UNIVERSITY OF CAMBRIDGE

Cambridge Industrial Innovation Policy

BABBAGE FORUM

Global Industrial Innovation Policymaking

Meeting of International Policymakers.

The Graduate Hotel, Cambridge UK

25th September 2024

Meeting Report

Foreword

The Babbage Forum is a small international group of economists, engineers and management people with a common interest in industrial innovation policy. Discussions with colleagues and policymakers around the world confirmed our view that there is no natural professional forum for international industrial innovation policymakers to meet with their peers. We hope that Babbage can provide that facility.

On the 25th of September 2024, the Babbage Forum brought together senior invited policymakers and academics from fifteen countries to jointly explore the current challenges, trends and opportunities for industrial innovation policymaking in the context of a rapidly evolving global landscape.

Keynote presentations by leading figures from Europe, USA, China and Asia introduced the contexts in their respective regions to provide brief overviews of the international scene as it affects industrial policy. These overviews, informed by the pilot 'regional' meetings that the Babbage Forum held in California and Korea, are not detailed in this report however the videos of each presentation are available.

This report provides a summary of all roundtable sessions which this year focused on key challenges facing policymakers including: emerging technologies, missions vs sectors and policy alignment. The sessions were designed to enable participants to share experience of challenges and solutions, share practices which have been found to be successful and perhaps some that have not and we are grateful for the openness and richness of your contributions.

The Regional programme of meetings will take place again next year and we hope many of you will be able to join us in the U.S, Asia and Europe as well as back in Cambridge in September for our 2025 international policymakers meeting.

Professor Sir Mike Gregory

University of Cambridge

BABBAGE FORUM

Contents

Agenda

Wednesday 25 September | **morning**

WELCOME & INTRODUCTIONS

SESSION 1: THE GLOBAL CONTEXT—Keynotes

Keynote presentations on the key global regions, Asia, China, Europe and USA including the current drivers, trends and concerns for industrial policymakers in a national and international context. They are designed to provide geopolitical insights to inform the roundtables

Speakers in this session will address, for each region:

- Key regional drivers of industrial innovation policy
- Current industrial innovation policy objectives
- Latest regional industrial innovation policy developments
- Emerging industrial innovation policy trends and their implications
- Babbage regional meeting insights

Europe – Giulia Del Brenna, European Commission
USA – Bill Bonvillian, MIT
China - Professor Xiaobo Wu, National Institute of Innovation Management
Asia – Professor Arnoud De Meyer, Singapore Management University

BREAK

SESSION 2: ROUNDTABLE DISCUSSIONS—Part 1

In the context of each theme, participants are invited to contribute to the following industrial innovation policy issues:

- What challenges and opportunities are your country focusing on?
- What are your policymakers' primary sources of evidence and analysis; and what are they missing?
- What exemplars/case studies do you have of successful or unsuccessful policies?

Theme 1.
Effective emerging technology policies for industrial strategy

Theme 2.
Developing and implementing mission based industrial innovation policies.

Theme 3.
Reconciling industrial, innovation, science and technology policies

Theme 1	**Theme 2**	**Theme 3**
Granta Suite	Lower Granta Suite	Cam Suite
Table 1 & Table 2	Table 3 & Table 4	Table 5 & Table 6

LUNCH

SESSION 2: ROUNDTABLE DISCUSSIONS—Part 2

Theme 1.
Effective emerging technology policies for industrial strategy.

Theme 2.
Developing and implementing mission based industrial innovation policies.

Theme 3.
Reconciling industrial, innovation, science and technology policies.

Theme 1	Theme 2	Theme 3
Granta Suite	Lower Granta Suite	Cam Suite
Table 3 & Table 6	Table 1 & Table 5	Table 2 & Table 4

SESSION 2: ROUNDTABLE DISCUSSIONS—Part 3

Theme 1.
Effective emerging technology policies for industrial strategy.

Theme 2.
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Theme 1	Theme 2	Theme 3
Granta Suite	Lower Granta Suite	Cam Suite
Table 4 & Table 5	Table 2 & Table 6	Table 1 & Table 3

BREAK

SESSION 5: ROUNDTABLES—Report Back

The Chair for each roundtable theme will present back to the meeting the key highlights compiled across all three discussion sessions.

SESSION 6: Developing and delivering industrial innovation policy-Plenary

In light of the day's proceedings, this final plenary session will invite participants to consider emerging policymaking needs and responses. Focusing on what is most useful to policymakers, it willseek to highlight new insights and identify opportunities for the sharing and development of effective practices.

