# In pursuit of skills excellence

## The experience of China in WorldSkills competitions, 2010- 2024

**REPORT**

CONFERENCE VERSION

# Contents

# Foreword

The future will belong to societies that can combine knowledge with know-how, ideas with execution, and innovation with the human capacity to make things work. We will need engineers who can design new systems, but also technicians who can install, maintain and improve them; scientists who can develop new technologies, but also skilled professionals who can turn those technologies into dynamic economies and better lives. Vocational education and training brings together deep knowledge, practical mastery, creativity, judgement, collaboration, and pride in excellence.

Few organizations champion the skills agenda more powerfully than WorldSkills International. WorldSkills Competitions are the global benchmark for excellence in vocational skills. They make visible something that conventional measures of education often struggle to capture: what extraordinary expertise looks like when knowledge is translated into action. When young people compete at WorldSkills, they are not simply demonstrating that they can perform a task. They are showing precision, problem-solving, resilience and ingenuity at standards that rank among the best in the world.

The OECD is proud to partner with WorldSkills International to advance skills development worldwide. Through WorldSkills Competitions, the OECD Programme for International Student Assessment (PISA), and the emerging PISA Vocational Education and Training assessment, PISA-VET, we are building complementary ways of understanding what young people know, what they can do with what they know, and how education systems can help them reach their full potential.

International comparison matters because no country can improve simply by looking at itself. Benchmarking creates mirrors and windows: mirrors that allow systems to see their own strengths and weaknesses more clearly, and windows through which they can see what others are doing differently – and sometimes better. That is the real power of the collaboration between WorldSkills International and the OECD. Together, these initiatives can help move vocational education from the margins of education policy to the centre of economic and social strategy.

The scale of that opportunity is considerable. WorldSkills International brings together 90 Member countries and regions, most of which also participate in PISA and PISA-VET. Together, they represent around two-thirds of the world's population and some 100 million young people engaged in vocational education and skills training. Those countries have very different traditions, labour markets, and vocational systems. But they share a common question: how can we develop excellence in skills at scale?

Building effective opportunities for vocational education and training has proved challenging because it cannot be done in classrooms alone; it hinges on an effective integration of the world of learning with the world of work.

But it can be done. This year's host, China, provides a powerful example. At its first WorldSkills Competition in 2011, it won a single silver medal. Just 13 years later, it had topped the medal table at four consecutive Competitions (2017, 2019, 2022Special Edition, 2024), with a total of more than 160 medals won since 2011, across fields ranging from manufacturing and construction to information and communications technology, transportation, and services.

But medals are just the visible tip of a much larger skills ecosystem. Behind them lie years of investment in people, institutions, standards, and relationships. WorldSkills became a powerful catalyst precisely because preparing for international excellence pushes systems to ask difficult questions: Are our occupational standards truly world class? Are instructors connected closely enough to the frontier of industry? Are curricula keeping pace with changing technologies? Are young people learning merely to follow procedures, or to diagnose problems, adapt, and improve?

As this report shows, China has used WorldSkills as a tool for answering those questions. Its pursuit of excellence has stimulated investment in training methodologies, curriculum development, expert capability, and closer partnerships with employers. This is important, because the real value of international competition is not that a few exceptional young people stand on a podium; it is that the standards represented on that podium begin to influence the expectations of thousands of teachers, trainers, employers, and students.

That is how competition becomes system improvement.

Of course, success at WorldSkills cannot by itself tell us whether a country has a high-quality vocational education and training system. A competition necessarily concentrates on the very best. The broader challenge is to translate excellence at the frontier into excellence throughout the system – to ensure that vocational students everywhere encounter ambitious standards, talented teachers, modern technology, meaningful workplace learning, and genuine pathways to further education and rewarding careers. This is where OECD's PISA-VET comes in. It will allow countries to assess the extent to which their vocational education and training systems are progressing at scale.

By making vocational skills visible, measurable, and internationally comparable, WorldSkills and PISA-VET can help countries establish clearer expectations for excellence. They can strengthen the evidence available to policymakers. They can help educators and employers learn from one another. And perhaps most importantly, they can give young people a powerful message: mastery matters, craftsmanship matters, and vocational expertise can take you to the highest levels of achievement.

The OECD is committed to working with WorldSkills International to advance that global skills agenda and to ensure that learners acquire the knowledge, skills, and opportunities they need to thrive in economies and societies undergoing profound transformation.

Because in the end, the future will be built by people who know how to turn knowledge into action, ideas into solutions, and possibility into reality.

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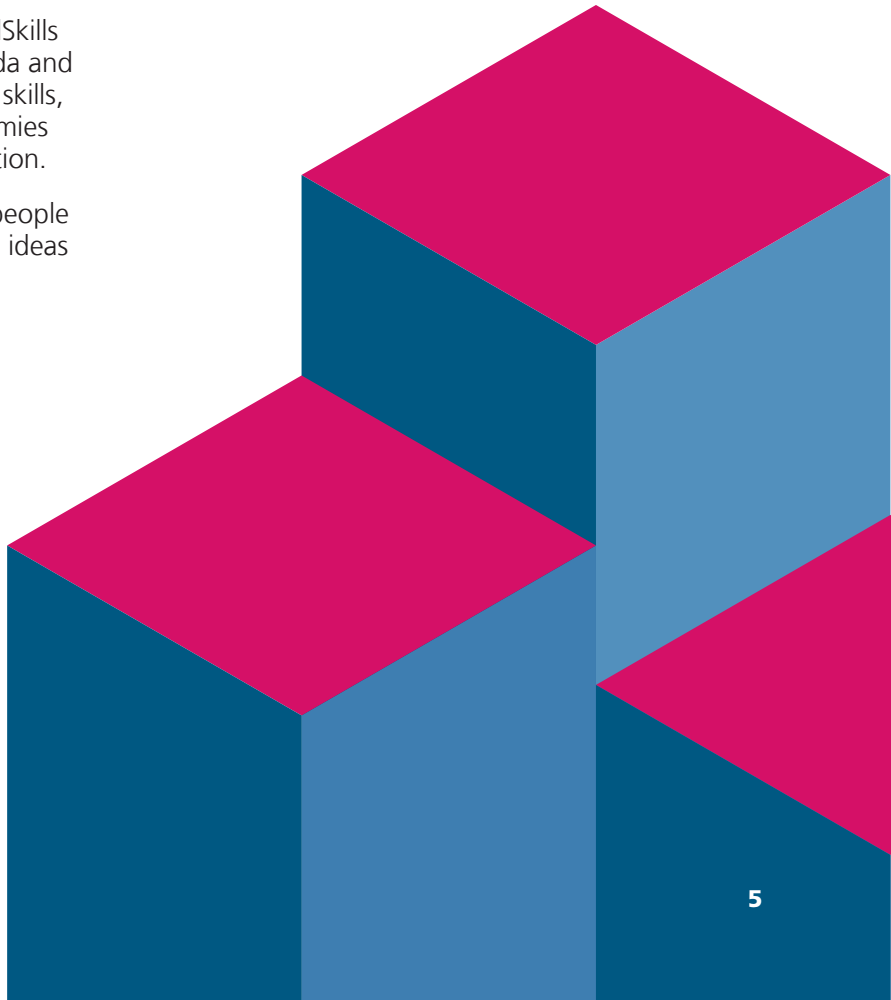

# Preface

The year 2026 marks an important milestone for the WorldSkills movement as the 48th WorldSkills Competition is held in Shanghai, China, following the celebration of WorldSkills International's 75th anniversary in 2025. This provides a timely opportunity to reflect on China's WorldSkills journey since its first participation in 2011 and to examine the factors that have enabled the country to become one of the world's leading performers in international skills competitions.

China is home to the world's largest technical and vocational education and training (TVET) system, and its engagement with WorldSkills has strengthened both China and the WorldSkills movement in many ways. Since joining WorldSkills International, China has significantly raised expectations of young people's capabilities and performance when benefiting from the development of international occupational standards, competition benchmarking, technical and educational expertise, and industry engagement. Its participation has helped advance the status and global relevance of WorldSkills while demonstrating how international competition can serve as a catalyst for strengthening national skills systems.

This report is the result of a collaborative effort between WorldSkills International, the UNESCO Teacher Education Centre, and Shanghai Normal University. Its purpose is to document China's experience as a Member of the WorldSkills community and participant in the WorldSkills Competitions since 2011, to analyse the policies, institutions, and practices that have underpinned its success, and to identify examples that may be of value to other WorldSkills Members seeking to strengthen their TVET systems. The report includes references to certain other Members, such as Brazil, Germany, India and Switzerland, that were willing to share and compare their own experiences at WorldSkills Competitions.

China's commitment to the WorldSkills movement has remained steadfast since it was awarded the right to host the 48th WorldSkills Competition in 2026. Under the leadership of the Ministry of Human Resources and Social Security, together with the Shanghai Organising Committee and many national and local partners, extensive preparations have been undertaken to deliver what promises to be one of the largest and most ambitious WorldSkills Competitions ever held, while upholding the movement's enduring principles of excellence, fairness, transparency, and technical integrity.

Together with all Members, China has also played an important part in shaping the future direction of the WorldSkills movement. The Shanghai Declaration reflects the shared commitment of WorldSkills Members to advancing a global skills agenda and provides a solid foundation for the implementation of WorldSkills Vision 2035. Together, these initiatives reaffirm the central role of skills in promoting innovation, sustainable economic growth, and vocational opportunities for young people around the world.

We hope that this report will contribute to a deeper understanding of China's WorldSkills experience and encourage further international collaboration, knowledge sharing, and policy innovation. The lessons presented here demonstrate how sustained investment in skills, strong partnerships among government, industry, and education, and an unwavering commitment to excellence can strengthen technical and vocational education and training systems, and inspire future generations of skilled professionals.

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# Contributors and acknowledgements

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## ACKNOWLEDGEMENTS

This report is the result of initial discussions between the OECD and the UNESCO Teacher Education Centre/ Research Institute of International and Comparative Education (RICE) of Shanghai Normal University, and the readiness of WorldSkills International to bring it to fruition. It represents a collaboration between Shanghai Normal University and WorldSkills International and draws extensively on the wisdom of the OECD.

Thanks are due to local officials and WorldSkills China Experts who generously gave their time to completing questionnaires and participating in discussions. We also thank the WorldSkills International Technical Delegates for Brazil, Germany, India, and Switzerland for their valuable feedback and insights.

We thank Marilyn Achiron for editing the manuscript. We are grateful to members of the WorldSkills Secretariat for access to essential data and for preparing the report for publication.


# Chapter 1

# Introduction and overview

WorldSkills International (WSI) is a charity that creates, organises, and promotes global and regional competitions for vocational skills. Its main Competition is held every two years in different parts of the world. It also hosts conferences on vocational skills.

The biennial WorldSkills Competition (WSC) is the gold standard of skills excellence. It inspires young Competitors to reach new heights in vocational occupations, helping them turn their passion into a profession. The WSC helps governments to develop skills through global occupational standards, training and development, and industry engagement, including support for the design of competitions and sponsorship. It also influences industry, government, and educators through cooperation and research – building a global platform of skills for all. In addition to its global and regional skills competitions, WSI initiates, oversees, or supports research, projects, and collaborations for the advancement of the global skills agenda. WSI has 90 Member Countries and Regions, representing two-thirds of the world's population and 100 million young people currently engaged in skills development.

This report focuses on the experience in the WorldSkills movement of one Member, China. The purpose of the report is to present China's track record from its first participation at WSC2011 through to its most recent participation at WSC2024. It places the country's participation in a global and national context, and discusses some of the key aspects of its experience as a Member, including what has gone well, what challenges have been faced, and what lessons have been learned, especially in relation to potential national policy impacts.

China became a member of the WorldSkills movement in 2010 and made its Competition debut at the 41st WorldSkills Competition (WSC2011) in London in 2011. Over little more than a decade, it has progressed from a newcomer to a leading WorldSkills Member, reflecting sustained national investment in technical and vocational education and training (TVET), skills excellence, and industry partnerships.

China's competitive performance has improved dramatically over successive competition cycles. At its first appearance at WSC2011, China won one silver medal together with several Medallions for Excellence. By WSC2017 in Abu Dhabi, China topped the gold medal table with 15 gold, 7 silver and 8 bronze medals, and went on to lead the overall rankings again at WSC2019 with 16 gold, 14 silver and 5 bronze medals. Following the cancellation of WSC2021 in Shanghai due to the COVID-19 pandemic, Chinese Competitors also performed strongly at the modified WSC2022 Special Edition (WSC2022SE). By the end of WSC2024 in Lyon, China had established an unprecedented record, leading the medal standings for four consecutive Competitions. Since first competing at WSC2011, Chinese Competitors have accumulated over 160 medals, including more than 90 gold medals, demonstrating exceptional consistency across manufacturing, construction, information technology, transportation, and service sectors.

The continuity and integration of China's WorldSkills Experts with fellow Members' Experts have been key factors underpinning China's sustained success in WSCs. Rather than relying on short-term preparation for individual skill competitions, China has developed stable teams of technical experts, trainers, and mentors who accumulate knowledge across multiple competition cycles. This continuity enables the systematic transfer of expertise in occupational standards, assessment requirements, training and development methodologies, and emerging technologies.

Experienced Experts also play an important role in strengthening China's broader TVET system. Many are involved in curriculum development, teacher training, national skills competitions, and the establishment of WorldSkills-aligned training centres, ensuring that lessons from international competition are disseminated throughout vocational education. Their long-term engagement helps maintain consistent training quality, supports the development of future Experts and Competitors, and fosters strong partnerships between vocational institutions and industry.

China's success has not been without challenges. Early participation highlighted gaps in international competition experience, judging standards, English-language communication, and exposure to global occupational practices. As China's performance improved, sustaining excellence across an expanding range of skills became increasingly demanding, especially within a vibrant, competitive community

of Members. Maintaining such high levels of performance requires continuous curriculum renewal, investment in modern equipment, high-quality expert coaching, and stronger collaboration with industry. More recently, rapid technological change, including digitalisation, automation, artificial intelligence, and green technologies, has created pressure to continuously update Members' training systems and ensure that Competitors are prepared for emerging skill requirements in addition to existing occupational standards.

From a policy perspective, China's experience highlights the value of investing not only in Competitors but also in the long-term development and retention of expert communities. Building and sustaining this human capital creates institutional memory, promotes continuous improvement, and enables its participation in the Competitions to deliver lasting benefits beyond medal success.

China's WorldSkills experience offers several important lessons for the future. Foremost among these is the importance of sustained investment in the development and continuity of WorldSkills Experts. Long-term relationships between Experts and Competitors enable the accumulation and transfer of technical knowledge, competition experience, and coaching expertise across successive competition cycles. This continuity not only contributes to stronger competitive performance but also creates a mechanism for embedding WorldSkills standards and practices throughout the wider TVET system and the broader expert community in China's national skill competitions.

China's experience also demonstrates that sustained government commitment, combined with strong industry engagement, can produce world-class skills outcomes. International benchmarking through WorldSkills provides a catalyst for modernizing vocational curricula, pedagogy, assessment, teacher development, and training methodologies. To maximize the value of participation for China, the expertise developed through WorldSkills is being disseminated beyond elite Competitors through expert networks, teacher professional development, pedagogy, and curriculum reform, while Competitors themselves continue to be supported as ambassadors for vocational excellence and skilled careers. Maintaining China's high ranking will require continued innovation to ensure that Experts, Competitors, and vocational institutions remain aligned with the rapidly evolving demands of advanced manufacturing, digital technologies, and the green economy.

China's sustained participation and success in the Competitions has had implications that extend well beyond international medal success. In addition to its role as a platform for competition, WorldSkills has become integral to China's TVET policy reform, quality improvement, institutional capacity building, and the professional development of both Experts and Competitors in China. The continuity of communities of Experts, and the mentoring relationships they establish with successive generations of Competitors, has enabled China to transform its WorldSkills participation into a long-term strategy for strengthening its TVET.

China's participation has also brought significant benefits to the WorldSkills movement. As one of the world's largest economies and vocational education systems, China has expanded the global reach, influence, and diversity of WorldSkills while strengthening its relevance to rapidly evolving industries and technologies. China's sustained investment in skills development, strong competitive performance, and active engagement in international technical cooperation have enriched the exchange of knowledge and good practice among Members. Through hosting international events, supporting Expert collaboration, contributing to technical discussions and standards development, and establishing the WorldSkills Museum in Shanghai, China has helped to raise the international profile of WSI and reinforced its role as a leading global platform for promoting skills excellence, innovation, and international cooperation.

Overall, China's WorldSkills experience demonstrates that international skills competitions can serve as a catalyst for broader reform when embedded within a comprehensive national skills strategy. The country's experience suggests that sustained investment, close industry engagement, rigorous standards, research, broader international engagement, and systematic dissemination of competition-based innovations can contribute not only to international competitive success but also to improvements in the quality, relevance, and prestige of TVET.

