地平线另一端的挑战
中国制造 2025

李孟纯 & 沃夫冈・莱莫
福来贝格矿业资源卓越中心
Mengchun.lee@gkz-ev.de
Challenge beyond the Horizon
Made in China 2025

Meng-Chun Lee & Wolfgang Reimer
Geokompetenzzentrum Freiberg
Mengchun.lee@gkz-ev.de
TABLE OF CONTENTS

1. Made in China 2025 (MIC 2025)
2. Evaluation of MIC 2025
3. Level of exposure to MIC 2025
4. Challenges for other industrial countries
5. Voices
6. Latest trends
7. Conclusion
MADE IN CHINA 2025

Background

- Identified **weaknesses** in Chinese manufacturing
  - Innovation capability
  - Resource efficiency
  - Industrial structure
  - Information level
  - Quality and efficiency
  - Lack of core technologies and equipment … etc.

- **Timing**
  - Technology revolution
  - Fast growing national economy/domestic demand
  - Restructuring of the international division of labour
MADE IN CHINA 2025 II

Aim

- Using three decades (2025/35/45) to build a manufacturing industry that has international competitiveness and moving up the value chain – Manufacturing Superpower
  - Self-sufficiency
  - Indigenous innovations
  - Leading manufacturing country

External challenges

- Re-industrialisation of the developed countries
- Competition from other developing countries

Key developing concepts
MADE IN CHINA 2025 III

Roadmap for the 1st three decade plan (MIC 2025)

- Top-bottom design
- The fixation on quantitative targets
- Generous funding from the central & regional governments

<table>
<thead>
<tr>
<th>类别</th>
<th>指标</th>
<th>2013年</th>
<th>2015年</th>
<th>2020年</th>
<th>2025年</th>
</tr>
</thead>
<tbody>
<tr>
<td>创新能力</td>
<td>规模以上制造业研发经费内部支出占工业收入比(%)</td>
<td>0.88</td>
<td>0.95</td>
<td>1.26</td>
<td>1.68</td>
</tr>
<tr>
<td></td>
<td>规模以上制造业每亿元主营业务收入有效发明专利数(件)</td>
<td>0.36</td>
<td>0.44</td>
<td>0.70</td>
<td>1.10</td>
</tr>
<tr>
<td>质量效益</td>
<td>制造业质量竞争力指数2</td>
<td>83.1</td>
<td>83.5</td>
<td>84.5</td>
<td>85.5</td>
</tr>
<tr>
<td></td>
<td>制造业增加值率提高</td>
<td>-</td>
<td>-</td>
<td>比2015年提高2个百分点</td>
<td>比2015年提高4个百分点</td>
</tr>
<tr>
<td></td>
<td>制造业全员劳动生产率增长(%)</td>
<td>-</td>
<td>-</td>
<td>7.5左右(“十三五”期间年均增速)</td>
<td>6.5左右(“十四五”期间年均增速)</td>
</tr>
<tr>
<td>转型升级</td>
<td>宽带普及率3(%)</td>
<td>37</td>
<td>50</td>
<td>70</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>数字化研发设计工具普及率4(%)</td>
<td>52</td>
<td>58</td>
<td>72</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>关键工序数控化率5(%)</td>
<td>27</td>
<td>33</td>
<td>50</td>
<td>64</td>
</tr>
<tr>
<td>绿色发展</td>
<td>规模以上单位工业增加值能耗下降程度</td>
<td>-</td>
<td>-</td>
<td>比2015年下降18%</td>
<td>比2015年下降3%</td>
</tr>
<tr>
<td></td>
<td>单位工业增加值二氧化碳排放量下降程度</td>
<td>-</td>
<td>-</td>
<td>比2015年下降2%</td>
<td>比2015年下降4%</td>
</tr>
</tbody>
</table>
Nine Strategic tasks

- Encourage innovation
- Promote the use of integrated, digital, technology-focused manufacturing
- Strengthen the overall industrial base
- Improve product quality and build global Chinese brand names
- Enforce green manufacturing methods
- Re-structure industries
- Improve service-oriented manufacturing and manufacturing-service industries
- Globalise Chinese manufacturing industries

**Ten priority sectors:** (semi-official) roadmap “MIC 2025 Green Paper”

- Integrated circuits and new generation information technology
- High-end manufacturing control machinery and robotics
- Aviation and aerospace equipment
- Advanced marine equipment and high-tech vessels
- Advanced rail and equipment
- Low and new energy vehicles
- Power equipment and technology
- Agricultural machinery and technology
- New materials
- Biopharmaceuticals and high-end medical equipment
MADE IN CHINA 2025 V

Ten priority sectors: (semi-official) roadmap “MIC 2025 Green Paper”

Made in China 2025 aims at substitution
Semi-official targets for the domestic market share of Chinese products (in per cent)

- New energy vehicles
- High-tech ship components
- New and renewable energy equipment
- Industrial robots
- High performance medical devices
- Large tractors above 200 hp and harvesters
- Mobile phone chips
- Wide-body aircrafts

Evaluation of MIC 2025

Advantages

- Massive mobilisation capacity
- Forward-looking long-term strategic planning
  - Presidency two five years terms
  - Single party
- Large state funding
- Policy innovation through experiment
  - pilot projects/cities, innovation centres
- Rush of local government to emerging industries