CONCLUDING REMARKS

CLOSE

Theme 1: Effective Emerging Technology Policies for Industrial Strategy

1.1. Prioritising Emerging Technologies and Their Strategic Implications

1.1.1. Challenges and Opportunities

The emergence of new technologies and their potential is increasingly apparent. There are many more technologies of which we are unaware and still less able to assess their potential impact.

This session was devoted to the identification, assessment and implications of emerging technologies and, particularly, the challenge of how they should be considered in the development of industrial innovation policies. The challenge highlights the interplay between innovation, investment, and geopolitical considerations, for example, scaling up in a rapidly changing and competitive technology landscape. Opportunities such as nanotechnology might be missed if not strategically integrated.

Prioritisation can also be strongly influenced by local considerations. Historical strengths might provide a robust platform for the adoption of new technologies, through public policies that support local entrepreneurial choices.

Many countries identify key technologies to which they will pay particular attention including, for example, EVs and advanced manufacturing. However, even when the technologies have been identified, their development and adoption needs to be integrated into broader industrial policies. Failure to make appropriate connections can result in the potential of promising technologies being lost, for example through the failure to provide effective manufacturing capability.

Prioritisation is particularly challenging for smaller countries which have to recognise and accommodate the complexities of global manufacturing shifts and investments by major global players that cannot be matched.

There was wide agreement that the lack of a coherent industrial strategy militates against effective prioritisation of emerging technologies.

1.1.2. Case Studies and Exemplars

Indonesia's focus is on resource-based policies, significantly different from the high-tech emphasis seen in other regions. This highlighted the varying definitions and strategies of industrial policy dependent on a nation's inherent resources and capabilities.

In the UK the Catapult network had been successful in building links between research and industry but illustrated the challenge of identifying appropriate support for appropriate objectives. The Graphene Institute in Manchester was a prime example of targeted investment that, while initially successful, required broader support mechanisms and clearer long-term visions to sustain growth and relevance.

Sweden's strategy had emphasised the need for a critical mass and a broader European cooperative framework to ensure that emerging technologies like quantum computing do not simply migrate to more financially robust ecosystems like the US, post-development.

1.1.3. Some observations

- The intricate link between innovation, industrial, and trade policies necessitates a coordinated approach to recognise and accommodate strengths of other players and mitigate associated risks.
- Regulation was acknowledged as both a barrier and a facilitator of innovation, with entities like the FDA playing a crucial dual role in the biotech sector.
- The importance of understanding regional capabilities and comparative advantages was emphasised, suggesting a need for responsive policies anticipating technological shifts.
- The dynamic nature of technology development calls for agile policy frameworks that can accommodate rapid changes without committing to paths that may quickly become obsolete.
- Issues of internal as well as external competition arise in the consideration of national priorities for emerging technologies.
- Ethical considerations and social contexts must be integral to developing and implementing emerging technologies, ensuring that innovations like AI are designed with broad societal benefits in mind.

The discussions painted a picture of a complex landscape where strategic foresight, collaborative frameworks, and adaptive policies are crucial in harnessing the full potential of emerging technologies within the global industrial context.

1.2. Providing Resilient Infrastructure and Supply Chain

1.2.1 Challenges and opportunities

The importance of resilient infrastructure and supply networks was widely recognised in the context of evolving geopolitical pressures and technological advancements. There are immediate implications for strategic local support to SMEs which may be vulnerable to global competition while providing an essential , and potentially unrecognised, national capability.

New international relationships are emerging as countries seek to secure access to essential resources and capabilities. Concepts such as 'friendshoring' are emerging. The need for resilience in terms of resources but also markets might lead countries to seek to build their own global networks through their global corporations.

Regulatory frameworks were thought to be particularly important in ensuring that technologies and systems are adequately protected without inhibiting innovation.

Comprehensive mapping of supply chains was thought to be essential if countries are to make well informed decisions about sources of supply

1.2.2. Case Studies and Exemplars

One of the most striking examples of supply concentration is the semiconductor industry where over 90% of all advanced chips are made by TSMC in Taiwan while the capability to build vital semiconductor manufacturing equipment is based in the Netherlands.

In the US urgent measures are underway to reduce these dependencies in semiconductors. While the auto industry continues to wrestle with the aftermath of COVID and the tensions between globalisation and localisation.

In the UK the restructuring of trade policies following Brexit revealed the need for origin data, which can complicate the relocation of production.