# Chapter 2

# International comparative assessment

The field of comparative and international education has enjoyed a resurgence over the past three decades, largely due to intensified globalization, especially from the 1990s onwards, rapidly changing geopolitical relations, and major advances in information and communications technology. A key element of this resurgence is the expansion of International Large-Scale Assessments (ILSAs) and increased demand from countries for internationally comparable data on education and skills. International interest in ILSAs and other comparative studies of educational achievement is primarily motivated by concern about differences in performance among systems, particularly in an era of intense global economic and educational competition.

This global context is important for understanding China's rationale for engaging with WorldSkills Competitions (WSCs) and its participation in ILSAs. The number of countries that regularly participate in these assessments has increased sharply over the past 25 years, with the share of countries participating in the largest of these, the OECD's Programme for International Student Assessment (PISA), for example, growing from one-fifth of countries in 2000 to almost one-half of countries in 2025. What accounts for this increase? Do these factors also explain China's participation in PISA, and its decision in 2010 to become a Member of WorldSkills International (WSI)?

## ILSAS AND CHINA

There are three broad explanations for the growth in participation in ILSAs (OECD, 2015): globalization of assessments, greater technical capacity for conducting assessments within countries, and increased demand from countries for the microeconomic and macroeconomic data obtained from these assessments. In the case of China, Shanghai has participated in PISA since 2009. China expanded its participation with Beijing, Jiangsu and Guangdong in PISA 2015 and with Beijing, Jiangsu and Zhejiang in PISA 2018, PISA 2022, and PISA 2025 in addition to Shanghai.

Like many upper-middle-income and high-income countries, China first participated in PISA following a long and steady experience with related assessment activities – such as the development of national assessments and examinations, and participation in other ILSAs. For example, in 1983-85, three provinces of China participated in the International Association for the Evaluation of Educational Achievement's Second Science International Study; in 1991 the country participated in Educational Testing Service's International Assessment of Educational Progress along with 19 other countries. These activities helped to establish a culture of assessment in China together with the necessary technical and administrative capacity for conducting and learning from ILSAs. Indeed, a key part of China's rationale for participating in PISA was the belief that this would strengthen its cooperation with the OECD in education, facilitate exchanges of experience with other participants based on the assessment data and international comparisons, and push forward national and global efforts to improve the quality and equity of basic education.

Shanghai's first participation in PISA 2009 was immediately followed by China's first participation in a WSC in 2011. The country's stated rationale for joining WSI and its skills competitions was in many ways like its rationale for participating in PISA. In its letter of application to WSI's CEO in 2010, China's Ministry of Human Resources and Social Security stated its belief that "accession to WSI will strengthen the cooperation between China and WSI, promote the exchange with other members in the field of skills competition, and push forward the development of the cause of skills competitions worldwide." Given the proximity in timing of China's first participation in PISA and its decision to participate in WSC2011, and the similar rationale given in both cases, we can conclude that the country was indeed responding positively to the globalization of assessments and was building on its recently developed technical capacity for conducting assessments. While China's demand for PISA data was slightly different to its demand for competition data from the WSC, the country was clearly attempting to benchmark its national education system and technical and vocational education and training (TVET) system against international standards through its participation in these international assessments and skills competitions.

China's participation in PISA has been a positive experience. In each edition of PISA in which the jurisdictions of China have participated their students have scored higher than the OECD average in reading, mathematics, and science. In PISA 2018, a larger proportion of students in Beijing, Jiangsu, Shanghai and Zhejiang, compared to the OECD average, performed at the highest level of proficiency (Level 5 or 6) in at least one subject; at the same time, a

larger proportion of students achieved a minimum level of proficiency (Level 2 or higher) in at least one subject. In Beijing, Jiangsu, Shanghai and Zhejiang, 95% of students attained at least Level 2 in reading, significantly more than on average across OECD countries (OECD average: 77%). At a minimum, these students can identify the main idea in a text of moderate length, find information based on explicit, though sometimes complex, criteria, and can reflect on the purpose and form of texts when explicitly directed to do so.

Performance in mathematics among the students in Beijing, Jiangsu, Shanghai and Zhejiang is even higher than that in reading. Some 98% of students from these jurisdictions attained at least Level 2 in mathematics compared to the OECD average of 76%. At a minimum, these students can interpret and recognize, without direct instructions, how a (simple) situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency). In Beijing, Jiangsu, Shanghai and Zhejiang 44% of students scored at Level 5 or higher in mathematics compared to the OECD average of 11% (OECD, 2026).

It is clear from the PISA results of Beijing, Jiangsu, Shanghai and Zhejiang that the education system in these areas is providing students with a solid foundation of basic skills and knowledge. China's vocational education and training system in these districts benefits greatly from these achievements in basic education, as the entrants to vocational programmes have at least the minimum levels of proficiency in reading, mathematics and science that are necessary for success in all occupations.

## THE WORLDSKILLS COMPETITION: IMMERSIVE LARGE-SCALE INTERNATIONAL COMPARATIVE ASSESSMENT

Founded 76 years ago, WSI oversees what is now the world's largest international comparative assessment event. Around two-thirds of WSI's 90 Members regularly make the considerable investment to prepare for and compete in the biennial WSC. In keeping with the complexity and diversity of the working world, the credibility of WSI's role in international comparative assessment stems partly from the engagement of Members who represent TVET systems, business, industry, and partners, and partly from WSI's blend of research, development, collaboration, events, and heuristic knowledge.

To compete in a Competition is to shoulder an obligation, strive for excellence, and be accountable for one's performance in the full glare of a Closing Ceremony. Sponsoring member governments review the results and often make funding decisions accordingly. Some Members undertake thorough analyses of their performance, seek feedback from WSI, and go on to develop improvement plans. Members may join, at least initially, to learn rather than to compete or win. Some countries use WSI's network to seek the support of expertise from around the world and to host friendly competitions to gain experience and benchmark their own systems. Thus, in addition to the biennial WSC and all it comprises, WSI sits at the heart of a network of informal vocational and professional development, created and owned by its Members.

### PISA-VET

Given its success in PISA and in WSC, China may consider participating in the OECD's new initiative: PISA-VET. Building on its PISA assessment experience and its TVET policy guidance, the OECD is working with WSI and a range of countries and experts to develop an international assessment of the professional skills of learners in TVET programmes. As part of its development phase – in which the feasibility of the new assessment is being tested – the initiative is focusing on learners who are about to complete their initial vocational programmes in the fields of business and administration, car mechatronics, electricians, healthcare, and tourism and hospitality. The assessment focuses on professional skills, including practice-oriented or technical skills as well as employability skills, and builds on WSC projects.

Over the next two years, the OECD will collaborate with participating countries and experts to define who will be assessed, what will be assessed, and how will they be assessed. At the end of the development phase, a framework document answering these questions will be prepared, as will a first set of proven and valid assessment instruments. Depending on the outcomes of the development phase, the project will then enter its pilot phase.

This initiative builds on a range of national and industry-specific efforts to measure applied skills, but it would be the first time these methods are applied at scale and across countries. PISA-VET has the potential to pay huge dividends by improving the labour-market relevance, quality, and social status of TVET. To achieve these benefits, the OECD and its members, as well as the industries whose skills will be evaluated, must confirm the validity of the metrics and the international comparability of results that will come from this assessment. To address this, the OECD has established a step-by-step approach to developing the assessment framework and the instruments, with multiple opportunities for countries to review progress and decide on subsequent work.

# Chapter 3

# The WorldSkills context: 2010 to 2024

Until 2004, WorldSkills International (WSI) ran skill competitions (WSCs) through the voluntary efforts of its Members; there was no full-time Secretariat. The Membership then stood at 39 countries and regions. Once a Secretariat was established, there was a strong push for growth in membership. China became the 53rd Member in 2010, and 32 more Members, large and small, economically developed and developing, joined by 2020, making 85 Members in total.

For WorldSkills Members, 2010 to 2019 was a period of optimism, expansiveness, and fresh thinking. New Members added diversity and complexity in purpose, size, expectations, capacity, and needs. There was increased scientific interest in vocational excellence, which led to Tampere University in Finland, the Royal Melbourne Institute of Technology in Australia, and Oxford University in the UK collaborating in a major inquiry into exceptional performance, based on WSC2011. The resulting 'MOVE Report' (Nokelainen et al, 2012) helped to create systemic change in several Members' teaching and learning practices.

Simultaneously, the Third International Congress on Technical and Vocational Education and Training (TVET) held in Shanghai in 2012 proposed the development of world reference levels (UNESCO, 2012). Given its ambition for excellence in TVET, WSI was invited to join the resulting development group established by UNESCO, thus gaining a connection with and an overview of international and global thinking. From WSC2007, each Competition had been enriched by a WorldSkills Conference. While an advisory coalition of international organizations had evolved alongside it over the years, the formal WorldSkills Conference Coalition took shape as a structured multilateral network leading up to the 2024 conference cycle. The WorldSkills Conference Coalition brings together leading international organizations – including UNESCO, ILO, OECD, the World Bank, and UNIDO – to shape the content and direction of the WorldSkills Conference. As a platform for multilateral collaboration, the Coalition works to ensure that the Conference strengthens national skills policies, fosters international cooperation, and connects the evidence and experience of its members to the challenges facing skills systems worldwide.

In 2022, WSI established its own Global Research Council, comprising representatives from UNESCO-UNEVOC, the World Bank, ILO, OECD, Oxford University, Adelaide University, and ibw Austria, to advise on and shape the WorldSkills global research agenda in order to build an independent evidence base on the impact, value, and return from developing skills excellence.

Until 2012, Experts had led the design of the assessments, with the result that they drew on common or competing national TVET assessment practice, without an independent, externally referenced standard or benchmark. Known Marking Schemes and Test Projects encouraged training 'to the test'. From 2012, the WorldSkills Technical Description for each skill competition was enhanced to incorporate an assessment framework and strategy, with independently created Occupational Descriptions, WorldSkills Occupational Standards (WSOSs), and Assessment Strategy. A redesigned assessment method for judging quality followed, as did an evolving Competition Information System (CIS) which by 2020 included a highly credible means of estimating assessors' reliability and detecting bad practice. Mandatory training for Experts was introduced from WSC2013.

Collectively, these developments provided a stimulating environment for new and existing Members. WorldSkills itself grew from being a club to a movement capable of handling diverse cultures, types, and capacities across its Members and partners.

While Members diverged widely on their reasons for competing in a WSC – some to monitor their national TVET outcomes, some to learn, and others to win – all had an interest in understanding the constituents of exceptional performance. The 'MOVE Report' (Nokelainen et al, 2012) provided Members with a useful developmental model of vocational talent to conceptualize multiple factors informing the high performance of WorldSkills Competitors. While the model (Figure 1) puts the individual at the centre, the lower area identifies multiple factors beyond the individual that contribute to their development. These include teachers, trainers, artefacts, work/employment, and peers, as well as home and friends.

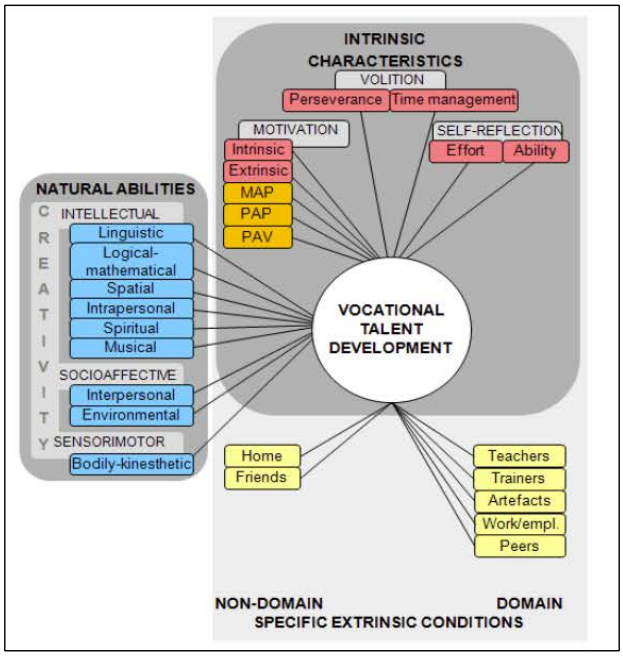



**Figure 1. Developmental Model of Vocational Talent (Nokelainen et al, 2012, p. 47)**

According to Bloom (1985) and Ericsson et al (1993), to achieve higher performance the learner must be motivated, and the tutor must have expertise in their field and be responsive in providing feedback. Ericsson and Lehmann (1996, pp.278-279) refer to this as 'deliberate practice', comprising:

*Individualized training activities specially designed by a coach or teacher to improve specific aspects of an individual's performance through repetition and successive refinement.*

This is not just about practice for a test. It is also about enabling individuals to develop adaptive capabilities, self-regulation, and the transversal skills of problem solving, innovation, and creativity (Zimmermann, 2013). In Beijing in 2009[1], Ericsson noted that deliberate practice rather than innate talent results in peak expertise (Ericsson, 2009; Ericsson, 2018).

By WSC2019, WSI was dealing with two significant issues: the logistic complexity of overseeing huge events, and the impact of widely divergent performance by Competitors and Experts, a result of having no restrictions on entering the skill competitions. In response, WSI determined that 'where inclusion and excellence are in conflict, excellence comes first', thus protecting assessment from poor practice by removing Experts' unconditional entitlement to assess, and protecting Competitors and Experts alike from physical danger and humiliation. Simultaneously, the broader need for support among new Members from developing countries began to be addressed.

As various options for managing WSI's expanding complexity were being considered, the COVID pandemic struck. Despite the ensuing disruptions, and as a further demonstration of the strength of the WorldSkills movement, skill competitions were held throughout Autumn 2022 across 35 venues in 17 member countries and regions, to maintain continuity and ensure a WorldSkills experience for intended Competitors. This was WSC2022SE.

The negative economic impact of COVID checked the growth in the number of Competitors for WSC2024, originally planned for 2023, held in Lyon, France. However, the challenges of running a global Competition remain for potential hosts and WSI, as does the pressure to manage widely diverse performance and meet the high expectations for quality of a live international comparative assessment.

Over the past 25 years, and particularly during the past 15 years, WorldSkills Members in Asia have performed as well as European Members and have embraced newer occupations more quickly, including by proposing new skill competitions in ICT-related occupations. South American Members are strongly engaged, while Africa is steadily advancing. The biennial Regional WorldSkills Competitions have acted as incubators for some prospective Members. It has always been clear that collaboration is vital to creating healthy competition through which every Competitor, Expert, and Member can grow. As demonstrated among African Member countries, the ability to draw upon the experiences of more established Members undoubtedly accelerates development, minimizes costs, and enhances the experience of Competitors and Experts.

Throughout its history the WSC has witnessed different patterns of member involvement, improvement, decline, and continuity, within a broad upward movement that reflects the growth of TVET and the changing demands of work. Exceptional effort and resources are usually required to host a Competition, and lead to improvements in performance which may or may not be sustained in future cycles. Brazil and the UK exemplify this. A small number of Members, such as Korea and Switzerland, demonstrate ongoing quality and resilience that stem from systemic strengths. Some Members choose to restrict their entries to familiar skill competitions, while others use the skill competitions to explore new occupations and TVET pathways. The WSC is sufficiently flexible to embrace these multiple purposes for engagement.

# Chapter 4

# China's performance in the WorldSkills Competitions: data analysis

WorldSkills International (WSI) collects, uses, protects, and shares as appropriate, a wide range of data before, during, and after each WorldSkills Competition (WSC). In summary these data comprise

- Competition entries by year, skill competition and Member
- Essential information regarding participants at a WSC, including Competitors, Experts, Team Leaders, Sponsors, Observers, and those overseeing the skill competitions and the supporting infrastructure
- WorldSkills Occupational Standards (WSOSs), Infrastructure Lists, Marking Schemes, and Test Projects
- Comparative results for Members based on the 'WorldSkills Scale', which converts criterion-referenced results into normative 'points'
- Personalized reports for each Competitor and Member, based on percentage marks
- Internal management reports governing the preparation, conduct, and completion of each individual skill competition and WSC, and facilitating reviews.

For this report, data have been accessed for purposes that they may not have been designed for. As a result, some data have limitations. The text indicates where this is the case.

Due to the disruptive effect of the COVID pandemic on the intended WSC2021 cycle, this report omits detailed consideration of WSC2022SE. This is because China and other Members competed more selectively in dispersed locations that could not emulate a normal WSC. A chart showing China's performance in WSC2022SE appears in Annex A.

The data for available skill competitions, entries, and results have high reliability, as they are based on WSI's Official Results for six biennial WSCs (2011, 2013, 2015, 2017, 2019, and 2024). The skill competitions are colour-coded by reference to occupational sectors using occupational classifications, reviews of their standards and content, and common understanding. They are similar but not the same as WSI's six sectors.

