

Vocational Education Reform in China:

Developments and challenges within a politically co-ordinated VET model

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Abstract

China's vocational education and training (VET) system is undergoing significant reform in response to global megatrends – technological, climate, demographic - that have elevated VET to a strategic instrument for national development. This chapter charts the reform path undergone by a 'politically co-ordinated VET model' and strategies aimed at industrial modernization, digitization, achieving carbon neutrality, and technological sovereignty while also contending with the internal challenges of deep-rooted cultural biases, fiscal disparities and fragmented governance. A 'Political-Economy Ecosystem Perspective' (PEEP) is adopted, and a historical analysis is provided of the interplay between national/international political economy factors and deep-seated national educational traditions. Five reform phases spanning the period [fill in a rough time period please] are seen to culminate in the current consolidation of China's system model, characterised by legal recognition of VET as an equal type of education, institutional innovation, and alignment with national strategies such as 'Made in China 2025' and 'Digital China.' To end, we examine the major challenges associated with this new model, and we provide comparative insights for global VET models that highlight China's paradoxical pursuit of openness to support innovation amid technological decoupling and technological self-reliance. The chapter concludes by exploring possible new directions for China's system model in an era of global megatrends.

Part 1. A political economy ecosystem perspective on VET in China

Entering the third decade of the 21st century, vocational education and training (VET) across different countries faces a series of systemic challenges in the form of global 'megatrends' including technological change, the climate emergency and the green transition, ageing populations and

demographic change, cross-border labour mobility, pandemics and persistent inequality (Garretsen et al., 2025). At the same time, geopolitical tensions, rising technological nationalism, and the restructuring of global value chains are pushing VET to the core of national development strategies, driving innovation, ensuring employment, promoting social inclusion, and even safeguarding national security (Xu, 2025).

Across many countries, VET systems continue to struggle with low social status, resource scarcity, and weak employer participation (Schmidt, 2020; Jumani-Alwani, 2025). China exhibits these same structural dilemmas, but in sharper and more systemically embedded forms through an historical tension between traditions and modernity - Chinese vocational students experience particularly strong societal labelling and marginalisation (Liu, 2025) while, at the same time, China's rapid mass expansion of VET has intensified quality deficits (Song & Xu, 2024). Furthermore, China faces a distinctive set of challenges less prevalent elsewhere, including pronounced regional inequalities in VET provision resulting from geographically concentrated institutions and uneven resource distribution, alongside demographic pressures such as an ageing workforce and population decline (Wang, 2024).

Faced with these complex realities, this chapter argues that understanding the national case of Chinese reform challenges requires the adoption of a 'Political-Economy Ecosystem Perspective' (PEEP) (Grainger & Spours, 2018; Lotz-Sisitka et al., 2024) - a holistic framework that allows Chinese VET to be viewed as a dynamic system shaped by three interrelated logics - political top-down interdependence, historical tensions between cultural traditions/socialist modernity and globalised relations.

The political economy logic of compulsory interdependence

In contemporary China, VET is a politically coordinated system now being steered by new laws - the newly revised Vocational Education Law of the People's Republic of China (PRC), the National Vocational Education Reform Implementation Plan (2022) and the newly released 15th Five-Year Plan (2026-2030) for national economic and social development. These interventions aim to weave together a wide range of institutional actors – secondary and vocational colleges, industrial enterprises, educational administrative departments (Ministry of Education/Department/Bureau), local governments, human resources and social security departments, national economic and

technological development zones, industry associations, and regional vocational education groups – with originally divergent objectives, conflicting incentive structures, and uneven resource bases into collaborative governance frameworks (Chen et al., 2025). The overarching purpose of these coordination efforts is to align vocational education more closely with China’s economic restructuring and industrial upgrading to enhance the status and quality of VET by integrating education with production, thereby contributing to workforce development, social mobility, and national competitiveness.

This top-down ‘compulsory binding’ mechanism of the politically co-ordinated model faces structural problems. Rather than evolving into efficient and sustainable collaborative practices as policymakers anticipated, the top-down logic has given rise to ‘institutionalized performativity’ (Xiao et al., 2025). Vocational colleges, for example, primarily focus on maintaining enrolment quotas (especially amid declining birth rates) and meeting quantified targets like ‘school-enterprise collaboration projects’ set by higher authorities. Enterprises, particularly private firms, that account for over 90 per cent of market players, prioritize economic survival and profit maximization. Local governments face multiple pressures - responding to the central government’s political call to ‘vigorously develop vocational education’ and ‘serve regional industries,’ - while being constrained by local fiscal capacity. Compounding these pressures are long-standing blurred boundaries of authority and responsibility and misaligned incentive mechanisms that lack effective coordination from intermediary social organizations (Zhu et al., 2025).