In Japan a strategy of diversification requirements in supply chains, highlighted a shift towards incorporating non-price values such as economic security and sustainability into market decisions. This approach reduces dependency on single-origin components, encouraging a broader investment spectrum.

China's challenges include balancing domestic and international manufacturing capacities to serve both domestic and global markets to retain access to both markets and resources.

The widespread deployment of electric charging stations in Norway illustrates how proactive steps can be taken at national level to establish sustainable infrastructure.

Germany's strategic investment in research infrastructures like the Max Planck, Fraunhofer, and Helmholtz institutes, which focus on basic R&D, applied science, and infrastructure development, respectively. These institutes exemplify a structured, long-term approach to building an ecosystem supporting emerging technologies.

1.2.3. Some observations

A number of more general observation can be drawn from the discussion:

- Infrastructure, regulatory environments, and strategic foresight are all important in developing policies for supply chain resilience.
- Innovation requires an ecosystem that includes technological development, supportive infrastructure, and proximity to knowledge centres, as seen in Germany's approach.
- It is essential for governments to possess strategic intelligence and the capability for foresight to anticipate and mitigate risks associated with emerging technologies.
- Tangible and intangible infrastructure are important in enabling innovation, from skills development to technological facilities like Faraday and Catapult centres.
- Regulation should function as an enabler of innovation, facilitating rather than obstructing the deployment of new technologies.
- The global nature of emerging technologies dictates that no country can afford to be isolated, underscoring the importance of international cooperation and robust, flexible supply chains.

Overall, the discussions highlighted the critical need for strategic, anticipatory policies that adapt to technological change and global market dynamics, ensuring that infrastructure and supply chain strategies are resilient and forward-looking.

1.3. Facilitating Scale-Up and Application of Emerging Technologies

1.3.1. Challenges and Opportunities

The need for an early appreciation of the potential of emerging technologies is widely recognised but many factors must be taken into account if the potential of emerging technologies is to be fully realised. Supportive industrial innovation strategies and plans should include development, demonstration, deployment, and integration into social contexts.

Disparities in technological adoption and infrastructure, particularly in economically disadvantaged regions, suggest that emerging technologies could help bridge these gaps as AI ride-sharing and widespread deployment of 5G networks have done. There are also societal issues around the acceptability of new technologies and the possibilities of resistance if the benefits are not apparent. The social behaviour changes driven by technology, including reduced physical interaction among younger populations and the broader implications for societal norms and mental health are raising new challenges for technology adoption.

The need for rapid and robust scale-up is sometimes overlooked as the skills required are different from those of R&D and development. There is a risk that scale-up is seen as simply a financial challenge, which is often the case. But the technical and operational complexities of scale up demand particular attention. Scaling up may be further inhibited by the presence of incumbent industries for which competition might be a challenge.

Internationally the challenges of emerging technologies include the dichotomy between fostering emerging industries domestically while participating in international collaborations, such as the ITER project for nuclear fusion.

1.3.2. Case Studies and Exemplars

The US experience with Li-Ion batteries highlighted a crucial lesson in balancing innovation and production. The failure to establish manufacturing capabilities for technologies developed domestically has led to a "one-way research system" where the U.S. sometimes continues to invest in research without corresponding gains in manufacturing.

The UK's approach with ARM was mentioned as a positive example where early-stage investments in emerging technologies provided substantial competence and financial gains despite not leading to large-scale manufacturing within the country.

1.3.3. Some observations

A number of more general observations can be drawn from the discussion:

- Development, Demonstration, Deployment: There's a critical need to focus on the entire lifecycle of technology development, from initial research to widespread deployment, ensuring that each phase is robustly supported and interconnected.
- Manufacturing and Services Integration: Consideration must be given to both manufacturing capabilities and the pre-and post-manufacturing services that can enhance the value and integration of new technologies.
- Overcoming Incumbent Barriers: Established industries often resist the scale-up process; thus, strategies must address these challenges directly to facilitate smoother integration of new technologies.
- Jobless Innovation: There's a risk that technological advancements may not always result in job creation, prompting a need for policies that consider the broader employment impacts.
- Social Considerations: Integrating social behaviour and acceptability into industrial policy is necessary to ensure that technological advancements contribute positively to society and do not exacerbate inequalities or social isolation.

These discussions highlighted the need for an holistic approach that considers technological, economic, and social factors in concert when orchestrating technology emergence and scale up.