**THE WORLDSKILLS COMPETITION: WSC2011-WSC2024**

The WSC has its roots in post-World War II reconstruction, when the requirement for manufacturing and construction skills was overwhelming. Although it has modernized and grown by adding new sectors over time, manufacturing and construction together still account for over 50% of the skill competitions.

Figure 2 shows the growth in number and occupations represented by skill competitions since WSC2011, when China first participated.

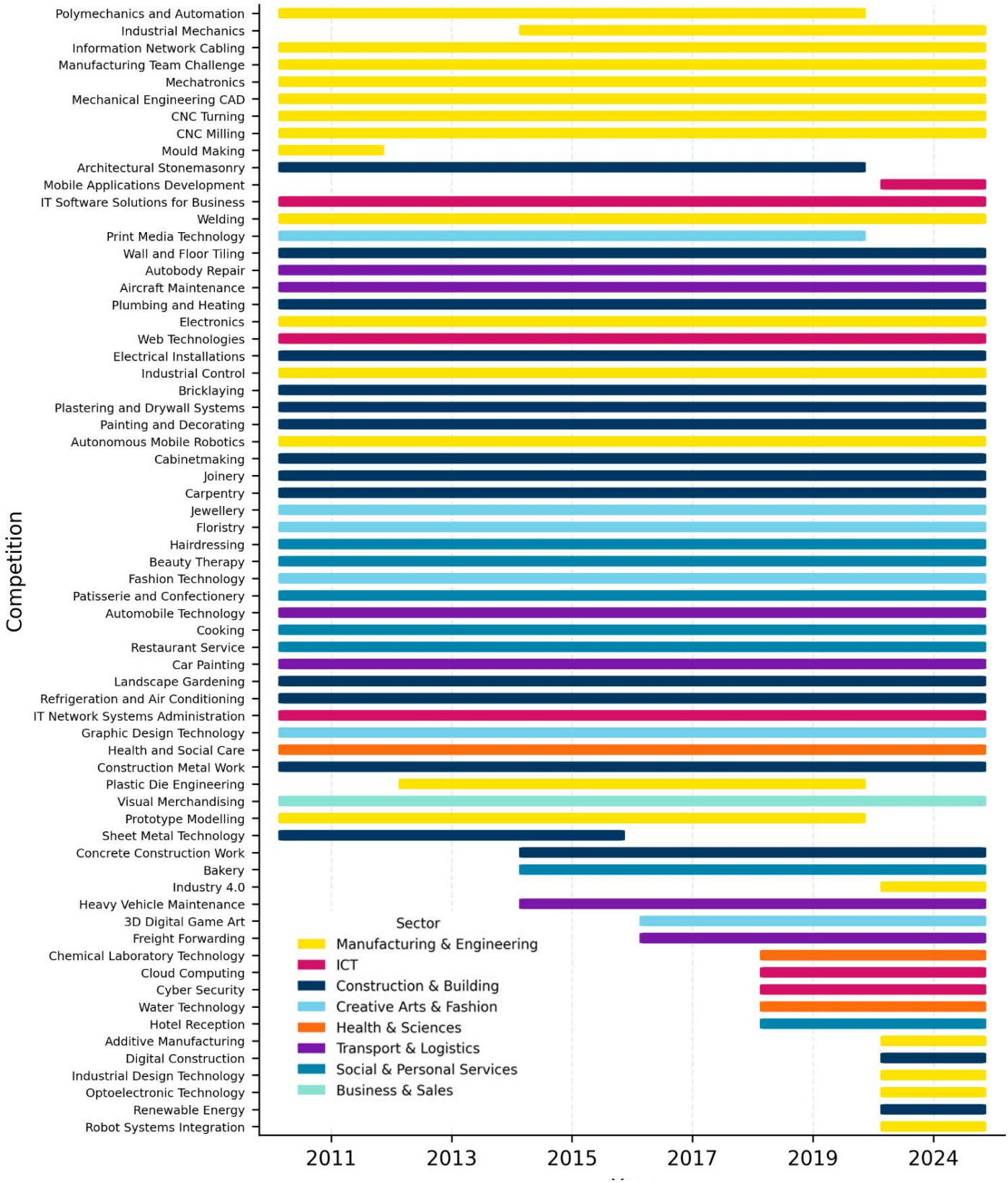



**Figure 2. Available skill competitions, shown by sector: WSC2011-WSC2024**

Figure 3 shows the number of skill competitions by sector, as percentages of the total available number for that WSC. The number of skill competitions and the occupations they represent at each WSC reflect Member demand, which ideally relates to their own economies and labour market needs. Each Member can choose how many skill competitions to enter from those available, subject only to each WSC's and skill competition's capacity.

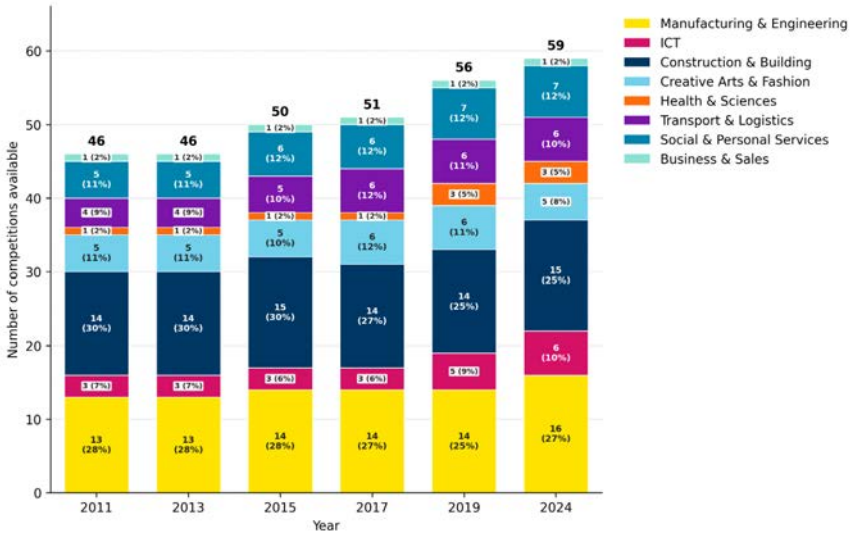



**Figure 3. Percentage of available skill competitions by sector: WSC2011-WSC2024**

## WORLDSKILLS CHINA'S PARTICIPATION: WSC2011-WSC2024

Figure 3 shows that 46[2] skill competitions were available for entry at WSC2011. Figure 4 shows that China chose to enter six skill competitions. For WSC2013, China entered 22 skill competitions out of an available 46, and in WSC2015 it entered 29 skill competitions out of an available 50. China significantly increased its entries in WSC2017, with 47 skill competitions out of an available 51. At both WSC2019 and WSC2024, China entered every available skill competition: 56 and 59, respectively.

Figure 4 shows that for its first WSC, China entered four manufacturing skill competitions, and one of each of ICT, and social and personal services skill competitions. For WSC2013, China entered an additional five manufacturing skill competitions and five construction skill competitions, together with four out of the five available transportation and logistics skill competitions for the first time. It also added another social and personal services skill competition, and for the first time entered a creative arts and fashion skill competition. From WSC2015, through WSC2017, China progressed to 100% of competition entries in all available sectors by WSC2019.

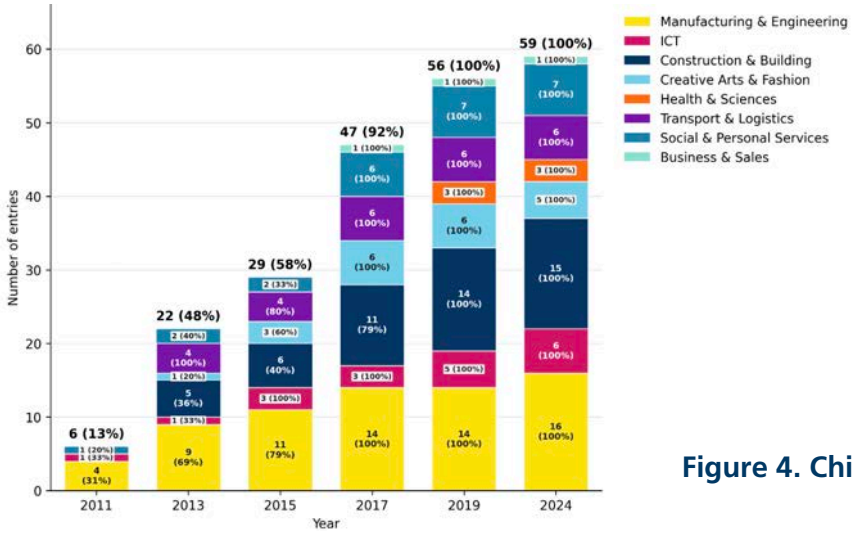



**Figure 4. China's entries by sector and WSC**

Figure 5 presents China's growing participation by sector, as a heatmap showing the relative speed with which it achieved 100% participation in each sector.

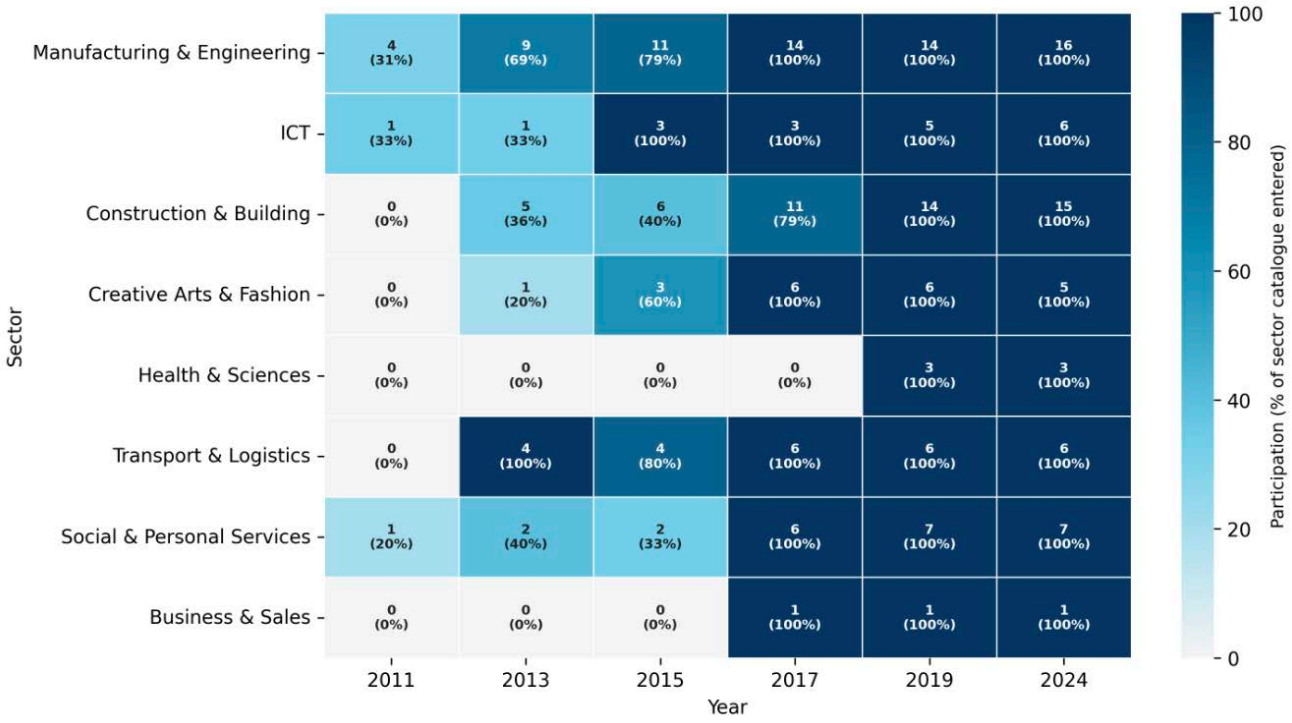



**Figure 5. China's rate of participation by sector: WSC2011-WSC2024**

## WORLDSKILLS CHINA'S PERFORMANCE: WSC2011-WSC2024

At every WSC, each Competitor's performance is assessed by 'criterion referencing', which evaluates their actual performance against a predetermined set of standards. This generates a percentage mark that is independent of comparisons with any other Competitors. Next, since the nature of the assessment is competitive, each Competitor's total mark is converted to a point on a scale which relates to the median[3] of all Competitors' total marks for that skill competition. This is referred to as 'norm referencing'. The median is assigned 700 points. This process results in the 'WorldSkills Scale'. In addition to producing each skill competition's results, the process prevents false comparisons between each skill competition. (Each skill competition has its own distinct WSOS, Test Project, Marking Scheme, and Competitors, all of which prevent direct comparison between skill competitions.)

For each skill competition there are five possible results: Gold Medal, Silver Medal, Bronze Medal, Medallion for Excellence (for meeting or exceeding the median but not winning a medal), or no award (for being below the median). (For the decades up to and including WSC2024, differences of fewer than two points were treated as equal for the award of medals. This had the effect of increasing the number of Medals awarded by the highest-performing countries[4].) When they receive the Official Results, Members most frequently focus on the number and type of medals awarded, their overall average point score, and their own positions relative to other participating Members.

Figure 6 shows China's achievements according to the official WorldSkills Scale. The data show that at WSC2011, China was able to exceed the numerical average point score in each skill competition entered. At WSC2013, a large increase in China's entries (from 6 to 22) resulted in a wider range of performance, with 4 Medals and 13 Medallions for Excellence, but 5 below-average performances.

At WSC2015, a much smaller increase in entries was accompanied by a dramatic improvement in

performance, with 15 Medals, including 5 Gold, 11 Medallions for Excellence, and only 3 Competitors with no award. At WSC2017, a large increase in entries to 47 led to 30 Medals, 12 Medallions for Excellence, and 5 Competitors with no award. At WSC2019, China entered every available skill competition and demonstrated modest improvement in overall performance. At WSC2024, China's performance dominated the Competition, with 36 Gold Medals, 9 Silver Medals, 4 Bronze Medals, 8 Medallions for Excellence, and 2 below-average performances.

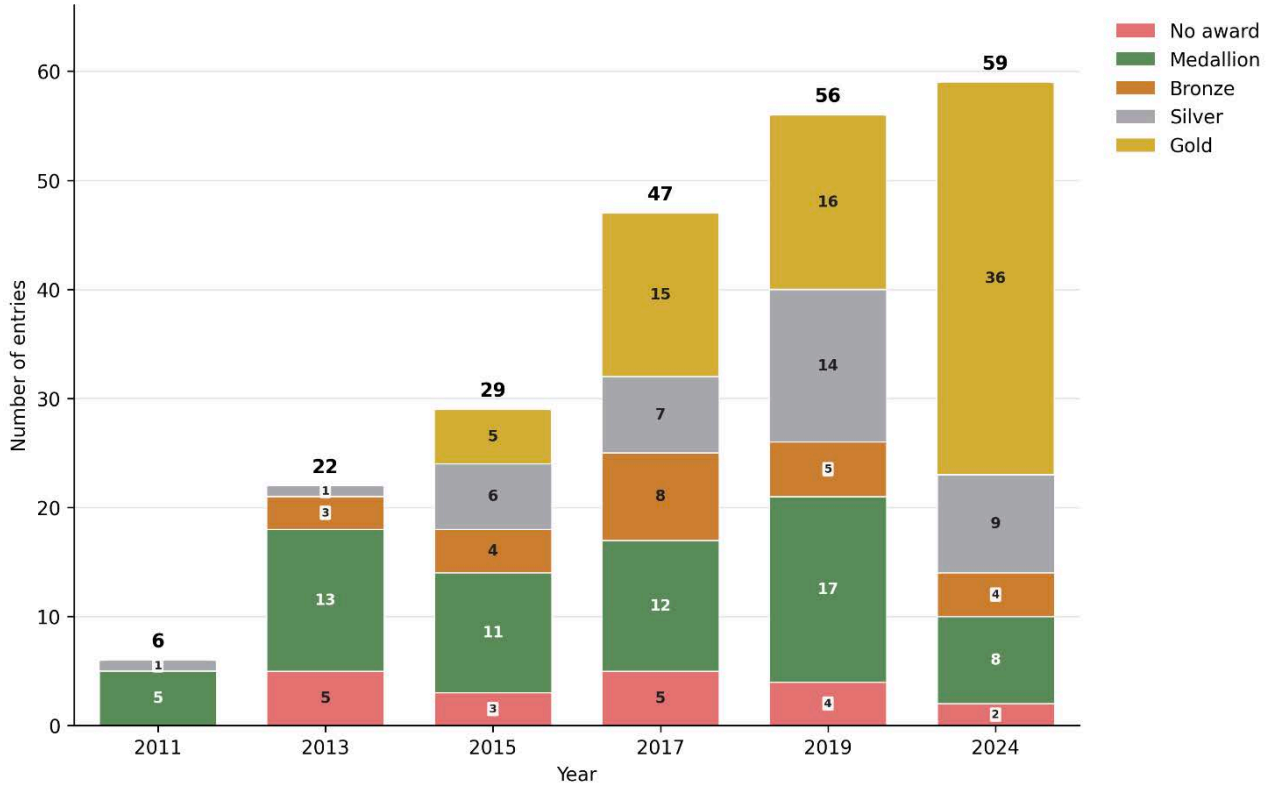



**Figure 6. China's performance in awards: WSC2011-WSC2024**

## CHINA'S WORLDSKILLS PERFORMANCE IN CONTEXT

The Official Results used in this Report show China's performance relative to the other Members whose teams make up the full cohort for each skill competition. To provide a context for review, the performance of six other Members' performance has been analysed: Brazil, Korea, Russia, and Switzerland for their high performance; India for its size; and Germany for the specific interest of the partner commissioning this report.