Source: MERICS (2016)
Evaluation of MIC 2025 II

Policy weaknesses

- Missing the specific needs of enterprises
- Missing management & gradual change
- Inefficient allocation of funds – Personal contacts
- Duplication of effort by local government
  - Overinvestment/overcapacity of low-value solutions
    ➔ Price decline & shrinking margin ➔ Affect global market

Unfavourable economic condition

- Domestic economic slowdown
- Shortage of skilled workers
- Impending lay-off due to automation

Source: MERICS (2016)
Evaluation of MIC 2025 III

CNY:EUR = 8:1
Source: MERICS (2016)
Level of exposure to MIC 2025

Source: MERICS (2016)
Challenges for other industrial countries

- **State-driven foreign direct investment (FDI)**
  - Acquiring cutting-edge technology
  - Generating large-scale technology transfer
  - Hollowing out of the technological leadership in industrial countries

- **Increasing Chinese market access restrictions**
- **Exclusion from the Chinese local subsidy schemes**
- **Cyber security … etc.**

If MIC 2025 successes, other industrial countries would experience **lower GDP growth rate, job losses & lower industrial output**

Source: MERICS (2016)
Challenges for other industrial countries

- **State-driven foreign direct investment (FDI)**
  - Acquiring cutting-edge technology
  - Generating large-scale technology transfer
  → Hollowing out of the technological leadership in industrial countries

- Increasing Chinese market access restrictions

- Exclusion from the Chinese local subsidy schemes

- Cyber security … etc.

If MIC 2025 succeeds, other industrial countries would experience lower GDP growth rate, job losses & lower industrial output.

*Source: MERICS (2016)*
Challenges for other industrial countries II

Potential impact on raw material sector

  - Upgrade and re-structure mining industry
  - Nations and enterprises co-establish a **strategic reserve system** combining mineral products with deposit sites

- **Strategic/critical minerals (2016)** – Macro-control, monitored and early warning mechanism
  - Energy minerals: Oil, natural gas, shale gas, coal, coalbed methane, uranium
  - Metallic minerals: Iron, chromium, copper, aluminium, gold, nickel, tungsten, tin, molybdenum, niobium, cobalt, lithium, rare earth, zirconium
  - Non-metallic minerals: Phosphorus, potassium salt, crystalline graphite, fluorite
Challenges for other industrial countries III

Potential impact on raw material sector

- Prohibit foreign investment (2018 Revision)
  - Exploration & mining: Tungsten, molybdenum, tin, antimony, fluorite
  - Exploration, mining & processing: Rare earth & radioactive minerals

- Opened after 2018 revision
  - Exploration & mining: Specific coking coal types & anthracite, natural graphite
  - Metallurgy: REEs, tungsten

- Encouraged FI (2017)
  - Developing new techniques for exploiting tailing
  - Techniques for rehabilitation
  - Exploration, mining & processing: Potash, chromium etc.
Opportunities

For European business

- Large business opportunities → policy induced demands
- New funding sources → careful with potential tech. drain
- Influencing China’s standardisation processes  

Source: MERICS (2016)

For raw materials sector

- Opening for international cooperation
  - Less restrict market access for foreign investors
  - Encouraging foreign investors to participate in advanced technology development and application projects

- Establishing mining service or cooperation platforms/forums along the Belt and Road Initiative
  - Promoting policy dialogue, experience exchange, capacity building, technology cooperation, co-lab and vocational training, ex. China-ASEAN mining information platform

Source: China National Mineral Resources Plan (2016)
Voices

Chinese officials argue that Made in China 2025 is in line with World Trade Organization (WTO) rules, since the plan is technically open to foreign participation, transparent, and defined by “instructive” rather than mandatory targets.

American officials and many foreign companies see the initiative as predatory, and rail against the Made in China 2025 plan because of long-standing grievances against the Chinese government for alleged intellectual property (IP) theft, coerced (or nearly coerced) technology transfer, and China’s stubbornly protectionist market. Made in China 2025 stands at the heart of the trade war between the U.S. and China, while also quickly becoming a symbol of growing nationalism within China.

The European Union Chamber of Commerce in China indicates that China should be cautioned against stoking tensions with international trade partners through the implementation of a carefully orchestrated industrial strategy. This includes through policy tools such as subsidies, continued support for inefficient SOEs, limiting market access for foreign business, and state-backed acquisitions of companies from the EU and elsewhere. The broad set of policy tools that are being employed to facilitate CM2025’s development are highly problematic.
Latest trends

• **The heart of the trade war – Withdraw MIC 2025?**
  • Beijing drops contentious ‘MIC 2025’ slogan, but policy remains – 05.03.2019 WSJ

• **Olive branch – China foreign investment law?**
  • The new law aims to create a more level playing field between domestic and foreign businesses.
  • A kind of sweeping set of intentions rather than a specific, enforceable set of rules – 14.03.2019 BBC
Conclusion

- MIC 2025 – A challenge to all the industrial countries
- MIC 2025 does not only affect high-tech industries but also the industries along the value chains
  - As a key player in the raw material sector, China’s movements have huge impacts on the market

- Is there counter-policies to minimise the impacts?
- Is there pro-active actions that industries can take?
- Existing/potential resource security measures?
- Existing/potential intellectual property security measures?
References

- German Mineral Resource Agency & Information Centre of Ministry of Land and Resources (2016). Supply and Demand of Lithium and Gallium
- Ming Fang (2019) 中國製造2025消失 分析：中共策略性迴避, online news article on 06.03.2019 obtained from EPOCH TIMES http://www.epochtimes.com/b5/19/3/6/n11092248.htm
Thank you!

Questions are welcome.