Theme 2: Developing and Implementing Mission-Based Industrial Innovation Policies

2.I. Balancing Mission and Sectoral Perspectives

2.1.1. Challenges and Opportunities

This roundtable explored the roles of mission-based and sectoral approaches within industrial innovation policies. National approaches vary widely but the challenge of aligning broad mission-driven goals with specific sectoral needs is frequently referenced.

While global challenges influence mission identification and execution, internal conflicts can arise when missions with differing objectives intersect, such as energy costs versus security. Both of these examples are significantly influenced by international factors suggesting that, while focussing on national objectives, missions must be seen in a global context.

Engaging businesses with government missions is essential given the complexities businesses face when interacting with government systems. This perspective highlighted the need for streamlined processes that facilitate rather than hinder business participation in mission-oriented initiatives.

It is also important that missions address societal priorities . A major challenge lies in identifying and responding to these priorities which are not always clearly articulated or understood.

There are concerns about the ambiguity surrounding new policy terms like “techno-economic security,” with a preference for evidence-based approaches in which sectors continue to serve as the foundation for policy design.

The primary sources of evidence for mission-based policies are often large business groups, but the roundtable acknowledged significant gaps in incorporating broader inputs. The OECD noted that while missions are gaining traction, there is a substantial capacity gap within governments to implement these effectively. There is also a need for new metrics to measure social impact, which remains underdeveloped.

External shocks like the pandemic have shaped missions, such as digital transformation and global value chain reconfiguration, but also highlighted the political challenges of balancing sectoral interests, which can often compete with or undermine mission objectives.

Despite the growing emphasis on missions, the enduring presence of sectoral policies reflects the complexity of evolving governmental strategies to incorporate new, ambitious goals.

2.1.2. Case Studies and Exemplars

France’s 2030 plan, includes missions such as hydrogen development and decarbonising the automotive industry. While sectoral, these initiatives align with broader mission objectives, illustrating how sectoral actions can support overarching missions.

Norway has seen a shift from mission-centric approaches towards more narrowly defined thematic missions, such as animal feed research combined with regulation, suggesting a trend towards integrating missions into specific, actionable agendas.

Singapore’s data-driven approach, contrasts it with regions where data and evidence integration might be less rigorous.

Some observations

- There is a need for more precise objectives in mission-based policies.
- Driving national productivity can yield greater returns from the diffusion of existing technologies rather than new inventions, suggesting a need for more precise strategic direction.
- The separation of R&D from manufacturing can lead to inefficiencies, stressing the importance of integrating these processes to support mission objectives.

This discussion highlighted the complexities of developing and implementing mission-based industrial policies, emphasising the need for clarity, coordination, and an appreciation of global challenges and local capacities.

2.2. Managing Multiple National Missions and Their Interactions

2.2.1 Challenges and Opportunities

National missions may arise from a wide range of policy objectives. While they can enable focus on priority issues there is a challenge of competition for resources and conflicting requirements for the fulfilment of different missions. The process is akin to managing a portfolio of businesses where the allocation of resources must be strategically managed across various missions to optimise outcomes and prevent resource conflicts.

Missions also place demands on systems of measurement and assessment. While it is relatively straightforward to access quantitative data on established activities, integrating qualitative insights can be challenging, for example in the case of emerging technologies and industries. This highlights a broader issue within policy formulation—balancing data-driven insights with the nuanced understanding needed to guide complex mission interactions. Examples include the consideration of non-monetised benefits in developing business cases, emphasising the need to codify qualitative impacts alongside quantitative metrics.

The importance of investing in data foresight to anticipate outcomes over the next decade, addresses the long-term planning required for mission-oriented policies.

Finally, policy alignment across different government layers, for example the coherence between regional and national initiatives, requires attention.

2.2.2 Case Studies and Exemplars

In Brazil experience suggested that starting with smaller, more manageable missions can lead to more effective outcomes. These included challenge-led missions targeting specific industrial challenges and thematic missions that evolve to support smaller projects. An ecosystem delegates some aspects of policy developments to the industry, fostering a bottom-up approach to mission implementation.

Italy, uses structural cohesion funds for data collection, stakeholder engagement, and consensus building. This approach underlines the importance of creating structural cohesion within and between missions, ensuring that various stakeholders are aligned and that there is a unified approach to mission implementation. Structured funding mechanisms can facilitate comprehensive stakeholder engagement, which is crucial for successfully integrating diverse mission objectives.

The US emphasises Research, Development, & Demonstration (R&D&D), highlighting the critical importance of demonstration and deployment in the innovation cycle. There is a significant role for public-private partnerships (PPP) and the engagement of smaller companies through networks like MEP/M-USA to ensure widespread technological adoption and innovation dissemination.