As noted, most Members are particularly interested in the Medals they win and the average score they attain. Figure 7 shows the average medal points earned by each of these Members, and China, between WSC2011 and WSC2024[5]. Two Members, Korea and Switzerland, had consistently high scores. Germany had consistently modest scores. Brazil peaked at WSC2015, in São Paulo. As a new participant at WSC2013, Russia matched China in its rate of improvement to WSC2019, held in Kazan.

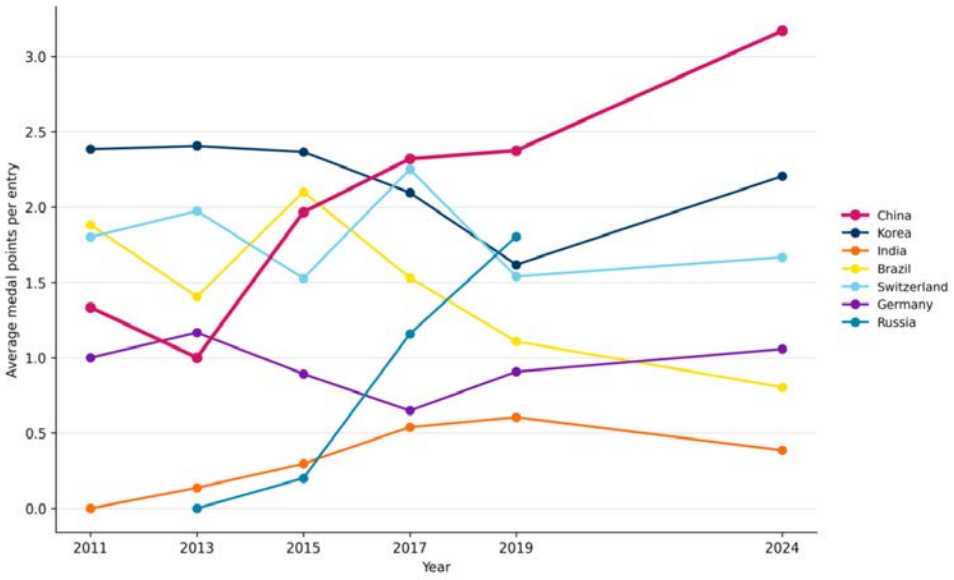



**Figure 7. Average medal points for seven Member participants**

Figure 8 shows the average points score for the seven Members selected. The difference in what is shown in Figures 7 and 8 indicates the overall quality of a team's performance, irrespective of the medals they win (for example, see Korea and Switzerland). It calculates the total points scored in every skill competition entered by a Member, divided by the total number of skill competitions entered by that Member, to create the numerical average points[6]. The critical number to exceed is 700 points[7], recognised by a Medallion for Excellence. This is a useful indicator of the quality of a Member's team, irrespective of team size.

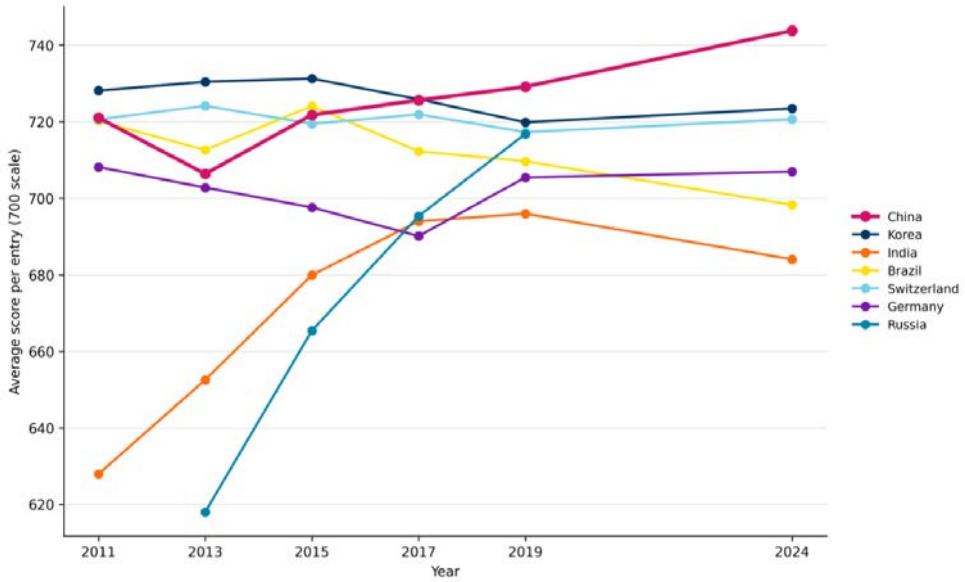



**Figure 8. Average points score for seven Member participants**

To explore China's performance further, Figure 9 provides a more detailed view of the medals China was awarded between WSC2011 and WSC2024.

Within the overall picture of sustained improvement, China's results at WSC2019 are more mixed, with 15 skill competitions showing a decline in the number of medals awarded.


**Figure 9. China's medal progression from WSC2011 to WSC2024**

It is the nature of any competition that success or failure depends on how one's own performance compares with others. Although China was a clear leader at WSC2019, with an average medal point of 2.38, five other Members also performed well, with their average medal points ranging from 1.80 to 1.50. Among these high-performing Members, Russia's progression from WSC2017 to 2019 was equivalent to China's, though its Team lacked the breadth and depth of China's. Further analysis shows that in 15 skill competitions at WSC2019, China and Russia were very close or equal contenders, with both awarded medals.

## THE NATURE OF THE WORLDSKILLS COMPETITIONS

The nature of a WSC's skill competitions is a factor in every Member's performance. Four characteristics are relevant to China as to every Member: complexity, sector, culture, and competition design.

Figure 10 shows the relative complexity of each skill competition as measured by the estimated time required to become proficient in its related occupation. (This excludes any time added for the purpose of competing in international skill competitions.) The times shown are referenced to the International Standard Classification of Occupations (ISCO)-08 levels, which embody European Skills, Competences, Qualifications and Occupations (ESCO) for this purpose. O*NET's estimates of time are used, but its assignment of levels to occupations is not, because it reflects the North American labour market and Technical and Vocational Education and Training (TVET) arrangements[8]. In Figure 10, the skill competitions associated with ISCO-08's Level 2 occupations require up to two years of initial TVET. ISCO-08 Level 3, technicians and para-professionals, is a growing category for the WSC, with new skill competitions and progression in manufacturing. It represents two to four years of initial TVET. ISCO-08 Level 4, another growing category, is classified as requiring 4 to 10 years of initial TVET.

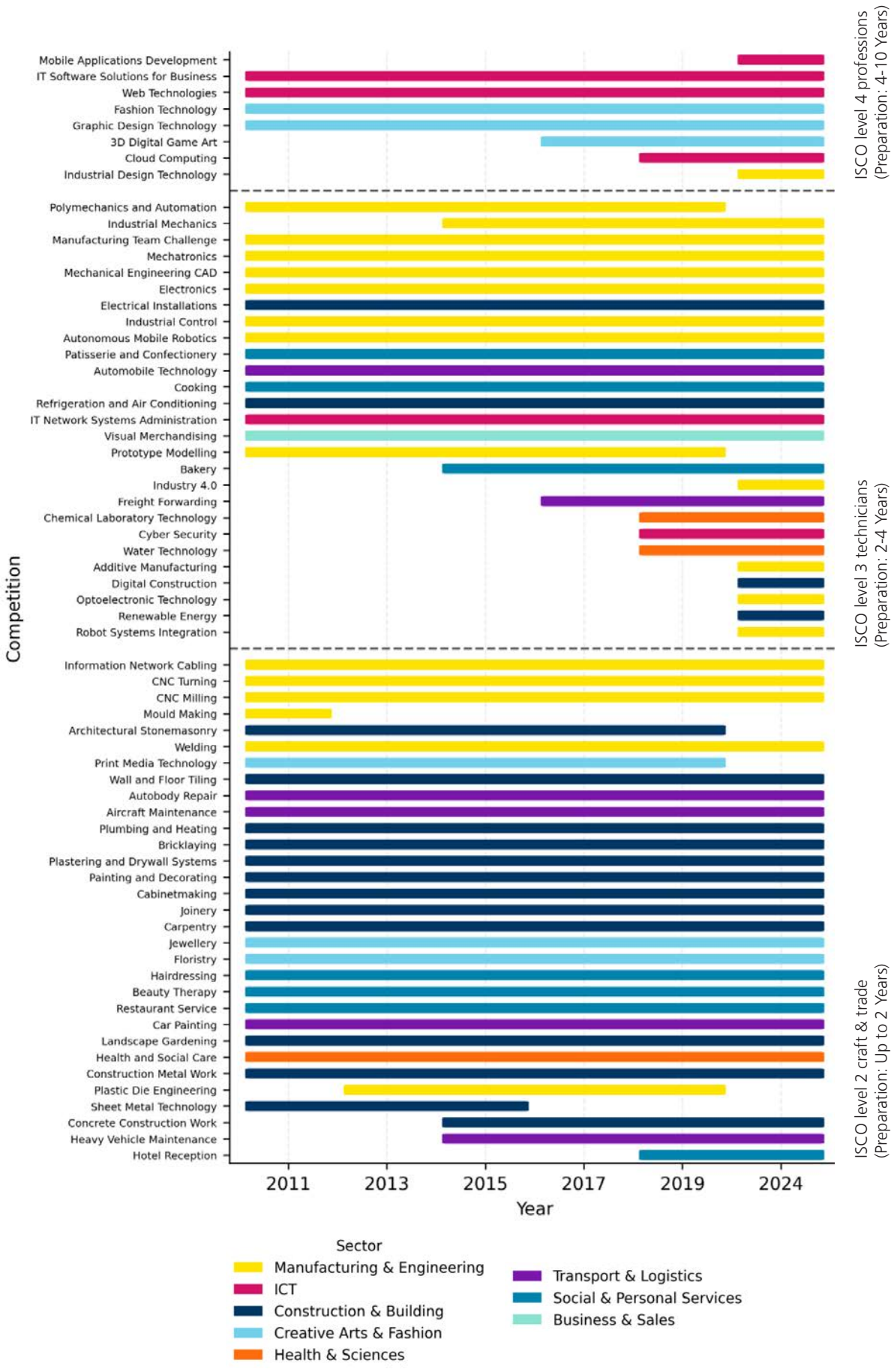



**Figure 10. Available skill competitions shown by ISCO-08 level: WSC2011-WSC2024**

In November 2010, China's starting point was national skill competitions associated with initial TVET at International Standard Classification of Education (ISCED) Level 2. The data in Figure 11 show that China initially chose to enter skill competitions requiring up to two years of initial TVET. (At the outset, Mechanical Engineering Computer Aided Design (CAD) was seen as an adjunct to Computer Numerical Control (CNC) Milling and CNC Turning[9]. The selection of Web Design stemmed from an initial underestimate of the scope of the skill competition, which was then called Web Design[10].) From WSC2013, China increased its entries in broad proportion to the skill competition portfolio's range of level and complexity, achieving 100% coverage by WSC2019.

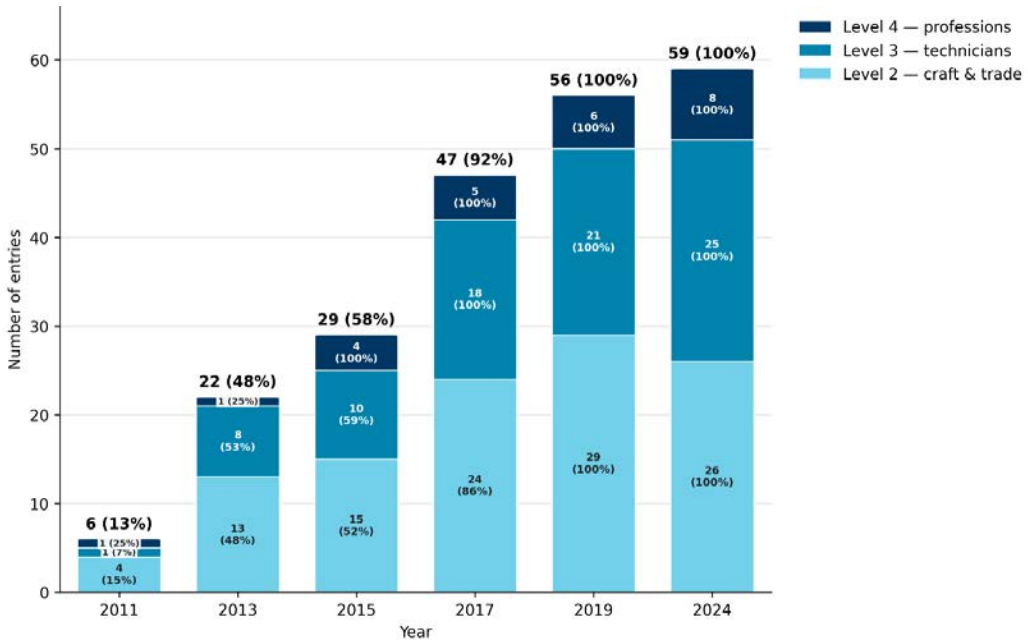



**Figure 11. China's entries shown by ISCO-08 level: WSC2011-WSC2024**

Figure 12 shows China's performance by ISCO-08 level, using average medal points. The highest level favours design and ICT skills, in which China performed least well in WSC2015 and 2019. Further analysis shows that in these WSCs, there were strong challengers from several other Members beyond those identified in Figures 6 and 9.

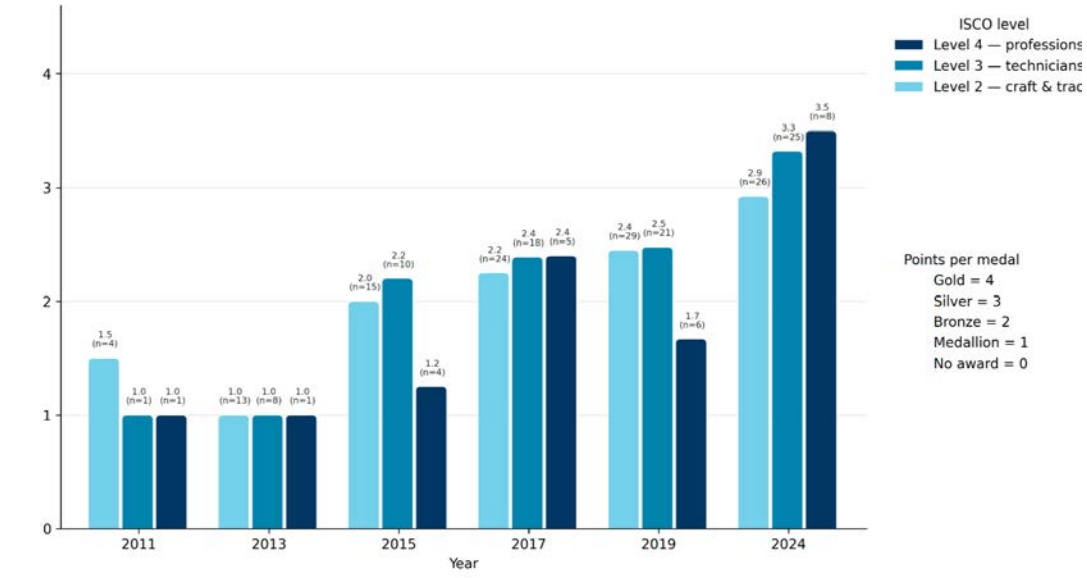



**Figure 12. China's performance by ISCO-08 level and average medal points per entry: WSC2011-WSC2024.**

The third factor, culture, overlaps with sector. Culture easily moves across national borders; but when the first skill competitions were held, they had a western orientation. To some extent, they still do. The data suggest that following WSC2013, China strategically planned and internally coordinated its growth in participation, including by sector. Thus, as shown in Figure 4, it increased its skill competition entries in creative arts, fashion, and social and personal services, as a group at WSC2017. Figure 4 also suggests that China was most cautious in entering skill competitions in construction. This may signify either an initial lack of training infrastructure, or significant differences in construction practices and materials between China and what is assessed in international skill competitions.

