



Building a Greener Future: Green Skills and Strategic Partnerships with KGGTF

Salman Asim, Senior Economist, World Bank

Hayeon Kim, Consultant, World Bank





Section 1. Green Skills and Job Requirements for a Sustainable Economy

Green Economy: Key Concepts for Driving the Green Transition



Green transition is the transition of an economy away from fossil fuels and the overconsumption of natural resources



Green job is a job that requires at least one **green task**. Skilling of workforce for these specific tasks are required.



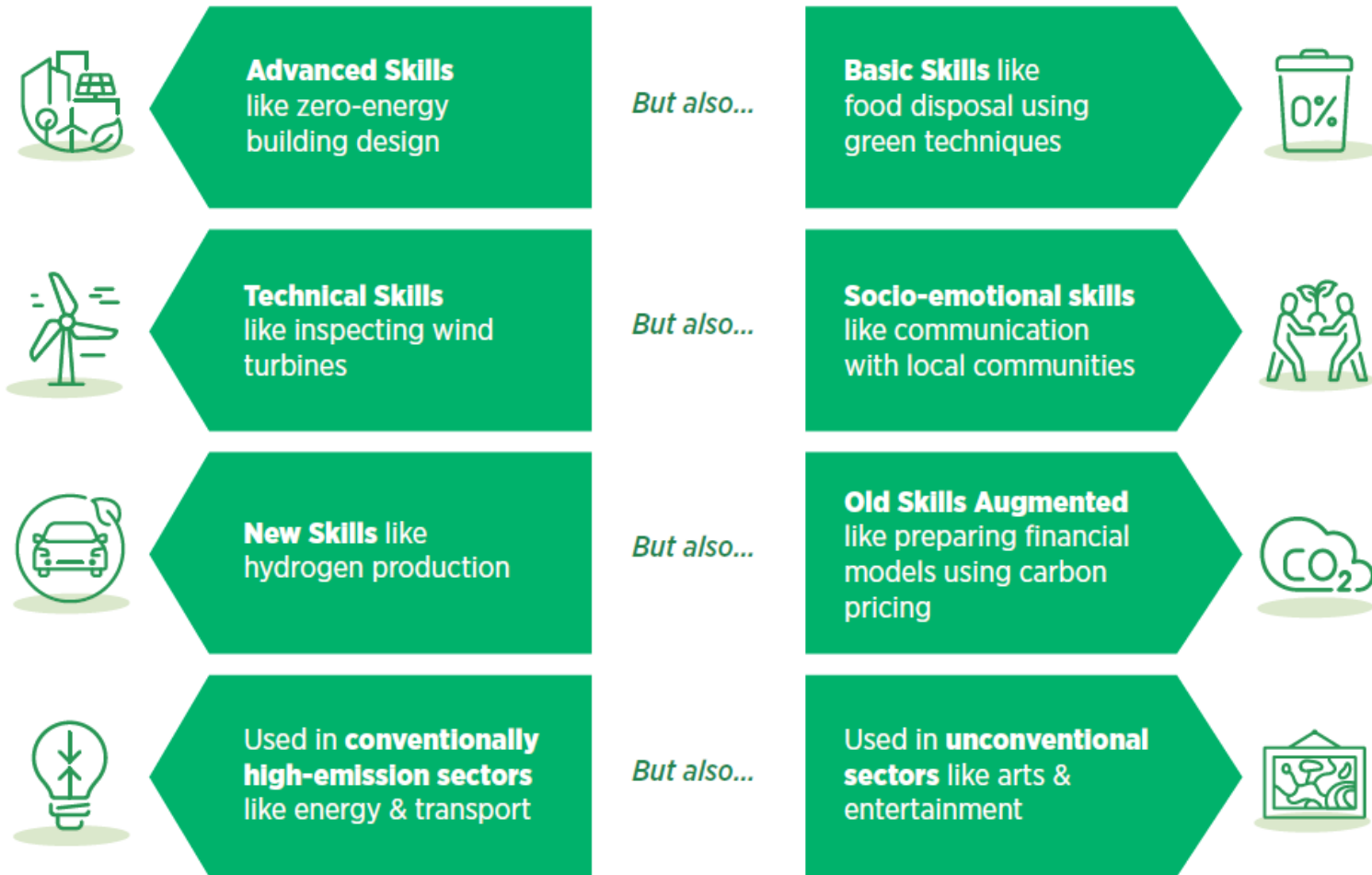
Green skills are labor market competencies essential for sustainable practices and low-carbon technologies, and resource-efficient operations.