Singapore does not have a centralised government agency to oversee mission-oriented initiatives. Instead, it describes a five-year plan that covers the entire value chain and incorporates foreign expert advice.

Italy's focus on energy transition and digitalisation, is supported by substantial government incentives like the "Superbonus" tax credits, rapidly deployed through collaboration with banks and private markets.

In Canada, the focus on disaggregated data collection across different demographics underpins a more nuanced approach to policy impacts, ensuring that the effects are understood across various population subgroups.

France's mission-oriented policies during COVID-19, facilitated rapid and effective governance solutions, overcoming traditional obstacles and inter-sector rivalry. This crisis response highlighted the potential for missions to cut through bureaucratic inertia when urgency dictates swift action.

The OECD noted the directive nature of missions, which are increasingly focusing government spending on specific areas.

2.2.3. Some observations

- Nations use different methodologies by which they manage the complexity of multiple missions, emphasising the need for flexibility, robust data integration, and stakeholder involvement.
- The insights gained underscore the necessity of a balanced approach incorporating quantitative and qualitative assessments to manage and align national missions towards cohesive policy goals effectively.
- There appears to be a shift towards greater reliance on fiscal incentives to stimulate private sector engagement in mission-driven research and development.

Overall, the roundtable underscored the necessity for strategic coordination across government departments and levels, integrating various stakeholder interests and aligning short-term actions with long-term mission goals. The discussions highlighted that effective governance, stakeholder engagement, and adaptive policy instruments are crucial for successfully implementing mission-oriented strategies.

Theme 3: Reconciling Industrial, Innovation, Science, and Technology Policies

3.1 Managing interfaces between government departments

3.1.1. Challenges & Opportunities

This roundtable segment was dedicated to the interplay and management of relevant policies emanating from different ministries, often in different contexts.

The reorganisation of government structures and departments was discussed as potentially reducing coherence in industrial policy. The separation might lead to silos, risking analytical incoherence, especially in sectors like energy and green technologies. However, some argued that smaller ministries can mitigate internal silos and promote agility, stressing that effective leadership and cultural adaptations are crucial.

Having the right personnel for new, challenge-led agencies, is a need accentuated during the COVID response. Post-COVID, the focus of many departments has diffused, emphasising the need for reinvigorated clear directives.

Top-down industrial policies, which, while swift (e.g., in response to initiatives like the IRA), may sacrifice technological neutrality and the beneficial unpredictability of innovation outcomes. Conversely, the European Research Council (ERC) represents a successful bottom-up approach, albeit with challenges in scaling up.

3.1.2. Case Studies and Exemplars

EU Horizon Europe Missions: These missions aim to create urgency around specific needs and have been linked successfully with competitiveness over the past five years.

Brazil's AI Plan: After initial unsuccessful attempts, forming a well-defined inter-ministry working group and subsequent smaller, focused groups led to practical action plans and the creation of a state AI institution, emphasising the importance of clear ownership and budget control.

Singapore's Approach: In Singapore, the small size of the government facilitates communication, and high trust in the government aids policy implementation. Senior (retired) ministers often take on coordinating roles across different agencies, enhancing policy coherence.

3.1.3 Some observations

- Diversification and Flexibility: New coordination mechanisms must be adaptable, allowing for the diversification of industrial policies.
- Data and Monitoring: There's a critical need for comprehensive datasets that help understand core science capabilities and monitor the progress of missions.
- Delegation and Regional Empowerment: Some industrial innovation policies could be delegated to regional authorities to leverage local insights and capabilities.
- Stable yet Dynamic Frameworks: While stability in institutional structures is crucial, policies must also remain dynamic to adapt to new challenges and opportunities.

The discussions underscored the necessity for a nuanced balance between mission-driven and sectoral approaches, advocating for structures that foster clear objectives and the flexibility to adapt to the emerging technological landscape.

3.2. Avoiding Overlaps and Omissions Between Policies

3.2.1. Challenges & Opportunities

This discussion delved into how countries can manage the intricacies of overlapping and, at times, contradicting policies within their industrial, innovation, science, and technology frameworks.

The challenge of stakeholder mapping for industry-specific policies was highlighted. Effective stakeholder engagement is essential for ensuring that policies are comprehensive and avoid unnecessary overlaps that can dilute the impact of government actions.

There are significant challenges aligning policies with financing mechanisms, particularly where treasuries and econometricians are sceptical of the efficacy of industrial policies.