The fourth factor is competition design. Figure 13 shows the assessment framework for every skill competition. Within this framework, the element that gains most attention among all Members' Experts is the Test Project, which comprises the activities that enable assessment. Alongside a requirement for authenticity, the WSCs' Test Projects are dependent on physical infrastructure, and their design may either enable or restrict performance. Until WSC2011, the design of Test Projects was executed in a variety of ways by Experts. Since then, Test Projects have increasingly been designed independently of Experts. In most cases they remain confidential prior to the Competition.

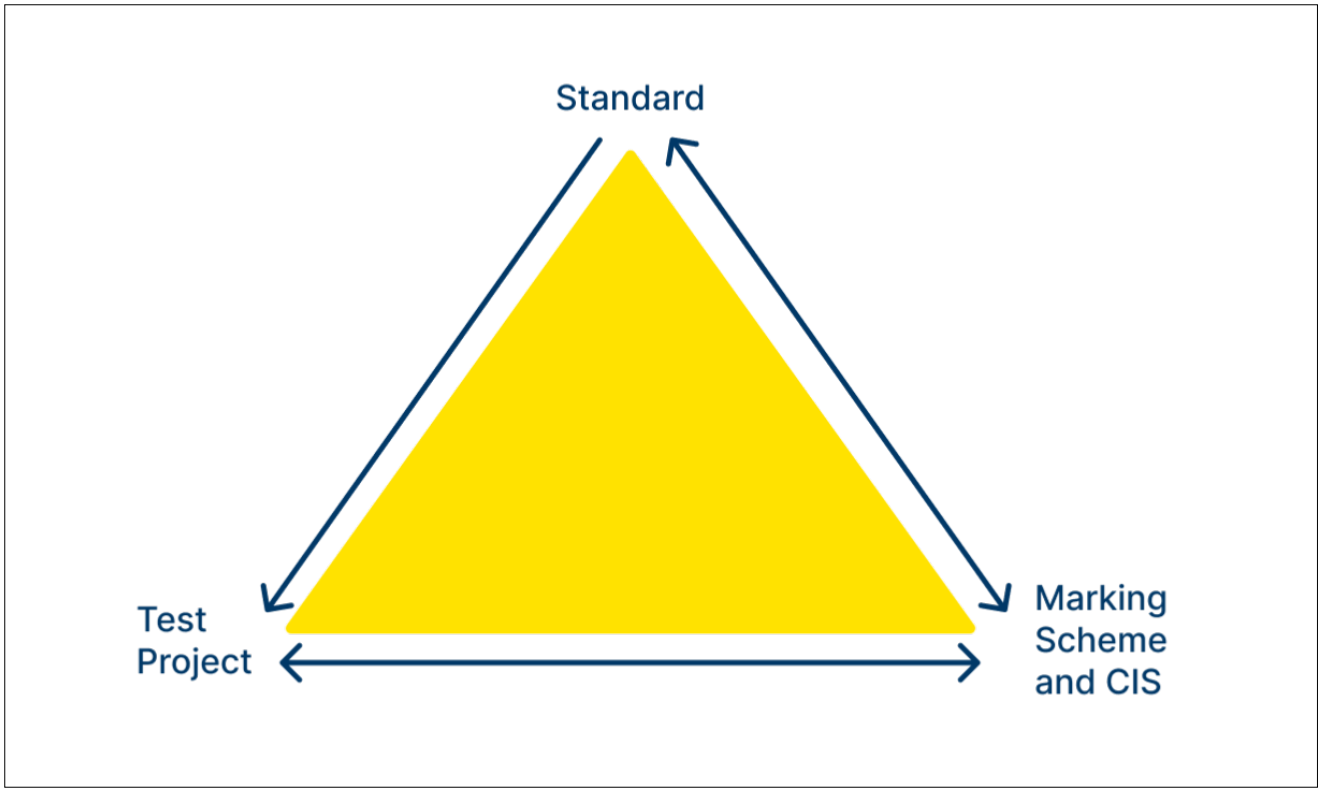



**Figure 13. Skill competitions' assessment framework**

Competition design has two main implications for performance at a WSC. The first is the requirement for at least 20% of marks to reflect performance in transversal skills. The transversal skills are work organization and management, communication and interpersonal skills, problem-solving, innovation and creativity, and sustainable practice. The opportunity to demonstrate and assess transversal skills must be embedded in the design of each Test Project.

Second, a modular structure has historically been favoured for Test Project design, partly because it facilitates the control of four days of assessment. However, a modular structure may reduce the scope to assess higher-level and transversal skills, which are particularly important for differentiating performance at ISCO-08 Levels 3 and 4. Figure 14 sets out the range of applied knowledge, skills, and behaviours that need to be captured in order for the assessment to allow for differentiating performance for the right reasons.

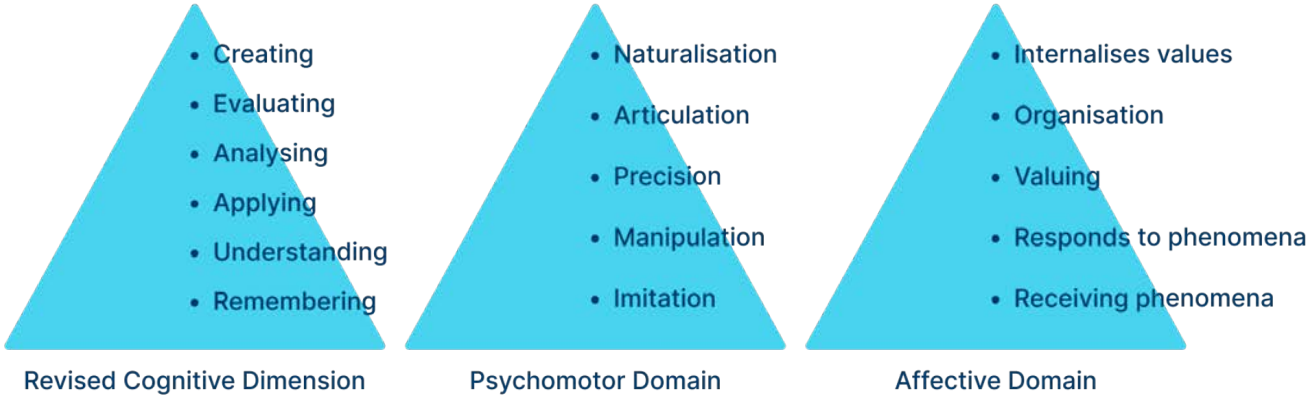



**Figure 14. Bloom's Taxonomy: cognitive, psychomotor, and affective domains (Source: Cedefop (2022, p. 62)**

## CHINA'S WORLDSKILLS EXPERTS

Given the importance of WorldSkills Experts, the professional data for China's Experts were analysed using their curricula vitae (CVs) and responses to questionnaires. These data have high to moderate reliability due to the limitations of the template's format for this report's purpose.

For every WSC, one Expert per skill competition entry is appointed by each Member. The CV data are limited for WSC2011 to WSC2017, inclusive. However, for WSC2019, CVs were required for all Experts. With the exception of three Experts, a basic CV for WSC2019 for those (still) acting as Experts, or for an Expert's first participation after that date, is available. A further limitation for the purposes of this Report is that updated CVs appear not to be mandatory once the first one is provided.

Using Competition Information System (CIS) data, which is complete and accurate, Figure 15 includes all known WorldSkills China Experts, their duration as Experts, and their association with Competitors' performance, excluding WSC2022SE. These data appear to show that:

- There were 90 Experts from WSC2011 to WSC2024, for a total of 219 skill competition entries over 14 years.
- Of the Experts who first participated at WSC2011, four continued to WSC2024, and two until at least WSC2015.
- There were no changes of Expert for WSC2013, four changes for WSC2015, eight changes for WSC2017, and seven changes for each of WSC2019 and WSC2024.
- For the 58 skill competitions in which China competed twice or more, 34 had only 1 Expert, and 13 had 2 Experts. With four changes, Aircraft Maintenance Experts changed most. Four skill competitions (Print Media Technology, Wall and Floor Tiling, Industrial Control, and Bricklaying) had three changes of Expert.
- There appears to be a partial but not strong relationship between below-average competition performance and a change of Expert.

No account has been taken of the personal circumstances of China's Experts. Notwithstanding that, in a context where 40% of all Experts change every WSC cycle, China's Experts appear to have been an exceptionally stable component of the 14 years of China's participation.

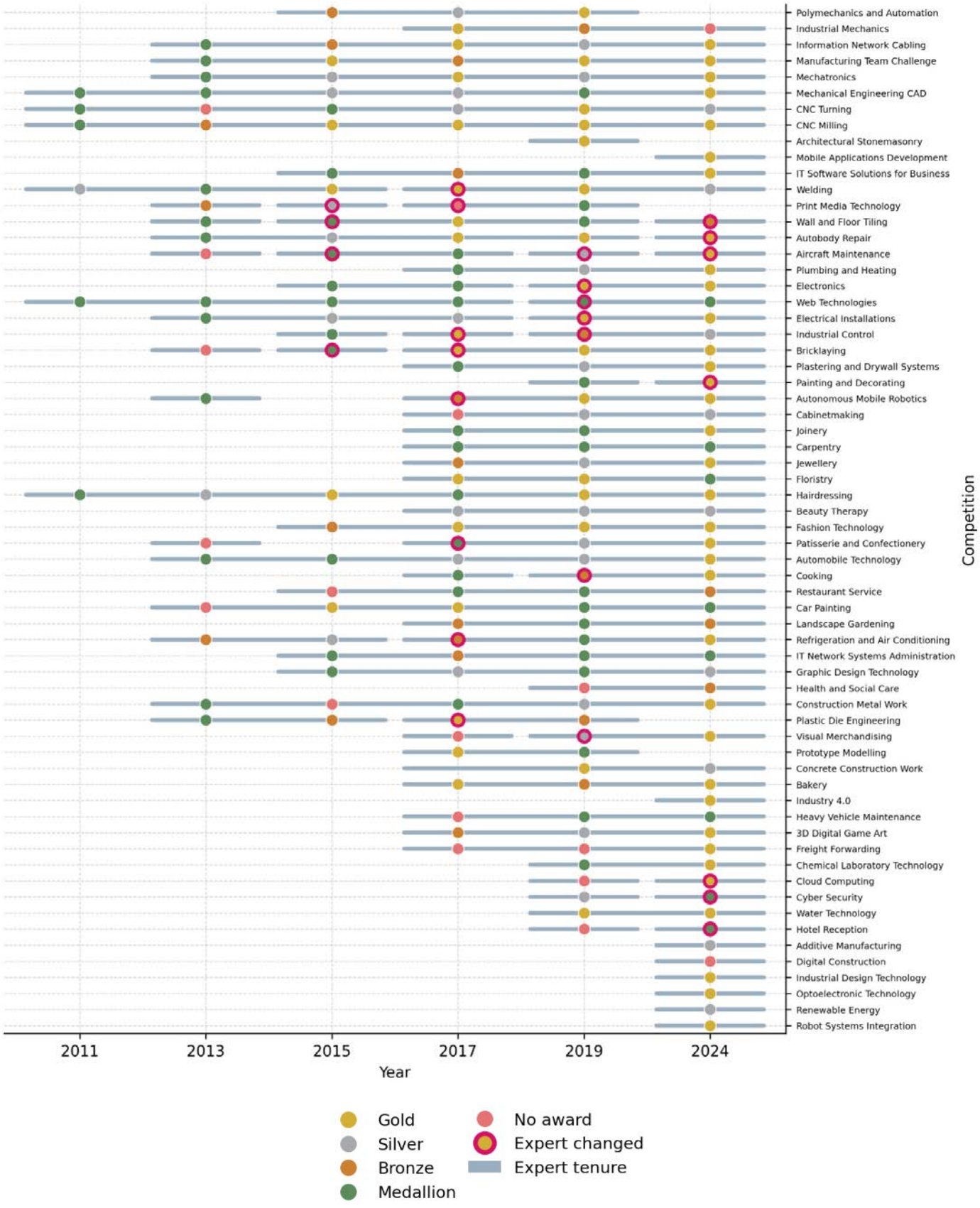



**Figure 15. China's Experts' duration and relationship with Medals and Medallions for Excellence**

From the CVs of 67 Experts for which data are available and clear, Figure 16 shows the highest qualifications reported by those Experts. Although comparable data for other Members is unavailable, the data suggest that China's Experts are exceptionally highly qualified for their role, with over half of those recorded holding at least a Master's degree[11]. Where no qualifications are recorded, this appears to be due to the way the CV template was interpreted.

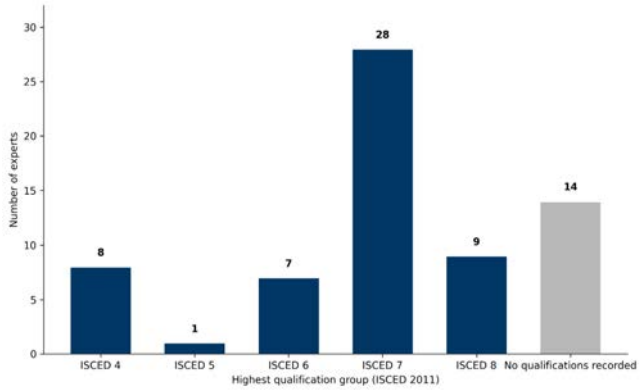



**Figure 16. China's Experts' highest recorded qualifications**

Data for most Experts' work experience in either or both TVET and industry are available, but less dependable for analysis. However, it is possible to show the Experts' pathways (see Figure 17). Set against the formal requirement of a WorldSkills Expert, close reading of individual Experts' CVs shows significant surplus capacity in qualifications and work experience across relevant professions including TVET.

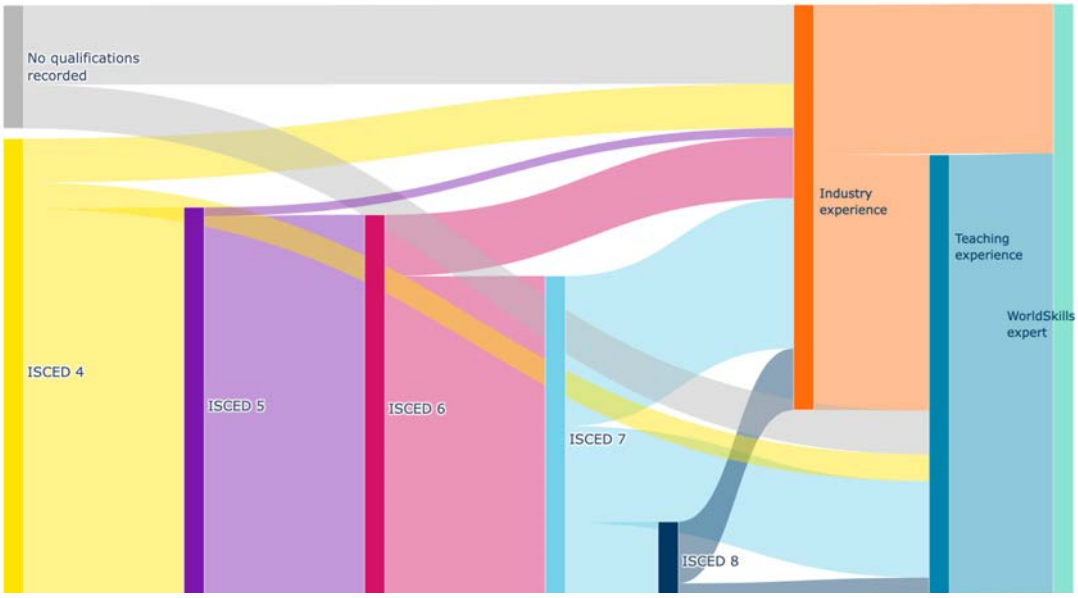



**Figure 17. China's Experts' pathways**

As a large country, both geographically and in population, the extent to which Team China represents the country as a whole is an important question for policy and strategy. Using the available CVs, and using Experts as an indicator of training sites, Table 1 shows Experts' locations. There were or are clusters of Experts in the 4 directly administered municipalities of Beijing (10), Shanghai (13), Tianjin (4), and Chongqing (5), a significant presence in Guangzhou (9), Anhui (5), Nanjing (5), Hangzhou (3), Shunde (2), and Shenzhen (2). A further 13 locations have, or had, 1 Expert each. (Based on 71 Experts, this information is a good indicator of the situation since 2019.)

| Location | Experts | Region entries in CV data |
|---|---|---|
| Shanghai | 13 | Shanghai; Shanghai and Guangzhou, Guangdong Province |
| Beijing | 10 | ASIA; Beihang, Beijing; Beijing; China |
| Guangzhou | 9 | Guangdong Province; Guangzhou, Guandong Province; Guangzhou, Guar Province; Shanghai and Guangzhou, Guangdong Province |
| Chongqing | 5 | Chongqing |
| Anhui | 5 | Anhui Province |
| Nanjing | 5 | Jiangsu Province |
| Tianjin | 4 | Tianjin |
| Hangzhou | 3 | Hangzhou, Zhejiang Province; Zhejiang; Zhejiang Province |
| Shunde | 2 | Shunde, Foshan City, Guangdon Province; Shunde, Guangdon Province |
| Shenzhen | 2 | Shenzhen; Shenzhen, Guangdong Province |
| Yunnan | 1 | Yunnan Province |
| Luoyang | 1 | Luoyang, Henan Province |
| Changsha | 1 | Changsha, Hunan Province |
| Foshan | 1 | Shunde, Foshan City, Guangdon Province |
| Henan | 1 | Henan Province |
| Hubei | 1 | Hubei Province |
| Hebei | 1 | Hebei Province |
| Jiangxi | 1 | Jiangxi Province |
| Shandong | 1 | Shandong Province |
| Xuzhou | 1 | Xuzhou, Jiangsu Province |
| Huangshan | 1 | Huangshan, Anhui Province |
| Fujian | 1 | Fujian Province |
| Shenyang | 1 | Dongbei (Northeast China) |

**Table 1. China's Experts' locations from CV data**

## CHINA'S WORLDSKILLS COMPETITORS

WSI's data on Competitors is limited. However, it is known from the Who's Who record that past Competitors may remain active contributors to both the WorldSkills movement and China's ongoing development. Chapters 7 and 8 provide more information about the preparation of Competitors based on interviews with Chinese Experts.