Source: Sabarwal et al. (2024)



Examples of green skills in a transitioning economy

THEIR SCOPE MAY SURPRISE YOU.

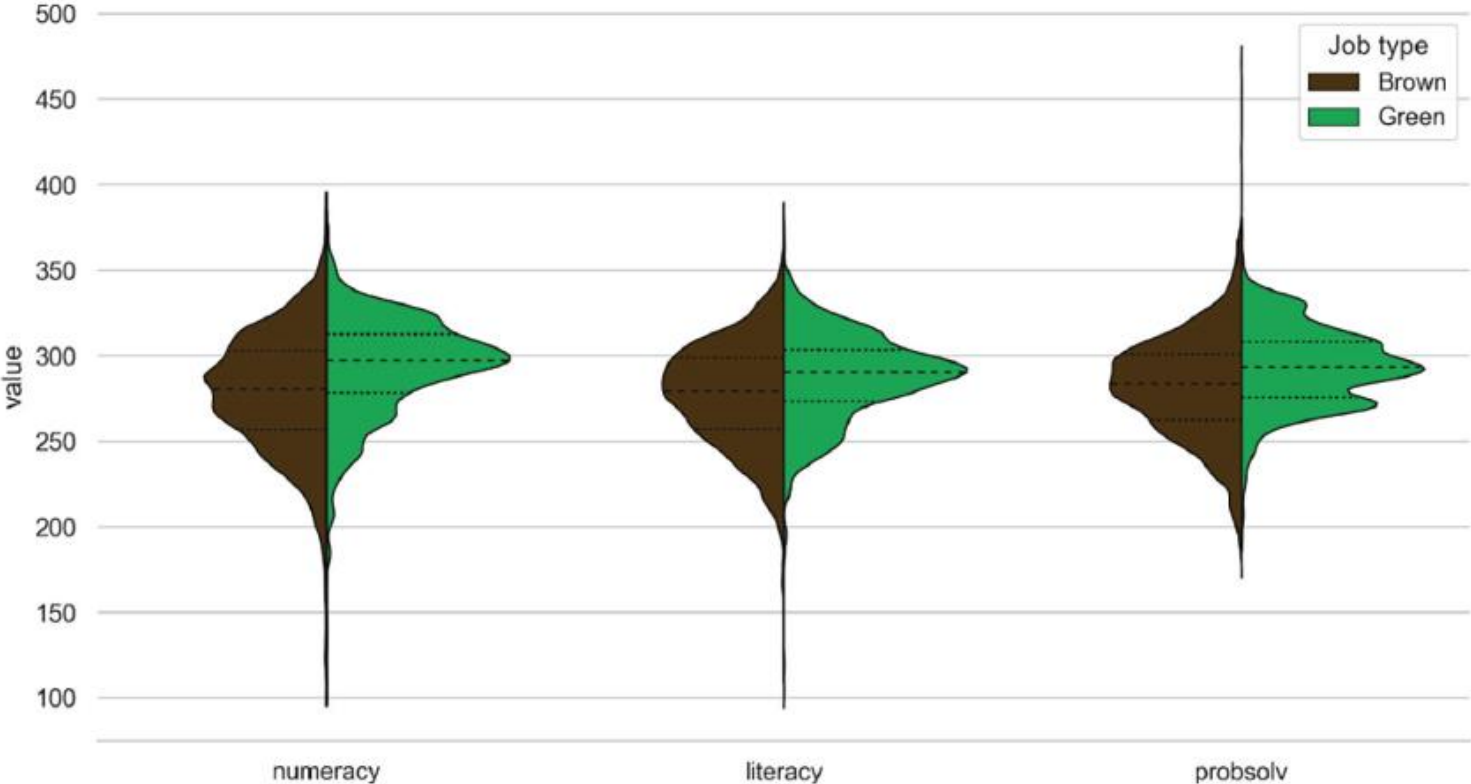


Source: Sabarwal et al. (2024)

Skill Comparisons in Green vs. Brown Job



Density Plots Brown vs. Green: For major adult skills covered in the Programme for the International Assessment of Adult Competencies (PIAAC) Suvey



Source: Sanchez-Reaza et al. (2023)



Section 2. World Bank Research for Green Skills and Human Development in the Green Transition

Advancing the Human Development Agenda within the EU's Green Deal (P175948)



- The project supports EU countries in **aligning human development (HD) policies with the European Green Deal (EGD)**.
- A regional report highlights **HD policies' role in achieving EGD goals and ensuring a fair transition**.
- Case studies cover Poland (R&D and HD), Croatia (green buildings), and the Slovak Republic (skills and behavioral change).