There is a notable conflict between ambitious industrial policies and environmental commitments For example, the substantial energy demands of AI technologies clash with countries' climate pledges, exemplified by moves like restarting the Three Mile Island facility to support energy-intensive industries.

Aligning domestic industrial policies with a nation's international R&D strategies can also be a challenge, potentially resulting in disjointed efforts that fail to leverage global partnerships effectively.

Continuous resetting of policies, with new administrations often undoing the progress of their predecessors, highlights the challenges of maintaining policy continuity across different government terms. Similarly new ministers can equally feel driven to add or change existing policy.

An overarching concern is that an excessive focus on specific missions can inadvertently crowd out resources from areas where a country previously excelled, potentially undermining established strengths in pursuit of new ambitions.

3.2.2. Case Studies and Exemplars

Korea presents a successful case of centralised budget decisions in the mid-2000s, which coordinated science policy across multiple ministries. By making centralised determinations of budget allocations, Korea has reduced duplicate efforts and streamlined its science policy initiatives.

The lack of joint infrastructure planning across government agencies in the UK for emerging technologies like quantum computing could lead to disjointed efforts. This exemplifies the challenges of different government entities operating with other priorities and timescales, often resulting in uncoordinated policy implementation.

3.2.3. Some observations

- Strengthening Interdepartmental Coordination: Establishing more robust mechanisms for interdepartmental communication and planning can help ensure that policies across industrial, innovation, science, and technology domains are well-coordinated and strategically aligned.
- Regular Policy Reviews: Implementing regular reviews of all related policies to identify overlaps and gaps can help streamline efforts and ensure resources are allocated efficiently.
- Long-term Policy Stability: Encouraging policies that transcend electoral cycles can help maintain continuity and prevent the undoing of progress with changes in government.

These discussions emphasise the importance of coherence and coordination in policy formulation and implementation, highlighting the need for systematic approaches to manage overlaps and avoid omissions that could undermine national objectives.

3.3. Ensuring Coverage of the Full Innovation Pipeline, Including Manufacturing

3.3.1. Challenges & Opportunities

The challenge of a shortage of qualified workers faces many countries. This reflects the rapid changes in technology which were not easy to anticipate, and the time required to educate and train people in advanced technologies. These shortages impact both private and public sectors across the innovation pipeline.

Overemphasis on R&D at the expense of demonstration and deployment (RD&D) can result in a lack of effective feedback loops and interrupted progression in technology readiness levels (TRLs) and manufacturing readiness levels (MRLs).

Geopolitical tensions can affect partnerships necessary for connecting different stages of the innovation pipeline, particularly with restrictions on research collaborations.

Organisational, language and cultural disconnects between researchers and the policy agenda can hinder the implementation of industrial innovation policies.

3.3.2. Case Studies and Exemplars

The OECD's MOIP committee aims to bridge different committees and sectors, focusing on quantifying industrial strategies and collecting data on industrial subsidies to understand the broader impact of government support on innovation.

China, traditionally strong in downstream manufacturing but weak in upstream innovation, has recognised this gap and is now more focused on upstream research, as seen in advanced technology initiatives and 'new quality production'

Denmark implements tripartite agreements built into contracts to ensure that all parties in the innovation pipeline are aligned and committed.

United States has established 31 technology hubs to foster innovation through a bottom-up approach, serving as a matchmaker between different stages of the innovation pipeline and signalling support for selected technologies.

China uses manufacturing innovation centres and national labs to mediate along the innovation pipeline, ensuring a smooth transition from basic research to market-ready products.

Italy promotes inter-institutional collaboration with committees that include representatives from business, academia, and government, which helps to formalise strategies across different sectors of the pipeline.

3.3.3. Some observations

- General Purpose Technologies explore technologies that can support multiple sectors, enhancing the flexibility and applicability of innovations.
- Collaboration Platforms encourage platforms for collaboration between countries at different stages of development to leverage diverse strengths and resources.
- Innovation Ecosystems adopt an innovation ecosystem lens to coordinate elements of the innovation pipeline, fostering environments that facilitate the seamless transition of ideas from conception to commercialisation.
- Regional and National Strategies consider the specific contexts of different countries, recognising that a global division of labour may be more efficient than attempting to replicate complete pipelines within every country.

This session highlighted the complex interplay between different stages of the innovation pipeline and the necessity for strategic coordination across all levels of government and industry to ensure comprehensive coverage of innovation activities.

BABBAGE FORUM

The Babbage Forum is part of Cambridge Industrial Innovation Policy

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