# Chapter 5

# Key factors contributing to China's success

China's emergence as a leading WorldSkills Member has been driven by a combination of long-term policy commitment, sustained investment, the strengthening of institutional capacity, and close collaboration among government, industry, and vocational education providers. Analysis of China's WorldSkills experience suggests that its success is not attributable to any single initiative but to a coherent and mutually reinforcing system that integrates skills competitions with broader workforce development and Technical and Vocational Education and Training (TVET) reform.

## SUSTAINED AND EXPLICIT POLICY COMMITMENT

China's WorldSkills achievements have been underpinned by consistent, long-term policy commitment, complemented by investment in effective competition preparation. The development of highly skilled workers has been embedded in China within national strategies for talent development, innovation-driven growth, and the construction of a skills-based society. Within this framework, the approach to each WorldSkills Competition (WSC) has evolved within China from a focus on preparing for an international competition into using it as a strategic instrument for strengthening Technical and Vocational Education and Training (TVET) more generally and developing high-level technical talent (MLSS, 2007; MOHRSS, 2016; State Council of the People's Republic of China, 2012).

Policy support has extended across the entire WorldSkills ecosystem in China, encompassing research, Competitor selection, national training systems, training-base development, Expert development, international cooperation, recognition and reward mechanisms, and the systematic transfer of competition experience into the wider skills system. The period between 2011 and 2015 represented an important phase of orientation, learning, and institutional development, while the 13th Five-Year Plan marked a transition from participation in the WSC to using it as a springboard towards national skills excellence and of TVET reform (MOHRSS, 2016).

## STRONG GOVERNMENT LEADERSHIP AND COORDINATED GOVERNANCE

China's arrangements for each WSC are characterised by strong government leadership supported by coordinated action across multiple ministries, agencies, industries, and educational institutions. The Ministry of Human Resources and Social Security (MOHRSS) has provided overall leadership for skills policy, competition organisation, international engagement, and technical workforce development (MOHRSS, 2016; State Council of the People's Republic of China, 2012).

At the same time, education authorities, industrial ministries, development and reform agencies, finance departments, sectoral organizations, and local governments have contributed complementary responsibilities, including curriculum development, labour-market analysis, funding, infrastructure, and programme implementation. Enterprises, industry associations, vocational institutions, technical colleges, and national training bases have further strengthened this governance model by jointly supporting Competitor development, technical expertise, occupational standards, and the dissemination of WorldSkills practices throughout the broader TVET system.

## STRATEGIC INVESTMENT IN SKILLS INFRASTRUCTURE

China's WorldSkills success has been built upon substantial long-term investment in skills infrastructure that pre-dated its entry into

international competitions. Since 2010, investments in public training centres, high-skilled talent development bases, curriculum resources, assessment systems, teaching materials, and teacher capability have provided a strong foundation for participation in WorldSkills Competitions.

Competition preparation built on these investments, and benefited from the provision of advanced equipment, specialist facilities, international exchanges, dedicated training programmes, and comprehensive organizational support. However, China's experience suggests that investment alone does not guarantee sustained success. Physical resources generate lasting value only when supported by stable governance, coherent training systems, rigorous assessment processes, and the continuity of experienced expert teams capable of translating infrastructure into consistently high performance (MOHRSS, 2016; Zhao, 2024).

## STRENGTHENED SCHOOL-ENTERPRISE PARTNERSHIPS

A defining characteristic of China's WorldSkills model has been the close integration of TVET with industry. Government policy has progressively established an open high-skilled talent development system in which enterprises provide industrial leadership, vocational institutions deliver education and training, school-enterprise partnerships connect learning with production, and government creates the enabling policy environment (MLSS, 2007; MOHRSS, 2016; State Council of the People's Republic of China, 2012).

Industry partners in China have contributed authentic workplace standards, advanced technologies, production environments, technical specialists, and workplace learning opportunities, ensuring that competition preparation reflects current industrial practice. Increasing collaboration between schools and enterprises in programme design, curriculum development, staffing, facilities, quality assurance, and Competitor training has further strengthened industry's role in developing internationally competitive skills (Chen & Shi, 2022).

## STABLE EXPERT TEAMS AND LONG-TERM COMPETITOR DEVELOPMENT

Two distinguishing features of China's WorldSkills experience are the ways in which it has ensured the continuity of its community of Experts and the long-term development of its Competitors.

China has established one of the most comprehensive and rigorous systems in the world for identifying and preparing Competitors for a WSC. Rather than relying on a single selection event, China employs a multi-stage process that progressively nurtures outstanding talent while providing sustained opportunities for technical development. The system combines open competition, intensive teaching and learning, and continuous performance assessment, ensuring that the Competitors who have reached and can sustain the highest international standard are selected to represent the country.

## THE SELECTION PROCESS

The selection process consists of three principal stages. The first is a series of local and provincial qualifying competitions, organized across municipalities and provinces, which provide broad opportunities for apprentices and young skilled workers to demonstrate their abilities. Successful competitors progress to the National Vocational Skills Competition of the People's Republic of China, held biennially, which serves as the principal pathway for WorldSkills selection. At this stage, medal winners and other outstanding performers in WorldSkills occupations are identified for further development.

The final stage takes place within China's network of National WorldSkills Training Bases. Rather than being selected immediately for the national team, prospective Competitors enter an extended period of advanced training and evaluation. Their technical performance, consistency, resilience, and capacity to perform under competition conditions are assessed continuously. Only those who demonstrate sustained excellence throughout this process are ultimately selected to represent Team China at a WSC.

## PREPARATION OF COMPETITORS

Preparation for international competition typically extends over two to five years, reflecting China's long-term approach to talent development. The MOHRSS coordinates this process through a nationwide network of specialized training centres that provide world-class facilities, expert coaching, and access to the latest industrial technologies.

Training generally progresses through three phases. During the first phase, which may last one to two years, Competitors participate in local, provincial, and national competitions while building increasingly advanced technical capabilities. Those selected for the national training squad then enter a second phase of intensive preparation lasting between one and three years. During this period, training extends beyond technical proficiency to include physical conditioning, psychological preparation, competition strategy, time management, and the development of the discipline and resilience required to perform under the intense pressure of international competition. The final months before each WSC are devoted to highly focused preparation through simulated competitions, masterclasses, and benchmarking exercises designed to replicate the conditions, standards, and pace of the international competition environment.

## SUPPORTING INFRASTRUCTURE AND A COMMUNITY OF EXPERTS

Supporting this system is an extensive network of National WorldSkills Training Bases and WorldSkills Centres located throughout China. These centres combine advanced technical facilities with close partnerships between vocational institutions, employers, industry experts, and WorldSkills Specialists. While training capacity exists across the country, several flagship centres have become nationally recognized for specific occupational sectors. The Global Training Centre in Tianjin serves as a major hub for international cooperation, technical exchange, and the application of the WorldSkills Occupational Standards (WSOSs). Shanghai Nanhu Vocational and Technical College has developed internationally recognized expertise in digital technologies, artificial intelligence, and smart-healthcare occupations. Other leading centres include the SAIC Motor Passenger Vehicle Training Base, specializing in automotive technology and advanced manufacturing; the China Eastern Airlines Technology Research and Development Centre, supporting aircraft maintenance and aviation service occupations; and the Shanghai Shentong Metro Group Longyang Training Base, which provides specialist training in railway operations and urban transport systems.

China has developed stable communities of Experts, coaches, trainers, teachers, former champions, and competition managers whose expertise accumulates across successive WorldSkills Competition cycles (Zhao, 2024). These Experts transmit far more than technical skills. Through sustained mentoring they develop Competitors' professional judgement, craftsmanship, quality awareness, problem-solving capability, psychological resilience, and understanding of international competition standards. Mechanisms such as skills-master studios, master-apprentice programmes, advanced technician development initiatives, champion return-to-school activities, and structured knowledge transfer between experienced and emerging Experts enable individual expertise to become institutional capability. This continuity has created an enduring system of technical leadership that benefits both WorldSkills performance and the wider TVET system (MLSS, 2007; MOHRSS, 2016; Zhao, 2024).

## LONG-TERM TALENT DEVELOPMENT AND PSYCHOLOGICAL RESILIENCE

China recognises that skills excellence is achieved through sustained development rather than intensive short-term preparation. Competitors typically progress through successive stages of technical and professional development – from novice to skilled performer, to elite international competitor – with each stage involving progressively higher standards of performance and responsibility (Zhao, 2024).

Training programmes systematically increase technical complexity, competitive pressure, and exposure to unfamiliar environments through institutional competitions, provincial and national selection events, national team training, overseas exchanges, and international competitions. Alongside technical capability, equal attention is given to developing psychological resilience, including long-term goal commitment, emotional regulation, confidence under pressure, recovery from setbacks, and sustained support from Expert mentors.

## HIGH STANDARDS, AUTHENTIC ASSESSMENT, AND CONTINUOUS IMPROVEMENT

WorldSkills has provided China with an internationally recognized benchmark for technical excellence. Competition tasks replicate authentic workplace activities and assess not only technical proficiency but also occupational standards, problem-solving, communications, teamwork, safety, quality, and time management (Chen & Shi, 2022).

China has systematically analysed the WSOSs, Test Projects, and Marking Schemes to strengthen curriculum design, assessment practice, and performance analysis. The combination of authentic tasks, detailed assessment criteria, objective measurement, and expert judgement has enabled increasingly precise identification of performance gaps and supported a culture of continuous improvement throughout the training system.

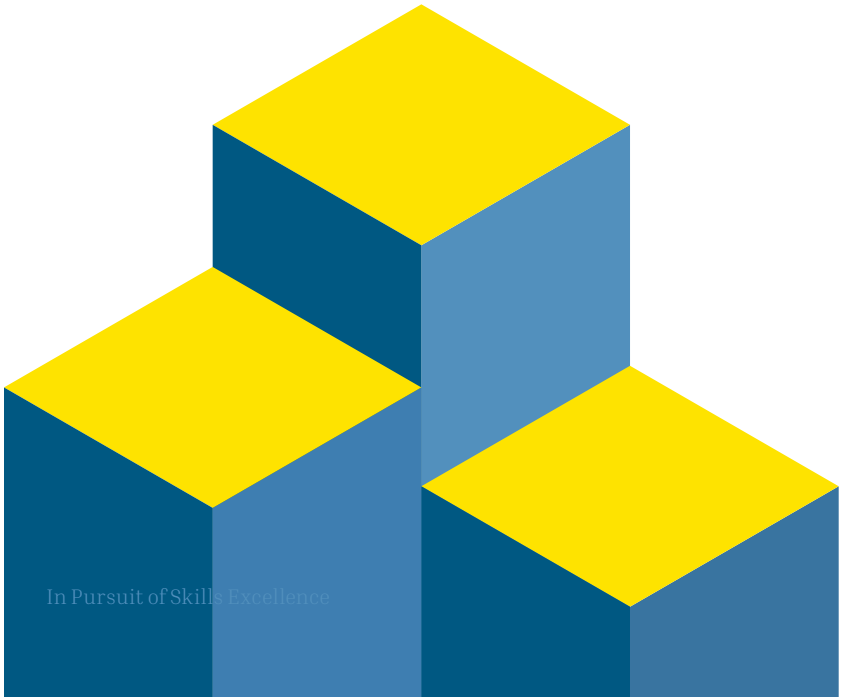
## INTEGRATING COMPETITIONS INTO THE WIDER TVET SYSTEM

Perhaps the most significant feature of China's approach has been the integration of its WorldSkills membership into the broader TVET ecosystem. Rather than viewing Competitions as isolated events, China has embedded WSCs within systems of talent identification, training, assessment, quality assurance, motivation, and public engagement.

Vocational institutions and national training bases provide the infrastructure for Competitor development, while successful Competitors enhance institutional reputation, strengthen industry partnerships, and raise the social status of skilled occupations. In turn, the WSOSs, training methods, and assessment practices are progressively transferred into mainstream TVET, creating a mutually reinforcing cycle in which competition excellence drives broader improvements in TVET quality, and a stronger TVET system generates future WorldSkills success (Chen & Shi, 2022; MOHRSS, 2016; Zhao, 2024).

## WIDER BENEFITS FOR CHINA'S TVET SYSTEM

While its competition preparation has drawn from and shared features in common with other Members, an important, distinctive feature of China's approach to WorldSkills membership has been its single-minded, system-wide, unity of approach. The infrastructure, methods, and actions put in place since 2011 serve purposes extending well beyond competitor preparation. They function as centres for curriculum innovation, teacher and expert development, international technical exchange, applied research, and industry collaboration. As a result, knowledge generated through participation in the WorldSkills movement is transferred into China's broader TVET system, helping to modernise teaching, strengthen industry engagement, and raise skills standards nationally. This integration between competition preparation and system-wide capacity building has become one of the defining characteristics of China's WorldSkills strategy and an important factor underpinning its sustained international success.



# Chapter 6

# The experiences of some other WorldSkills Members

As a large, vertically integrated society, China is unique in the resolve and scale of its embrace of WorldSkills: it takes the WorldSkills Competitions (WSCs) very seriously. Until it no longer participated, only Russia, another relatively new Member, equalled China in its ambition to excel, and with the single-minded power to do so. India, another large, relatively new Member (India joined in 2007) participates less dynamically, a result of its more complex internal arrangements. Brazil, whose membership is led by SENAI (Serviço Nacional de Aprendizagem Industrial), was invited to join WSI in 1981. Although changes in Brazil's government do not disrupt its core operations, SENAI, like India, interacts with many organizations internally to generate entries for every available skill competition.

Commensurate with their smaller size and distinct characteristics, both Switzerland and Korea, Members since 1953 and 1966, respectively, match China in a determination to win, and expect to continue doing so. Each has kept pace with the challenge of growth in WorldSkills Members, in participation in skill competitions, and in quality. Both have demonstrated their intention to be placed among at least the top five Members in every WSC. Korea's detailed arrangements are unknown. However, Switzerland's membership organisation (SwissSkills) sits within a stable, high-performing, industry-led Technical and Vocational Education and Training (TVET) system, which has performed strongly since 1953. Excelling in each WSC and EuroSkills Competition is regarded as vital to upholding Switzerland's self-esteem. SwissSkills' consistent goal is 'to finish in the world's top 3, and to be the best nation in Europe'. Switzerland and Korea each show the importance of an analytical, winning mindset, irrespective of size and structure. Germany, which like Switzerland joined in 1953, takes a mature view of its Membership, which has evolved from reconciliation and re-entry to the international community, to benchmarking, and to advocacy for TVET. Its steady performance across a nationally relevant set of skill competitions at each WSC reflects this.

Across the WorldSkills membership, the arrangements for governance, management, and funding are diverse. However, through constant interchange and feedback at many levels, preparation for each WSC has become similar in several respects. From the outset, Brazil has benefited from Switzerland's ongoing influence on its TVET system. Most Members now construct a pyramid of local, national, and regional competitions to select potential competitors and build resilience and excellence. Like China, some bring future competitors to earlier regional competitions or WSCs. Germany has more than 30 certified Performance Centres and National Performance Centres which embed competition-based learning in training institutions across Germany and prepare future members of Team Germany. Each Member prepares its team for the adaptive capabilities and self-regulation needed for vocational excellence. Engaging and motivating young people is a shared priority. India has attracted 365,000 registrations for WSC2026, up from 115,000 for WSC2024 – evidence of a groundswell of interest and investment from social and industry partners.

