IN MANUFACTURING

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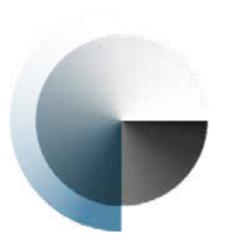
20<sup>th</sup> October 2021





- Manufacturing industry is a **major driver of global economy**, both in terms of jobs and overall wealth, and now has a key role in an economic recovery that needs to address the dual digital and sustainable transition to thrive.
- Only **one in three** manufacturing professionals and **one in four** manufacturing leaders are women *Deloitte (2015). Women in manufacturing study. Exploring the gender gap*
- The gender gap has a **direct effect on the productivity** of companies and, consequently, on the Gross Domestic Product (GDP) of countries. By 2050, improving gender equality would lead to an increase in EU GDP per capita of **6.1% to 9.6%**, which amounts to €1.95 to €3.15 trillion. *EIGE. (2017). Economic Benefits of Gender Equality in the European Union: Overall economic impacts of gender equality.*

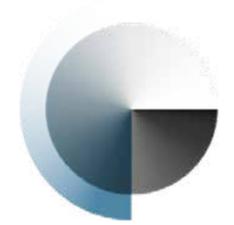
**What is good for gender equality is good for the economy as well as society**



The WMF Women in Manufacturing Focus Group aims to **add to the momentum for closing the gender gap** in the manufacturing industry and beyond, by:

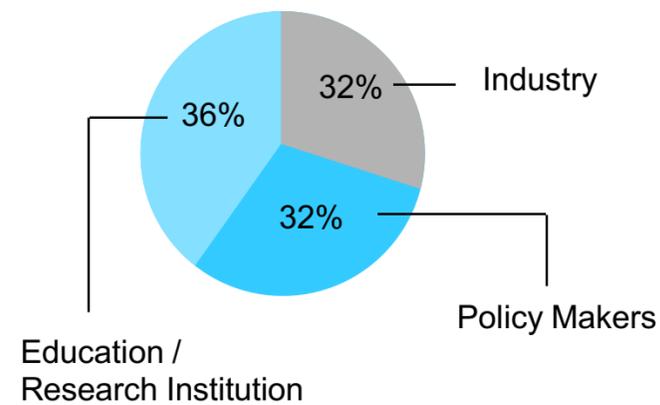
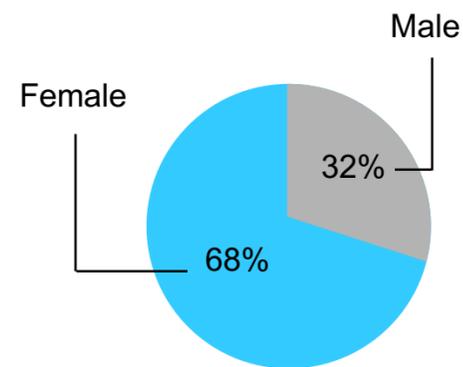
- Thinking out of the box to propose **bold recommendations for action** to be promoted by industry, public institutions, international organizations, educational and research centres and civil society,
- To make it possible for the manufacturing industry **to lead gender equity policies** in a new model for sustainable and digital industry and its connected services.

**It's not only about writing reports, but about engaging people**



## International Expert Group 25 highly qualified persons from 13 nationalities

- Canada
- USA
- Mexico
- Paraguay
- Argentina
- Spain
- United Kindom
- France
- Italy
- Austria
- Bangladesh
- Australia



## State of play



Women make up about 47% of the labour force, but only 20% of the manufacturing workforce  
International Labour Organization. ILO.(2021).

### Why women are not accessing the industry?

Across all industries, women currently make up on average 33% of junior level staff, 24% of mid-level staff, 15% of senior level staff and 9% of CEOs. *World Economic Forum (2016) The Industry Gender Gap Women and Work in the Fourth Industrial Revolution.*

### When and why do women disappear along the pipeline?

### What prevents women from reaching the top levels of leadership?

**The new manufacturing industry needs the untapped potential of women to ensure it gets the talent required to transform manufacturing to the new age**



# Access

In order to build the necessary conditions for women to accede to the manufacturing industry, it is necessary to overcome the digital gap, the **scarce presence of women in STEM** and to create and consolidate an organizational culture with an incorporated gender perspective. It is essential to take the necessary action to **awaken interest and participation** of women in the new business models that embrace **digitalisation and sustainability** in the manufacturing industry



# Thrive

It is essential to create the best conditions for women to prosper in the industrial environment and to **overcome the barriers of permanence**.

- barriers related to **working conditions**, by generating more flexible work models
- barriers related to **working environments**, by promoting equitable workplaces

In such flexible environments and equitable workplaces, the talent of women could be used to full advantage and promote of **innovation through diversity**.



# Lead

Current conditions such as:

- the feminization of the underground economy and part-time work,
- occupation of lower-level positions,
- salary gap compared to peers,
- fewer opportunities for professional advancement

Make the **glass ceiling** the fundamental cause why women occupy so few leadership positions compared to men. In the current context with a shift in paradigm towards business and industrial management that does not exclusively prioritize economic values and that is committed to social and environmental values, there should be **better conditions and more opportunities for women to occupy more positions of leadership** in the manufacturing industry

# Starting point



Fostering women to...	...overcoming current barriers...	...and seizing new opportunities....	...with recommendations for action....
<b>ACCESS</b>	Digital gap. Not enough interest in STEM	Sustainability, servitization – new business models	Create awareness – communicate attractiveness of manufacturing and new opportunities.
<b>THRIVE</b>	Working conditions	More flexibility, more diverse and equitable workplace	Change mindset towards outcome oriented working models and boost innovation through diversity
<b>LEAD</b>	Glass ceiling	Not only economic values, but also social and environmental sustainability	Mainstream gender issues in industrial policies and company strategies with data, objectives and resources

**...in a new industrial model for high added value manufacturing, that becomes part of the solution to climate and social crisis**

# 1 Strategic imperative, 3 Building blocks



“Gender-based discrimination starts in early childhood and continues at school, universities and the workplace. For a future where leadership is not associated with any gender, education, training and professional opportunities must equally empower girls and boys, women and men. We have cultural, domestic and business barriers to break”.