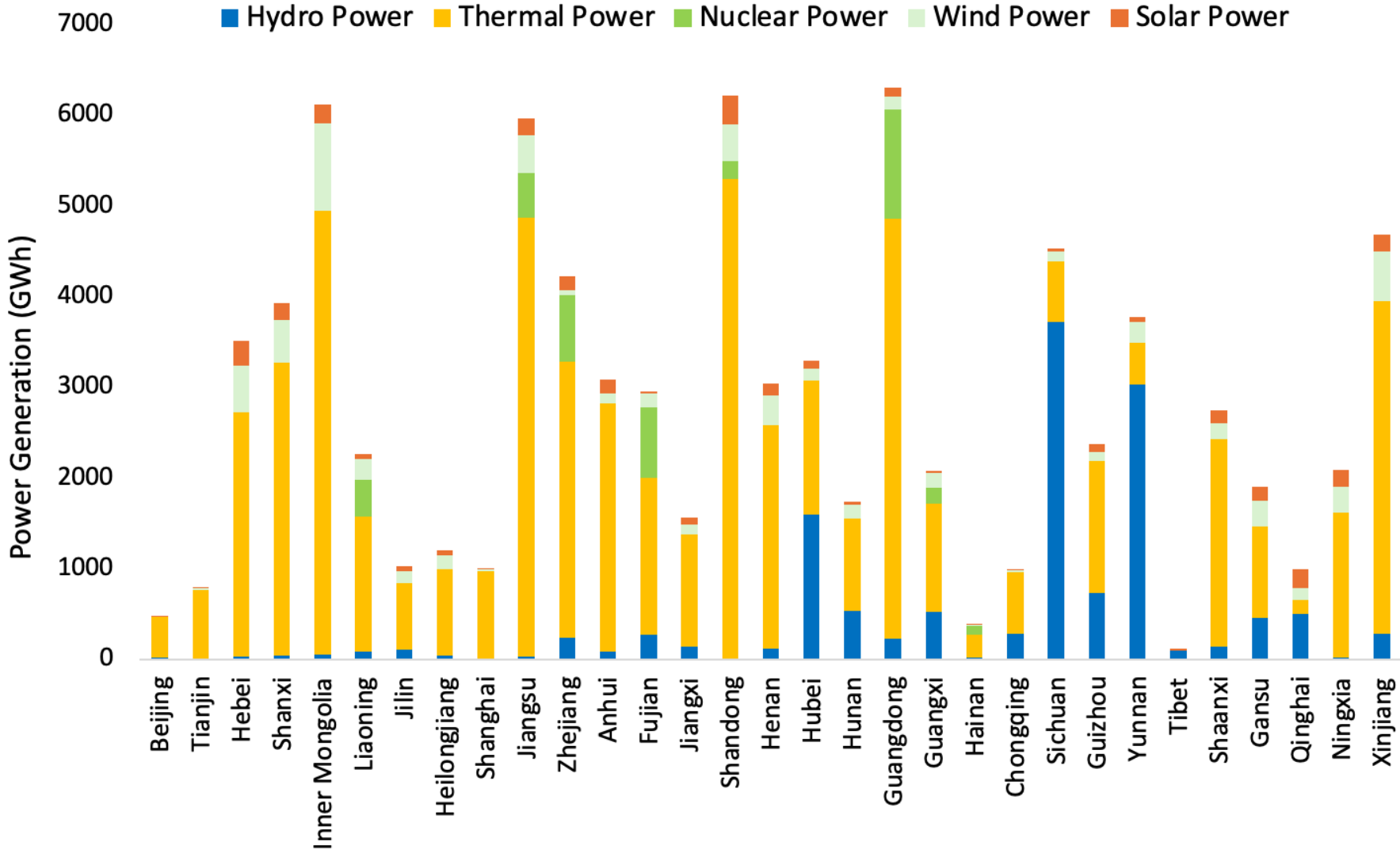
Section 3. China's Green Skills Research: Labor Market Shifts and Educational Responses