Experts are increasingly recognised as an asset. Switzerland has a 10% to 15% turnover at each WSC, broadly comparable to China's, with Experts drawn from industry. India asks its industry partners to advise on Expert selection and prioritizes breadth of contribution over number of medals won. Germany's Experts have an average tenure of four to five WSCs, with some remaining for several more. For structural and financial reasons, Brazil's turnover of Experts is higher.

Each Member has distinct purposes and circumstances rooted in its own country that determine what counts for it as successful participation in a WSC. The Member's relative seniority as a Member, from 15 years to over 70 years in this sample, is one factor among many that creates considerable diversity. However, all Members recognize and apply the factors that lie at the root of a winning performance: individualized training activities specially designed by a coach or teacher, with selective, focused repetition, testing, and successive refinement by the individual. For some Members it may be a challenge to provide these activities at this point. Others may be able to focus more on the positive impact their participation in WSCs can have on their TVET systems.

# Chapter 7

# China's learning journey through the WorldSkills Competition

China became a Member of WorldSkills International (WSI) on 7 October 2010 at the General Assembly in Kingston, Jamaica. The following month, WSI's President and Standards and Assessment Adviser visited China to support the newly appointed Official and Technical Delegates in preparing for the country's first participation in the WorldSkills Competition (WSC), WSC2011 in London. The visit coincided with a national skills competition in Chengdu, Sichuan Province, involving a small number of manufacturing occupations, and provided an opportunity to benchmark China's emerging competition system against international WorldSkills requirements.

Over several days of technical review and gap analysis, three strategic priorities were identified for China. First, a clear line of sight was needed between national competition standards and international good practice. Second, stronger alignment was required between Technical and Vocational Education and Training (TVET), the WorldSkills Occupational Standards (WSOSs), and the needs of industry. Third, national occupational classifications and skills domains needed to be mapped more closely to their international equivalents. These recommendations laid the foundations for a more integrated approach to competitor development, competition design, and skills-system reform in China.

The review also concluded that skills competitions should serve not only as technical assessments but as public showcases of vocational excellence in China. Rather than focusing primarily on competition security and administration, greater emphasis was placed on engaging the public, particularly children and young people, through demonstrations of high-level skills and craftsmanship, thereby raising awareness of vocational careers and enhancing the social status of skilled occupations.

The 2010 visit concluded with the Vice-Minister of the Ministry of Human Resources and Social Security (MOHRSS) approving China's participation in six skill competitions at WSC2011. Although modest in scale, this decision reflected a clear commitment to learning from international competition and marked the beginning of a long-term strategy aimed at developing world-class technical talent.

To address the priorities identified during the 2010 review, the WSI Standards and Assessment Adviser, together with WorldSkills UK Experts in Welding, Mechanical Engineering CAD, and Web Design, returned to China over the following months to provide technical advice, training, assessment, and feedback. These exchanges demonstrated the value of engaging vocational institutions, universities, and industry partners in Competitor preparation and Expert development. They also established an important model of international collaboration, with Team China joining Team UK's training, assessment, and selection programme for both Experts and Competitors. This early partnership accelerated China's understanding of WorldSkills performance levels and competition practices and helped establish many of the approaches that would underpin its subsequent success.

## BECOMING A MEMBER OF AN INTERNATIONAL MOVEMENT

One of the less visible, but arguably most important, features of China's early WorldSkills journey was the challenge of becoming an active participant in an established international community of practice. In 2011, China entered a movement that had evolved over six decades, and whose Members shared not only common technical standards but also established ways of working, long-standing professional relationships, and a culture of openness, peer learning, and mutual support. As a new Member, China could easily have remained on the periphery, participating only in competitions while taking years to build the trust and networks needed to benefit fully from international collaboration.

In interviews conducted for this report, several of China's Experts highlighted insufficient English-language proficiency and limited capacity for international communication among China's representatives as key challenges in the early stages of the country's WorldSkills membership. These Experts also reported that the level of support for their roles in WorldSkills varied according to the circumstances of the institutions and industries in which they worked. When the Competitor was enrolled at the Expert's own institution, or when the training base was located at that institution, the Expert was generally able to receive sufficient support.

China's approach to WorldSkills membership was proactive from the outset. It viewed WorldSkills not simply as a Competition but as an international learning network. Chinese delegates, Experts, and officials actively sought opportunities to learn from more experienced Members, recognizing that success required understanding of not only WorldSkills technical standards but also its culture, governance, assessment philosophy, and approaches to competitor and expert development. This willingness to engage openly with established Members accelerated China's learning and helped shorten what might otherwise have been a lengthy period of institutional adaptation.

A particularly significant feature of this approach was China's commitment to international partnerships. Rather than developing its systems in isolation, China invited experienced WorldSkills Experts to provide advice on standards, training methodologies, assessment, and competition management, while also encouraging its own Experts and Competitors to participate in overseas training programmes and national competitions. The early collaboration with WorldSkills UK, including participation in Team UK's training, assessment, and selection programme, provided Chinese experts and competitors with first-hand experience of international best practice and demonstrated the value of learning through observation, benchmarking, and joint practice rather than formal instruction alone. These exchanges subsequently evolved into broader UK-China vocational education partnerships and WorldSkills roadshows that promoted the exchange of expertise between the two countries.

China also recognised that learning extended beyond technical preparation. By attending international and national competitions hosted by other Members, participating in Experts' meetings, and building professional relationships across the WorldSkills network, Chinese delegates gained insight into competition organisation, judging practices, occupational standards, and the wider educational purposes of WSI. Over time, these international relationships became channels for continuous knowledge exchange, enabling China not only to learn from other members but increasingly to contribute its own experience and expertise to the global WorldSkills community.

China's experience illustrates that successful participation in WorldSkills depends as much on international collaboration as on national capability. The country's rapid progress was facilitated by its willingness to engage with the WorldSkills community as a collaborative learning network, embracing peer-to-peer exchange, benchmarking, and mutual support. This openness accelerated institutional learning, strengthened the capability of its expert community, and helped transform China from a new Member in 2011 into a global leader in WSCs within little more than a decade.

## SUCCESS BRINGS ITS OWN CHALLENGES

China's rapid rise to become one of the leading WorldSkills Members created a new set of policy and institutional challenges. Many of the factors that contributed to early success, such as concentrated investment, elite training systems, and strong government leadership, had to be complemented by approaches that ensured long-term sustainability, wider system impact, and continued adaptation to technological and industrial changes. The main challenge for China over the past two decades and going forward are to manage the transition from building competitive capability to embedding skills excellence throughout its national TVET system.

## BALANCING NATIONAL SYSTEMS WITH PARTICIPATION IN AN INTERNATIONAL COMMUNITY OF PRACTICE

China's early participation in the WSC required adaptation not only to international technical standards but also to the distinctive culture and operating practices of the WorldSkills community. Unlike many domestic skill competitions, which were traditionally organized within educational structures, WorldSkills is founded on occupational practice, international collaboration, peer review, and professional co-governance. Chinese Experts therefore had to develop new capabilities in international technical discussions, consensus-building, standards development, assessment design, technical documentation, and participation in Expert communities and informal professional networks (Huang & Dong, 2012; Zhang et al., 2021).

As China's influence has grown, the challenge has evolved. China is no longer simply learning from the WorldSkills community but is increasingly expected to contribute to its future development. This requires continued international engagement, openness to new ideas, sustained collaboration with other Members, and investment in Experts' capacity to ensure that China remains an active contributor to the evolution of international skills standards rather than relying solely on established approaches.

## ALIGNING OCCUPATIONAL COMPETENCE WITH STANDARDS OF EXCELLENCE

China has made substantial progress in aligning national occupational standards with WorldSkills requirements, but important differences remain between systems designed for workforce competence and those designed to recognise world-class performance. National occupational standards support large-scale vocational education, certification, and employment, whereas the WSC assesses exceptional performance under complex, authentic, and high-pressure conditions.

The continuing policy challenge is therefore not to replace one system with the other, but to establish effective mechanisms through which WorldSkills can progressively inform curriculum design, occupational standards, assessment practice, and teacher development, while remaining appropriate for learners with different aspirations and levels of competence (Chen & Shi, 2022; Huang & Dong, 2012; MLSS, 2007).

## TRANSLATING COMPETITION EXCELLENCE INTO MAINSTREAM TVET

Preparation for WSCs necessarily focuses resources on a relatively small number of elite Competitors. The longer-term value of participation depends on how effectively the knowledge, practices, and innovations developed through competition are transferred into mainstream TVET.

This transfer extends beyond the adoption of competition tasks. It requires WorldSkills approaches to influence curriculum design, authentic workplace learning, project-based pedagogy, assessment methods, teacher professional development, training environments, and institutional quality improvement. The challenge is to ensure that competition excellence becomes a catalyst for system-wide improvement rather than remaining confined to specialized training programmes (Chen & Shi, 2022).

## BALANCING ELITE EXCELLENCE WITH BROAD-BASED SKILLS DEVELOPMENT

WorldSkills represents the highest level of international skills performance, while national TVET systems must develop the occupational capability of millions of learners across diverse industries and regions. Sustaining WorldSkills success therefore requires an appropriate balance between investment in elite performance and investment in broad-based workforce development.

A continuing policy priority is to ensure that the expertise, training methodologies, assessment practices, and professional networks developed for WorldSkills Competitors and Experts are systematically shared across vocational institutions, benefiting teachers, students, and industries well beyond the competition environment (Chen & Shi, 2022; MOHRSS, 2016; State Council of the People's Republic of China, 2012).

## ENSURING EQUITABLE ACCESS TO EXCELLENCE ACROSS REGIONS AND INSTITUTIONS

China has established an extensive network of national training bases and leading vocational institutions equipped with advanced facilities, experienced Experts, and strong industry partnerships. These centres have played a critical role in developing WorldSkills champions and supporting innovation in technical training.

However, significant differences remain between regions, institutions, and occupational sectors in access to facilities, teaching capability, industry engagement, and development opportunities. A continuing challenge is therefore to broaden access to high-quality training resources and expert support so that WorldSkills-inspired improvements contribute to raising standards across the entire TVET system rather than being concentrated within a relatively small number of centres of excellence (MOHRSS, 2016).

## SUSTAINING EXPERT CAPABILITY ACROSS SUCCESSIVE COMPETITION CYCLES

China's success has demonstrated the importance of stable Expert teams and long-term mentoring relationships. As experienced Experts retire or move into other leadership roles, maintaining this capability becomes an increasingly important strategic challenge. China's future success will depend on systematic succession planning, the development of new generations of Experts, and effective mechanisms for transferring technical knowledge, competition experience, and professional networks across successive WorldSkills cycles. Sustaining these expert communities will not only strengthen future competitive performance but also ensure that the WorldSkills movement continues to contribute to curriculum reform, teacher development, and the wider modernization of China's VET system.

## OTHER MEMBERS' CHALLENGES

Although some Members feel pressure to enter as many skill competitions as possible, the rationale for offering Members a large menu of skill competitions is to give each Member a basis for choice based on their socioeconomic needs, including TVET. For large economies, such as China, India, Brazil, and, earlier, Russia, all or almost all skill competitions are rooted in their comprehensive labour markets (SASAC, 2025). For medium and smaller economies, the choice is more complex. For example, in Switzerland, the professional associations selecting the competitions to enter frequently choose those that reflect traditional occupations with large workforces. In doing so, they seek refinement of existing skills rather than new and higher-level occupations. European Members more generally enter skill competitions for 'stock' occupations over newer ones. It takes extra time and effort to create a pipeline to enter a new skill competition, and Members may lack these resources. This 'historical drag' is not a feature of Asian Members, which are proactive in proposing and participating in newer skill competitions.

For some Members, access to the technology used for a WSC is especially difficult. Several African Members lack adequate resources for TVET, in addition to the more advanced tools and equipment required for many of the skill competitions. This is also an issue for South American Members, including Brazil. Some Members, including Germany, face the added challenge of decentralized national TVET arrangements with differing practices and resources. As with China, either or both Experts and Competitors may lack proficiency in English, which then necessitates hiring interpreters at the WSC, for which the Member must pay. Retaining access to good Experts is an almost universal challenge.

The rapid growth in WorldSkills membership, as in the OECD Programme for International Student Assessment (PISA), points to the scale of interest in international comparative assessments, both specifically and broadly. Many Members value their inclusion and experience in the WorldSkills community as much as in winning. WorldSkills India, for example, places the personal development of young people at the top of its agenda, valuing the 'accelerated maturity' that it engenders. It has created the 'WorldSkills India Club' for WSC Alumni to continue contributing to WSI's and other initiatives. It is an active contributor to the WorldSkills Conference. Seen in the light of its broad agenda, its participation in every skill competition is a source of pride, irrespective of the results. Brazil uses the WSC for intelligence gathering. It holds workshops and makes YouTube videos for its vocational schools to disseminate information about the new technologies seen at the most recent WSC. Currently it is focusing on 'soft' skill development at industry's request. Germany strives to balance the size of its team with sufficiently deep preparation for the skill competitions it enters in order to maximize return on investment for its partners.

With these diverse perspectives and purposes, every Member can use its participation in a WSC for its own ends. As Germany states: "the Competition has become the visible instrument for a broader goal, rather than the goal itself."

# Chapter 8

# Major benefits of China's participation in the WorldSkills Competition

China's participation in the WSC has generated benefits that extend well beyond international medal success. While improved competitive performance has enhanced China's global reputation for technical excellence, participation has also served as a catalyst for Technical and Vocational Education and Training (TVET) reform, institutional innovation, international collaboration, and the development of a stronger national skills culture. Within China, WorldSkills has become an inspiration for TVET policy reform, quality improvement, institutional capacity building, and the professional development of both Experts and Competitors. The continuity of Expert communities, and the mentoring relationships they establish with successive generations of Competitors, has enabled China to transform its WorldSkills participation into a long-term strategy for strengthening its TVET. Taken together, these benefits demonstrate the value of WorldSkills as both a benchmark of excellence and a catalyst of broader skills-system development.

Overall, China's WorldSkills experience demonstrates that international skills competitions can prompt broader TVET reform when embedded within a comprehensive national skills strategy. The country's experience suggests that sustained investment, close industry engagement, rigorous standards, and systematic dissemination of competition-based innovations can contribute not only to international competitive success but also to improvements in the quality, relevance, and prestige of TVET.

An important feature of China's approach is that the infrastructure and approaches put in place since 2011 serve purposes that extend well beyond Competitor preparation. This infrastructure includes centres for curriculum innovation, teacher and expert development, international technical exchange, applied research, and industry collaboration. As a result, knowledge generated through participation in WorldSkills is transferred into the broader TVET system, helping to modernize teaching, strengthen industry engagement, and raise skills standards nationally. This integration between competition preparation and system-wide capacity building has become one of the defining characteristics of China's WorldSkills strategy and an important factor underpinning its sustained international success.

## ENHANCED INTERNATIONAL SKILLS COMPETITIVENESS

China's consistently improving performance across successive WSCs since 2011 reflects far more than increasing medal success. It demonstrates the development of national capability in identifying and nurturing talent, preparing Competitors to meet international standards, developing highly skilled Expert communities, and managing complex competition systems. China's achievements have positioned it as a leading WorldSkills Member and strengthened its international reputation for technical excellence.

This enhanced competitiveness has had significant benefits for China's TVET system overall. Interviews with members of China's community of Experts for this report reveal that a major turning point came at WSC2017, when the number of gold medals won by Team China increased dramatically. This breakthrough boosted confidence across the entire TVET system in China. The success in the Competition also served to increase Chinese government support and commitment to skills more generally, leading to the rapid development of TVET and strengthened links between TVET and industry. Success at WSC2017 also positively affected Chinese government funding, the establishment of Expert groups, the creation of training bases, and the development of effective strategies and implementation pathways to build on the country's success in the WSCs. The government began to see the potential for skills competitions to promote the cultivation of skilled workers and changes in social attitudes. In every sense, China's success in the WSCs bred more success with significant spillover of benefits for the broader Chinese TVET system.

## AN INTERNATIONAL BENCHMARK AND CATALYST FOR CONTINUOUS IMPROVEMENT

WorldSkills membership has provided China with an objective international benchmark against which to measure the quality of its TVET system. Occupational Standards, Test Projects, Marking Schemes, and Competition results have enabled policymakers, Experts, and educators to identify strengths, diagnose performance gaps, monitor progress over time, and benchmark national capability against international best practice (Chen & Shi, 2022).