**CULTURAL TRANSFORMATION**

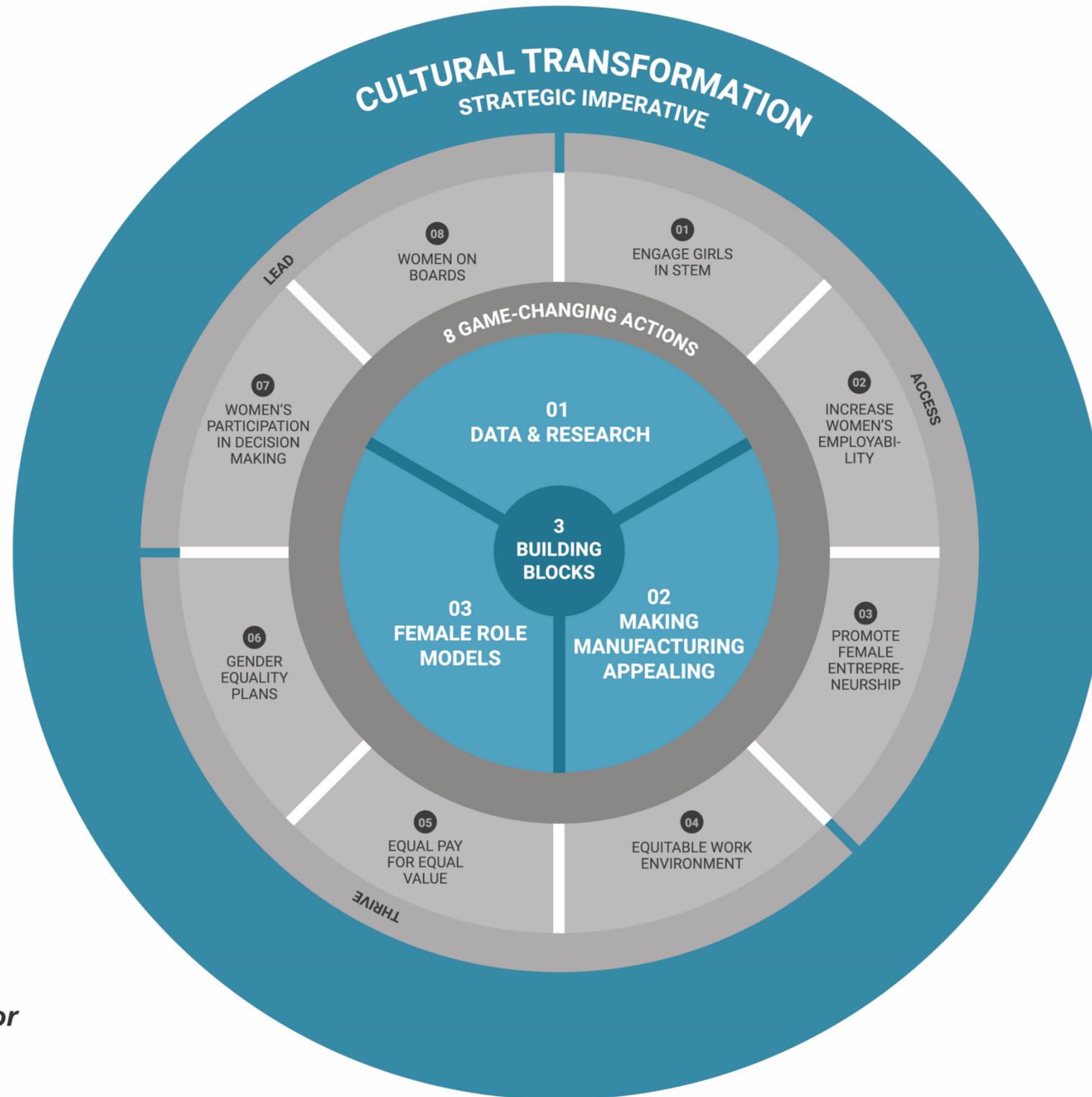
“Contribution of women is already there, but it is not yet recognized enough. Once we recognize it, we give it relevance”. **DATA & RESEARCH**

“The starting point is to show women have many things to say”. **ROLE MODELS**

“Manufacturing industry is designed by men for men”. **MAKING MANUFACTURING APPEALING**

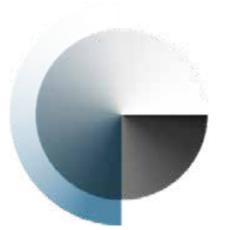


# 8 game changing actions



Back to the Future. *Emerging topics for long term resilience in manufacturing.*  
Women in manufacturing

## A matter of competitiveness



Increasing the rate of **women in companies improves performance**, as it implies higher productivity, better decision-making, different risk-management strategies, more innovation, creativity, and increased efficiency. Hence, gender equality no longer remains just a matter of human rights, but a **fundamental question to ensure competitiveness and economic recovery**.  
*UNIDO (2019). Inclusive and sustainable industrial development: the gender dimension.*

<https://worldmanufacturing.org/wp-content/uploads/Oyon-Women-in-Manufacturing.pdf>

# THANK YOU!

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