Five phases of Chinese VET reform

The second dimension of the PEEP framework emphasises that any explanation of the challenges facing contemporary VET must recognise historical legacies. China views itself as a country that is developing socialism with Chinese characteristics, a political conception essential for understanding the full emergence of its coordinated model - a political variant of East Asia model that has developed through five distinct phases since the birth of the modern Chinese state in 1949.

Phase 1. Exploration (1949–1978) - under a highly centralized administrative structure, VET was tightly aligned with industrial sectors and delivered primarily through work-study and semi-work, semi-study programs, integrating education with productive labour and collective development. During this

socialist construction period from 1949 to 1978, the principle of ‘combining education with productive labour’ served not only as an educational policy, but also as the cornerstone of national ideology in which part-time schools, technical colleges, and vocational schools directly affiliated with industry ministries, formed the primary channels for cultivating technical talent. Under a centralized employment allocation system, vocational school graduates moved seamlessly from vocational education and training into work in state-owned factories, enjoying stable salaries, housing, medical care, and retirement benefits. Vocational education during this phase was not a ‘second choice,’ but a dignified and secure pathway for social advancement (Jing et al., 2022).

Phase 2. Expansion (1978–mid-1990s) – in the post-Mao era VET reform saw the state actively promote the expansion of VET through the ‘Four Modernizations’: reform of state-owned enterprises, the formation of emergent labour markets, the expansion of university enrolment with a return to China's college entrance examination system (Gaokao), and the diversification of providers. With this reform, a new social mobility logic became established, in which general education became the dominant legitimate pathway to urban household registration, government positions and professional certifications (Xue & Li, 2022). Nevertheless, throughout this liberalization phase, government-run institutions remained dominant.

Phase 3. Crisis (mid-1990s–2010) - during this period, China’s VET system entered a crisis triggered by economic liberalisation and major structural shifts in education demand. By the late 1990s, only four per cent of the labour force were advanced technical workers, highlighting both shortages and the declining attractiveness of vocational tracks. At the same time, the major expansion of higher education redirected student aspirations toward academic degrees, widely seen as the safest path to mobility during market transition. These shifts resulted in a crisis of low public recognition, weak industry alignment, lagging teacher development and a decline in secondary VET enrolment (Li, 2021).

Phase 4. System rebuilding (2010–2018) – during this decade China launched a coordinated transformation of its VET system, placing industry-education integration and school-enterprise collaboration at the centre of national reform with a government-led, industry-guided,

enterprise-involved school-governance mechanism, formally institutionalising school-enterprise cooperation that, by 2018, had produced large-scale collaborative structures with 56 vocational education steering committees and 1,400 vocational education groups, engaging over 30,000 companies in joint training, modern apprenticeships, and ‘schools in factories.’ Policy analyses identify this period as a new strategic development phase, in which industry-education integration became the primary response to long-standing weaknesses in labour-market alignment and school governance (Li, 2021).

Phase 5. System consolidation (2019-present) - since 2019, Chinese VET has entered a phase of comprehensive consolidation of the politically coordinated model, marked by legal codification, structural coordination, and institutional integration across secondary, higher vocational, and applied undergraduate levels. These reforms have driven the consolidation of clearer learning pathways, the articulation of a unified qualification architecture, and the expansion of applied undergraduate programmes as the apex of vocational progression (NPC, 2022). At the same time, system consolidation has been reinforced through large-scale industry–education partnerships, national standards for curriculum and professional clusters, expanded teacher development mechanisms, and the development of pilot zones designed to synchronise governance, quality assurance, and industrial upgrading (Zhu et al., 2025).

Viewed historically, the second ‘open’ phase marked a definitive departure from the initial socialist model of the first phase. The fourth phase sought to address the contradictions of liberalisation in the third, while the fifth phase aims to institutionalise and consolidate the VET reform process since 2010 (see Part 3 for elaboration of Phase 5).

Global interdependence - tensions between technological sovereignty and open development

The third element of PEEP concerns globalised relations. As technological competition between the major powers has intensified, China’s VET system has experienced another paradox. Along with higher education, it has been asked to serve national strategies such as building a ‘manufacturing powerhouse,’ developing a ‘digital China,’ achieving the ‘dual carbon’ goals, and cultivating ‘new quality

productivity (Chen & Chen, 2025) and, at the same time, to maintain openness by introducing advanced international standards and sending teachers for overseas training to address the shortage of high-end skilled talent (Liu & Hardy, 2021).