WorldSkills Occupational Standards (WSOSs) and related resources have been translated into China's TVET curricula and teaching materials, with publication of these supported by the country's Ministry of Human Resources and Social Security (MOHRSS). This curriculum and training reform process faced initial challenges due to the mismatch between TVET teachers' existing capabilities, practical training conditions, equipment, and other supportive resources, and the standards demanded by the WSCs. However, China's successful participation has helped to incubate domestic competitions, including Chinese sectoral competitions and vocational skills competitions, that have in turn helped to develop the capacity of the TVET system and to raise standards.

Participation in the WSCs has accelerated the modernization of China's TVET system by promoting a shift from the acquisition of isolated technical skills towards the development of integrated occupational competence. WorldSkills principles have influenced curriculum reform, project-based learning, authentic workplace tasks, competency-based training, and closer alignment between TVET and the requirements of modern industry (Chen & Shi, 2022).

## MORE AUTHENTIC APPROACHES TO SKILLS ASSESSMENT

WSI has provided an important reference point for improving the assessment of vocational competence. Its emphasis on authentic workplace tasks, the integration of process and product evaluation, and the combination of objective measurement with expert professional judgement has informed the development of more comprehensive and reliable approaches to skills assessment within China's TVET system (Chen & Shi, 2022).

## THE DEVELOPMENT OF NATIONAL TECHNICAL LEADERSHIP

Participation in the WSCs has strengthened the capability of China's Experts, coaches, trainers, and vocational teachers. Through involvement in international standards development, competition design, assessment, quality assurance, and technical exchange, these individuals have developed expertise that extends well beyond competition preparation. Many now play leading roles in curriculum development, teacher training, occupational standards, national skills competitions, and wider TVET reform, helping to embed WorldSkills knowledge and expertise throughout the skills system (Chen & Shi, 2022; MOHRSS, 2016; Zhao, 2024).

## STRENGTHENING SKILLS TRANSMISSION AND TALENT DEVELOPMENT

WSI has reinforced long-standing traditions of mentorship and craftsmanship in China by creating structured pathways for the transfer of knowledge between successive generations of Competitors, Experts, teachers, and skilled workers. Former champions frequently return to vocational institutions, national training bases, and skills-master studios as coaches, teachers, or technical experts, ensuring that competition experience becomes institutional knowledge rather than remaining individual achievement. They also provide powerful role models for young people considering vocational careers (MOHRSS, 2016; Zhao, 2024).

## DEEPER COLLABORATION BETWEEN EDUCATION AND INDUSTRY

Within China, WSI has also strengthened partnerships among vocational institutions, enterprises, industry associations, and national training bases. These collaborations have brought advanced technologies, current occupational standards, authentic production tasks, technical specialists, and workplace learning opportunities into TVET, ensuring that training remains closely aligned with industrial practice and technological change (Chen & Shi, 2022; MLSS, 2007; MOHRSS, 2016).

## BUILDING A NATIONAL CULTURE OF SKILLS EXCELLENCE

Participation in the WorldSkills movement has helped China to promote a broader culture that values technical excellence, craftsmanship, quality, innovation, occupational pride, workplace safety, environmental sustainability, and lifelong learning. Skills competitions, public demonstrations, and media coverage have improved public awareness of vocational careers, while the opening of the WorldSkills Museum in Shanghai in 2023 – the first permanent museum dedicated to vocational skills – provides an enduring symbol of China's commitment to celebrating technical achievement and preserving the heritage of skilled work (WSI, 2023).

## RAISING THE PROFILE OF VOCATIONAL EDUCATION AND SKILLED CAREERS

WSI has helped to improve the public image of occupations accessed through TVET. The achievements of Chinese Competitors and Experts, together with national and international media coverage, have demonstrated that vocational excellence is worthy of public recognition and can provide rewarding career pathways. This has supported broader government efforts to enhance the attractiveness and social status of skilled occupations and technical education (MOHRSS, 2016; Zhang et al., 2021).

## INTERNATIONAL COLLABORATION AND MUTUAL LEARNING

Participation in the WorldSkills movement has enabled China to become an active member of an international community of practice dedicated to skills excellence. Initially, this involved learning from more experienced Members through technical exchanges, benchmarking, and participation in overseas competitions. Over time, China has become an increasingly important contributor to international standards development, technical cooperation, capacity building, and the exchange of expertise. The long-term professional relationships established through WSI have strengthened China's international engagement while allowing Chinese experience to inform the continuing evolution of the global WorldSkills movement (MOHRSS, 2016; Zhang et al., 2021).

## BENEFITS TO THE WORLDSKILLS MOVEMENT OF CHINA'S PARTICIPATION

China's participation has in turn also benefited the WorldSkills movement. As one of the world's largest economies and TVET systems, China has helped to expand the global reach, influence, and diversity of the WorldSkills community while strengthening its relevance to rapidly evolving industries and technologies. China's sustained investment in skills development, strong competitive performance, and active engagement in international technical cooperation have enriched the exchange of knowledge and good practice among Members. Through hosting international events, supporting Expert collaboration, contributing to technical discussions and standards development, and establishing the WorldSkills Museum in Shanghai, China has helped raise the international profile of WorldSkills and reinforced its role as a leading global platform for promoting skills excellence, innovation, and international cooperation.

In sum, China's experience demonstrates that the greatest value of WorldSkills lies not in medal counts alone, but in the capacity of WSI to prompt systemic improvement.

China's WorldSkills Membership has also benefited the Membership as a whole. It has disrupted routines and expectations, opened WSI to a larger world, and injected innovation. China's push to include skill competitions representing newer occupations is invaluable, as Members Brazil and Germany attest. Expert-to-Expert and Competitor-to-Competitor exchanges are at the heart of the skill competitions. All Members gain from the overall rise in performance that has resulted from China's participation in WSCs.


# Chapter 9

# Broad reflections on China's journey through the WorldSkills Competition

China's WorldSkills journey demonstrates that sustained international success is not simply the product of investment in elite Competitors, but of building an integrated skills ecosystem in which government, industry, vocational institutions, Experts, and Competitors work towards a common goal of skills excellence. China, perhaps more than any of the other 90 WorldSkills Members, has made the Competition itself a key tool for transforming its Technical and Vocational Education and Training (TVET) system. While many Members share elements of China's approach, China appears unique in having systematized success on such a comprehensive scale.

In China, since 2011, the WorldSkills Competition (WSC) has been a catalyst for strengthening the country's TVET system through international benchmarking, the adoption of world-class occupational standards, closer industry engagement, collaboration among educators, experts, employers, and governments, and learning from other countries' experiences.

China's approach to skill competitions provides a successful model that other Members may wish to consider. A main feature of this model, and one of the key factors that has contributed to the country's success, is the sustained investment in the identification, development, and continuity of its WorldSkills Experts. Long-term relationships between Experts and Competitors have enabled the accumulation and transfer of technical knowledge, competition experience, and coaching expertise across successive Competition cycles. This continuity has not only contributed to the country's stronger competitive performance, but it has also created a mechanism for embedding WorldSkills standards and practices throughout the wider TVET system and the broader expert community in China's national skill competitions.

China's journey illustrates the value of the WorldSkills movement as a means of revitalizing and reforming a national TVET system. It also shows the value of WSI as a global community of practice, where international collaboration, mutual learning, and the exchange of expertise enable Members to strengthen both competition performance and national TVET systems. As technologies, industries, and labour markets continue to evolve, the lessons from China's experience provide valuable insights for countries seeking to develop highly skilled workforces capable of meeting the challenges of the future.

China's participation in WSCs since 2011 has clearly benefited the WorldSkills movement. After all, China has the largest TVET system in the world. It is the only country with all industrial categories in the UN's industrial classification and with manufacturing value-added ranking first for consecutive years (SASAC, 2025). China's representatives have played important roles in promoting new skill competitions and are helping to raise the standards of the WSCs.

While China's sustained success has undoubtedly strengthened the profile and technical standards of the WSCs, it also presents a challenge for the future of the WorldSkills movement. Consistent dominance by a single Member may reduce the perceived competitiveness of the event and discourage some Members from competing or attempting to match China's performance. Led by WSI, Members will need to reflect on responses to this potential dilemma.

Meanwhile, WSI and its Members should continue to invest in capacity building across the WorldSkills community through Expert exchanges, mentoring partnerships, technical cooperation, regional training initiatives, and the systematic sharing of good practice. At the same time, WSI should continue to develop its Occupational Standards and Test Projects to reflect emerging technologies and future skills, ensuring that success is the result of continuous innovation rather than established advantage. By strengthening the capabilities of all Members while maintaining rigorous international standards, the WorldSkills movement can preserve both the integrity of its skill competitions and its broader mission of advancing skills excellence around the world.


SAMSUNG
AUTODESK
DEWALT

# ENDNOTES

1. International Conference on the Cultivation and Education of Creativity and Innovation, Beijing, China. Chinese Academy of Sciences.

2. Total numbers for available skills competitions and China's entries and results include Official Skills, Demonstration Skills, and Host Member Skills, where offered. From WSC2017, the distinction between these categories of skill competition was removed.

3. Before WSC2017, the midpoint of Competitors' performance in each skill competition was calculated using the numerical average and was ascribed 500 points.

4. The detailed procedures for implementing this system are set out in the Competition Rules, Section 11.10, which is reproduced in Annex B of this Report.

5. Average medal points per Member are calculated by assigning 4 points for a Gold Medal, 3 points for a Silver Medal, 2 points for a Bronze Medal, and 1 point for a Medallion for Excellence. The total is divided by the total number of skill competitions entered by that Member. This compares Members on an equal basis, irrespective of the number of skill competitions entered.

6. Official Results for the six WSCs shown are available as follows.

   https://worldskills.org/what/competitions/wsc2011/#results

   https://worldskills.org/what/competitions/wsc2013/#results

   https://worldskills.org/what/competitions/wsc2015/#results

   https://worldskills.org/what/competitions/wsc2017/#results

   https://worldskills.org/what/competitions/wsc2019/#results

   https://worldskills2022se.com/results/

   https://worldskills2024.com/en/competition-results/index.html (scroll down)

7. For Figure 8 only, the official average points for WSC2011, WSC2013, and WSC2015 have been recalculated according to the WorldSkills Scale introduced from WSC2017, which set the numerical average point score at 700.

8. ISCO-08, ESCO-21, and O*NET are the prime sources for occupational classifications and descriptions. See 'References' for more information. ISCO-08's levels 1-4 are fully described in ILO (2012, pp. 11-15). O*NET's estimated times are helpful, but their application to jobs is continental rather than global and reflects the USA's TVET arrangements.

9. China, December 2010

10. China, Spring 2011

11. The International Standard Classification of Education (ISCED) classifies post-secondary education, not university level, as Level 4; short higher education or equivalent as Level 5; first-degree level or equivalent as Level 6; Master's-degree level or equivalent as Level 7; a Doctorate or equivalent as Level 8.

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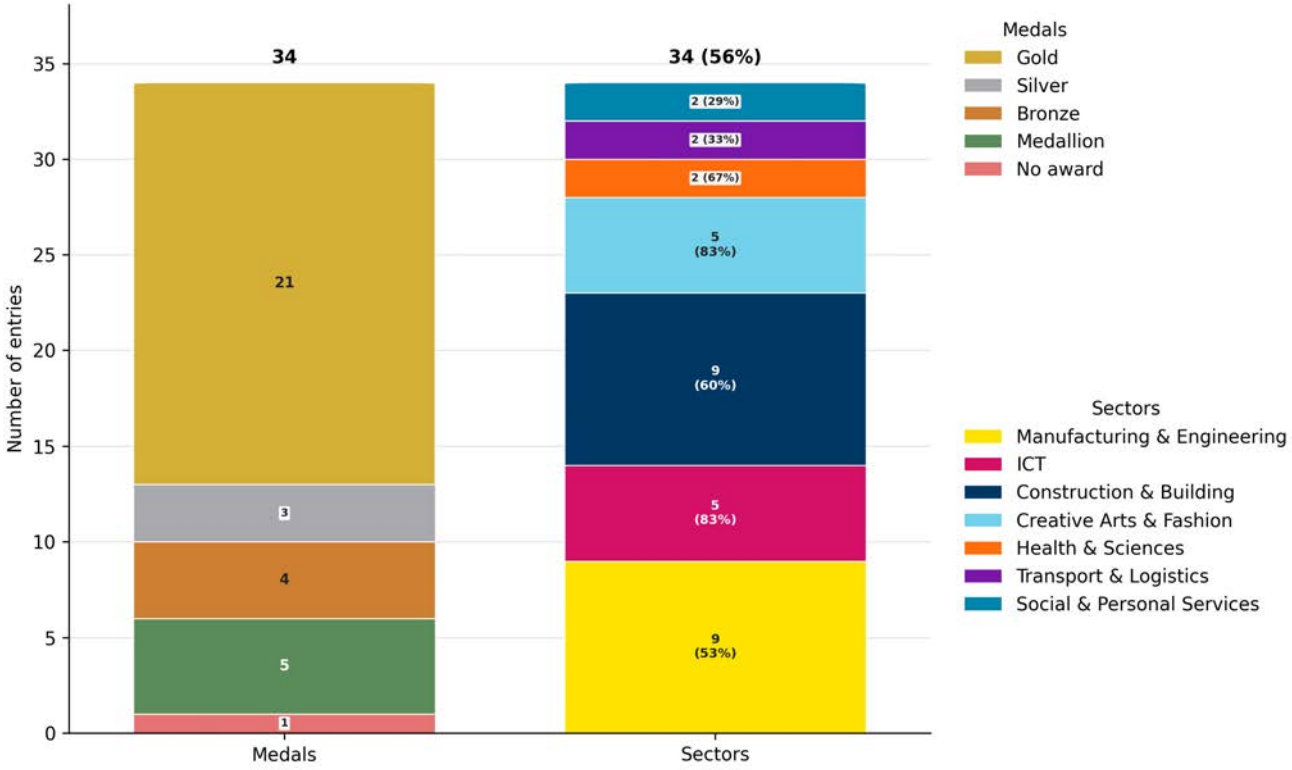
# LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CAD | Computer Aided Design |
| CEDEFOP | European Agency for the Development of Vocational Training |
| CIS | Competition Information System |
| CNC | Computer Numerical Control. |
| COVID | Coronavirus Disease |
| CV | curriculum vitae |
| ESCO | European Skills, Competences, Qualifications and Occupations |
| IEA | International Association for the Evaluation of Educational Achievement |
| IAEP | International Assessment of Educational Progress |
| Ibw | Institute for Research on the Economic Education System (Austria) |
| ICT | Information and Communication Technology |
| ILO | International Labour Organization |
| ILSA | International Large-Scale Assessments |
| ISCED | International Standard Classification of Education |
| ISCO | International Standard Classification of Occupations |
| MOVE | Modelling Vocational Excellence |
| MOHRSS | Ministry of Human Resources and Social Security |
| O*NET | Occupational Information Network |
| OECD | Organisation for Economic Co-operation and Development |
| PISA | Programme for International Student Assessment |
| PISA-VET | Programme for International Student Assessment Vocational Education and Training |
| TVET | technical and vocational education and training |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNEVOC | a combination of UNESCO and vocational education |
| UNIDO | United Nations Industrial Development Organization |
| WSI | WorldSkills International |
| WSC | WorldSkills Competition |
| WSC2022SE | WorldSkills Competition 2022 Special Edition |
| WSOS | WorldSkills Occupational Standard |

# ANNEX A

## CHINA'S ENTRIES AND PERFORMANCE AT WSC2022 SPECIAL EDITION



# ANNEX B

**PROCEDURES FOR THE AWARD OF MEDALS AND AWARDS**

This is an extract from WSI's Competition Rules (v11.0_en) to explain the procedures for awarding medals between WSC2011 and WSC2024. (Chapter 4, footnote 4 refers.)

## 11.10 Medals and awards

### 11.10.1 Gold, silver, and bronze medals

Gold, silver, and bronze medals are awarded to the Competitors who come first, second, and third respectively on the WorldSkills Scale in all Official Skills.

### 11.10.2 Equally placed medals

If the difference between two or more Competitors is no more than two points on the WorldSkills Scale, then equally placed (ex æquo) medals are awarded as described below. Variations may be recommended by the Competitions Committee and ratified by the General Assembly at the meetings at which Competition results are ratified.

**Gold**

- Two gold medals, no silver medal, one or more bronze medals
- Three or more gold medals, no silver medal. In addition, one or more bronze medals when the difference between the last gold medal winner(s) and the next Competitor(s) is not more than two points

**Silver**

- One gold medal, two or more silver medals. In addition, one or more bronze medals when the difference between the last silver medal winner(s) and the next Competitor(s) is not more than two points

**Bronze**

- One gold medal, one silver medal, two or more bronze medals

### 11.10.3 Medallion for Excellence

Competitors who have obtained 700 or more points, but who are not awarded a medal shall be awarded a Medallion for Excellence.

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