Since the intensification of Sino-US strategic competition in 2018, Western countries led by the United States have implemented a systematic technological containment strategy against China, including high-tech export controls, entity list sanctions, software license termination and exclusion from technical standards (Lu & Zhang, 2025). Policy orientation in China has thus begun to tilt toward self-reliance. However, this shift also faces challenges, as Chinese VET struggles to access cutting-edge technical training due to domestic industrial software that still lags international mainstream standards in terms of stability (Shao et al., 2022).

These internal tensions suggest that domestic institutional adjustments alone may be insufficient to resolve the deep-rooted challenges associated with VET reform, therefore making it necessary to situate China's experience within the diverse landscape of global vocational education and training governance.

Part 2. Review of global VET models and the interpretation of megatrends

National VET systems worldwide face challenges that can be seen as 'mega trends' - digitization, the green transition, employer engagement, equity gaps, ageing populations and labour mobility - affecting all systems, albeit in differing ways (Oxfam International, 2020). Policymakers interpret these structural factors through the lens of unique societal histories and contexts, governance logics and socio-economic priorities and this produces distinct policy responses.

Let us provide a brief comparative analysis of national system responses to 21st Century structural issues in VET by clustering possible national VET systems into two differing global models – a neoliberal market led model (e.g. US/UK) and a state co-ordinated model (e.g. Germanic countries) (Smi, & Trampusch, 2012), to better understand the distinctiveness of the China's response (Chen et al., 2025). A neoliberal market-led model of VET is characterised by a strong reliance on market mechanisms, in

which the role of the state is relatively limited, whereas in a state-coordinated model, government plays a strategic role in aligning education and training with longer-term economic and social goals. These two models result in different handling of the mega-trends that we identified at the start of this chapter and, in each case, the Chinese response is distinct from both of these.

Digitization - Germany embeds technological change within collective bargaining and occupational standards, while Anglo-Saxon systems emphasise individual adaptability through micro-credentials and market-driven solutions. China, on the other hand, integrates digitalisation into its national 'Digital China' strategy reflecting a strong state-led approach.

The Green Transition - is mainstreamed in EU and Nordic VET systems, where ecological literacy is treated as a civic competence. China politicises green skills under its 'dual carbon' goals, rapidly expanding programmes in new energy and photovoltaics, though curriculum depth often lags behind industrial needs.

Employer engagement - remains a global weak point but varies institutionally. Corporatist systems (Germany, Austria, Switzerland) enforce employer participation through chambers of commerce and legal obligations. Anglo-Saxon models, on the other hand, rely on voluntary engagement, resulting in fragmented provision. By contrast, the Chinese Government conceives the state–employer relationship in VET as a state-led, hierarchically coordinated partnership in which enterprises support national development priorities rather than act as autonomous social partners with the use of tax incentives and preferential status to encourage private sector involvement while relying on administrative mandates to secure state-owned enterprise engagement (NPC, 2022).

Equity gaps -reflect contrasting philosophies - Nordic countries treat VET as a public good, ensuring free access and lifelong learning entitlements while market-driven systems often marginalise VET as a 'last resort' for disadvantaged groups. China positions VET as a poverty alleviation tool and rural revitalisation lever, but stark urban-rural disparities in resources and pathways persist.

Population ageing and labour mobility – faced with shrinking student cohorts and erosion of traditional apprenticeship models, is prompting digital solutions. Cross-border mobility challenges qualification recognition in Europe and China grapples with inter-provincial migration and fragmented credential systems.

Taken together, these comparisons show that while national VET systems face broadly similar megatrends, their responses are filtered through divergent governance logics and institutional traditions. China's approach is marked by its strong state coordination, strategic industrial alignment, and the integration of VET into national projects such as Digital China, dual-carbon goals, and rural revitalisation that suggests that responses to megatrends do not necessarily produce system convergence but, rather, reinforce the distinctive configurations of national VET models, within which China is pursuing a centralised, development-oriented pathway.

Part 3. China's VET reforms in the fifth phase – developments and challenges

China's VET reforms are currently undergoing a critical transition from scale expansion to high-quality development with a dual strategic mission: bridging the skills gap in high-end manufacturing to achieve technological self-reliance and industrial upgrading, while also seeking to address social equity issues and the long-standing low social status of vocational education. The reform framework comprises seven core elements.

1. Policy framework - in 2019, the State Council issued the National Implementation Plan for Vocational Education Reform (commonly known as the 'Vocational Education 20 Measures'), which affirmed that VET and general education are two distinct but equally important types of education (State Council/PRC, 2019). In 2022, the newly revised Vocational Education Law legally enshrining the 'type-based' identity of vocational education to provide a legal foundation for its implementation, policies strategically aligned with national initiatives such as 'Made in China 2025' (Standing Committee/PRC, 2022).

2. Institutional innovation - the 'Double-High Plan'—China's flagship initiative to build world-class higher vocational colleges, typically catering for 15-18 year olds together with professional clusters—

supports more than 400 institutions and programme groups, comprising 197 institutions and professional clusters from the first phase and an additional 220 designated in the second phase, for their alignment with strategic industries such as advanced manufacturing, AI, health services, and modern logistics (Xinhua News Agency, 2025). These institutions receive concentrated funding and policy support to deepen industry cooperation, modernise curricula, and expand applied research and technology-transfer functions within regional innovation ecosystems. Parallel to this, the creation of ‘industry-education integrated enterprises’ has been accelerated through the designation of 50 national pilot cities, where local governments, vocational colleges, and enterprises are mandated to build shared training bases, co-develop standards, and participate in regional talent-development platforms (NDRC/PRC, 2023).

At the upper-secondary stage (15-18), China delivers vocational education through a separate system of secondary vocational schools—including vocational high schools, secondary technical schools, and technical workers’ schools. Enrolling around one-third of the age cohort, these institutions serve as the entry point to higher vocational colleges and applied undergraduate pathways. However, despite their formal equivalence to the academic track, secondary vocational schools continue to be widely perceived as a destination for academically weaker students (Zhang, 2025) (see Table 1).

Table 1. Stages and pathways in Chinese compulsory education

Stage	Age (approx.)	Main pathways	Notes
Primary Education	6–12	Common academic curriculum	Universal compulsory education
Lower Secondary (Junior Middle School)	12–15	Common academic curriculum	End of compulsory education; key transition point
Upper Secondary Split	15–18	General Academic High School or Secondary Vocational School (Zhongzhi)	Students are streamed based on exam performance (Zhongkao) and choice

Source. Li & Cao (2025)

3. Transformation in teaching and technology - artificial intelligence is being leveraged to enhance teaching, with higher vocational colleges establishing virtual simulation training bases and utilizing big data and smart classrooms. Teacher capacity is also being upgraded by redefining their role from

knowledge transmitters to learning facilitators. National standards for ‘dual-qualified’ teachers—those proficient in both teaching and industry practice—have been established, along with clear criteria for recruitment and performance evaluation that will serve as a reference for recruitment and performance evaluation (MoE/PRC, 2022).

4. Equity and rural development - VET has served as a tool for poverty alleviation and rural revitalization with programmes such as - ‘train one person, employ one person and lift one household out of poverty’ - have enabled youth and unemployed individuals to acquire livelihood skills. Additionally, targeted initiatives focus on vulnerable populations—including ethnic minorities and left-behind children—through preferential policies, resource allocation, and mechanisms that integrate vocational education into child welfare support systems. Eastern China's high-quality vocational schools also provide paired assistance to institutions in western ethnic minority regions (MoE/PRC, 2023a).

5. Strengthening systematic enterprise-led vocational education - enterprises are mandated to take the lead—particularly in strategic sectors such as advanced rail transit equipment, aerospace, marine engineering, and new materials—to co-build industry-education integration communities with schools and research institutes (MoE/PRC, 2023b). A ‘comprehensive incentive package’ combining financial, fiscal, land-use, and credit policies is used to encourage enterprises to deeply engage in curriculum development and full-cycle talent cultivation.

6. Enhancing central-local governance coordination - a governance model based on ‘government leadership, tiered management, local responsibility, industry guidance, school-enterprise collaboration, and social participation’ is being implemented (Standing Committee/PRC, 2022). This model seeks to establish clearer divisions of responsibility between central strategic direction and localised implementation, while aligning education provision more closely with regional economic priorities. It also aims to institutionalise employer engagement and broaden stakeholder participation, thereby improving the responsiveness, coherence, and effectiveness of the VET system as a whole.

7. Driving digital and green transitions in vocational education - at the intersection of national strategies—Digital China, Manufacturing Power, and Carbon Neutrality—VET is being positioned to support intelligent industrial upgrading, address structural mismatches in skills supply and demand, promote green industrial transformation, and cultivate ‘green skills’ (Central Cyberspace Affairs Commission/PRC, 2024).

China’s long-term vision for VET, set out across the 2019 Implementation Plan for National Vocational Education Reform, the 2022 Vocational Education Law, and successive ‘modern VET system’ blueprints, is to build a fully articulated, lifelong vocational pathway beginning in the early teens and extending into adult upskilling, creating a three-level vocational ladder—secondary vocational → higher vocational → applied undergraduate—aligned with national qualification frameworks and intended to feed directly into priority sectors such as advanced manufacturing, modern services, health care, and digital industries (NPC, 2022).

Challenges facing the politically coordinated model

Despite the strategic and stability-oriented character of Chinese VET, the limitations of the top-down co-ordination model, private market logics and embedded cultural traditions continue to inhibit development of the vocational education system in China. This is further exacerbated by external global restrictions, notably Western restrictions on the export of advanced technologies. More specifically, the following challenges exist for China’s politically coordinated VET model.

Misalignment between central directives and local capacity - China operates a VET system characterized by ‘government-led coordination and tiered management’. However, under mounting fiscal pressures on local governments and continuing regional disparities, significant gaps in local fiscal capacity have emerged, leading to uneven resource allocation, with high-quality vocational education resources concentrated in developed areas (Zhu et al, 2025).

Insufficient incentives for deep enterprise engagement: enterprises—particularly private firms—

generally remain reluctant to engage deeply in school-enterprise cooperation with high training costs and high labour mobility making it difficult for enterprises to secure long-term returns due to poaching skilled workers by competitors. Conversely, existing tax incentives and subsidies are limited in scope and fall far short of actual training costs. Small and medium-sized enterprises (SMEs), constrained by their limited scale and low risk tolerance, are especially unwilling to participate substantively in curriculum development or co-build training facilities. Consequently, state-owned enterprises (SOEs) shoulder most of the training responsibilities under regulatory pressure, while market-driven dynamism remains untapped, causing industry-education integration to become largely symbolic (Zhu et al, 2025).

Deep-rooted social and cultural bias - China's imperial examination tradition and the historical valorisation of academic study have ingrained a societal preference for 'academic over vocational' pathways despite the state actively promoting values such as 'skills are precious', 'labour is honorable,' and the revised Vocational Education Law (2022) legally affirming the equal status of vocational and general education (Standing Committee/PRC, 2022).

Bureaucratic fragmentation and institutional inertia - VET is managed by multiple ministries—including the Ministry of Education (MOE), the Ministry of Human Resources and Social Security (MOHRSS), and the Ministry of Industry and Information Technology (MIIT)—resulting in overlapping responsibilities and poor inter-agency coordination. Moreover, local officials' performance evaluations remain heavily focused on GDP growth and social stability that risks relegating long-term approaches of vocational education.

External technological restrictions - Western countries' export controls on advanced technologies have restricted vocational institutions' capacity to deliver high-level applied training, compelling China to turn to domestically developed alternatives that still lag in terms of equipment performance, teaching resources, and instructor readiness (Tian et al., 2022).

Part 4. Possible future directions for China's VET model – towards integrated regional ecosystems

Looking ahead, the long-term evolution of China's VET system will depend not only on continued political coordination from the centre but increasingly on its ability to transition toward a more integrated, ecosystemic model of governance and provision. While the politically coordinated model has delivered strategic direction, institutional consolidation, and large-scale mobilisation, its persistent limitations—bureaucratic fragmentation, uneven regional capacity, shallow forms of enterprise participation— suggest that high-quality development will require a shift toward more lateral, place-based coordination. This direction aligns with international analyses of VET governance, which emphasise that sustainable improvement emerges from networked, multi-actor ecosystems that align training supply with regional innovation systems and industrial restructuring (Busemeyer & Trampusch, 2012; Lotz-Sisitka, McGrath & Ramsarup, 2024).

Emerging Chinese reforms already point toward this trajectory. Regional innovation zones, vocational education groups, industrial clusters, 'Double-High' consortia, and national pilot cities for industry–education integration have the potential to overcome rigidities of top-down coordination by fostering shared strategies, pooling resources, stabilising enterprise engagement—especially among SMEs—and building cross-institutional talent pipelines aligned with regional industrial transformation (Chen et al., 2025; Zhu, Zhu & Baylon, 2025). From an ecosystem perspective, these structures can operate as the connective tissue linking central strategic priorities with local adaptive capacity, helping to rebalance the system away from administrative compliance and toward collaborative problem-solving (IIEP-UNESCO, 2025).

This hybrid model that balances political coordination and ecosystem governance could strengthen quality, deepen technological and green skills development, enhance the social foundations of employer engagement, and create more porous, lifelong pathways across regions and sectors. Developing this ecosystemic direction—centrally guided, regionally coordinated, and locally networked—offers a plausible route beyond the structural constraints of the current politically

coordinated model and positions VET to meet the complex demands of China's next phase of industrial upgrading and social development in an era of global megatrends.

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