Expanding Green Commitments: China's Path to Sustainability



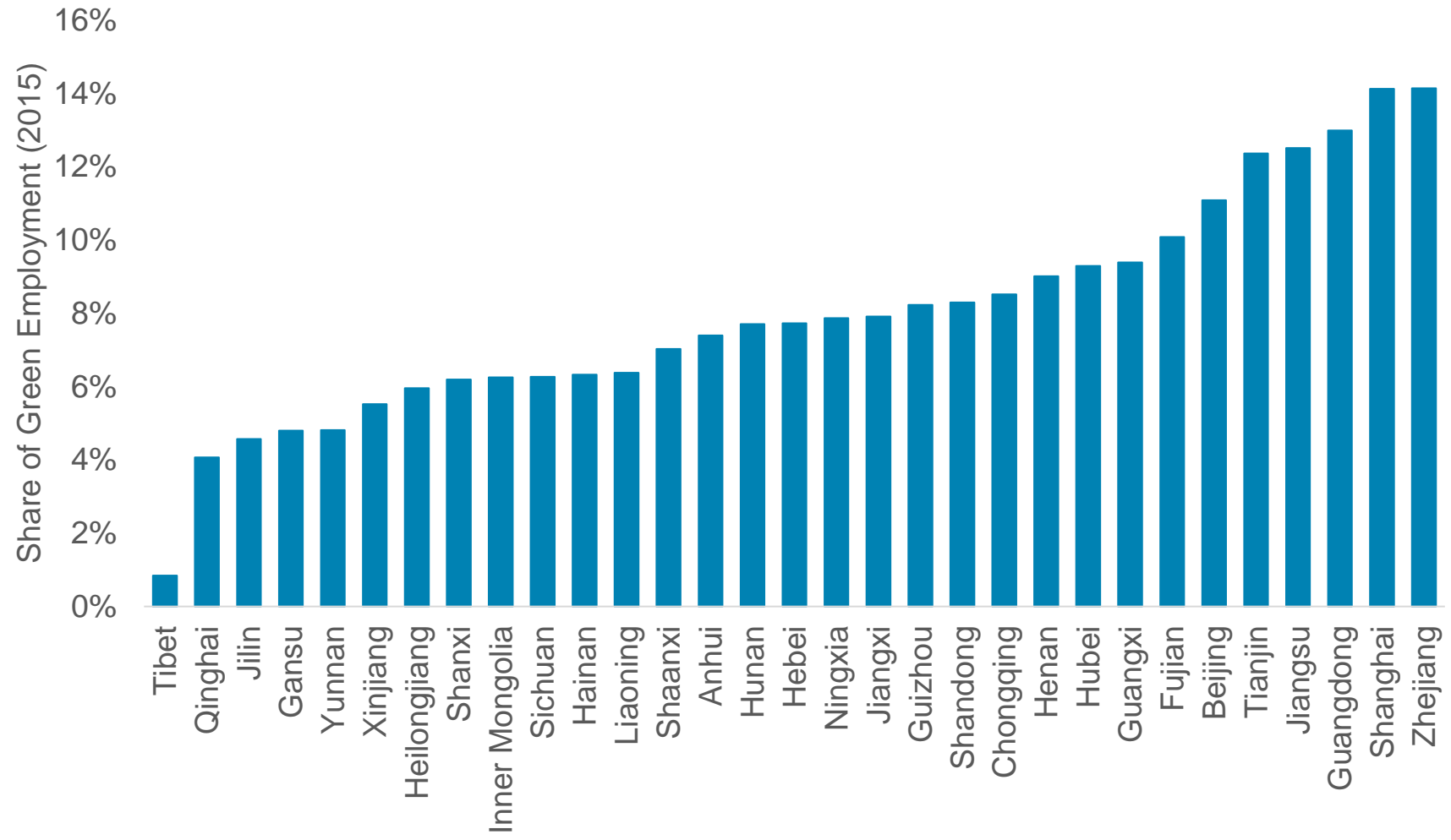
China has committed to achieving **carbon peaking by 2030 and carbon neutrality by 2060**

However, the share of renewable energy in total power generation varied widely across provinces



Source: National Bureau of Statistics. *China Energy Statistical Yearbook 2021*.

As China transitions to a green economy, green and brown jobs remain unevenly distributed across provinces.



The SPJ team identified green jobs by **matching census and CSCO occupation categories** using large language model processing, cosine similarity for semantic alignment, and manual review.

Source: World Bank. (forthcoming). Green jobs in China: A task-based approach and policy recommendations. Data Source = 2015 census

Research Questions



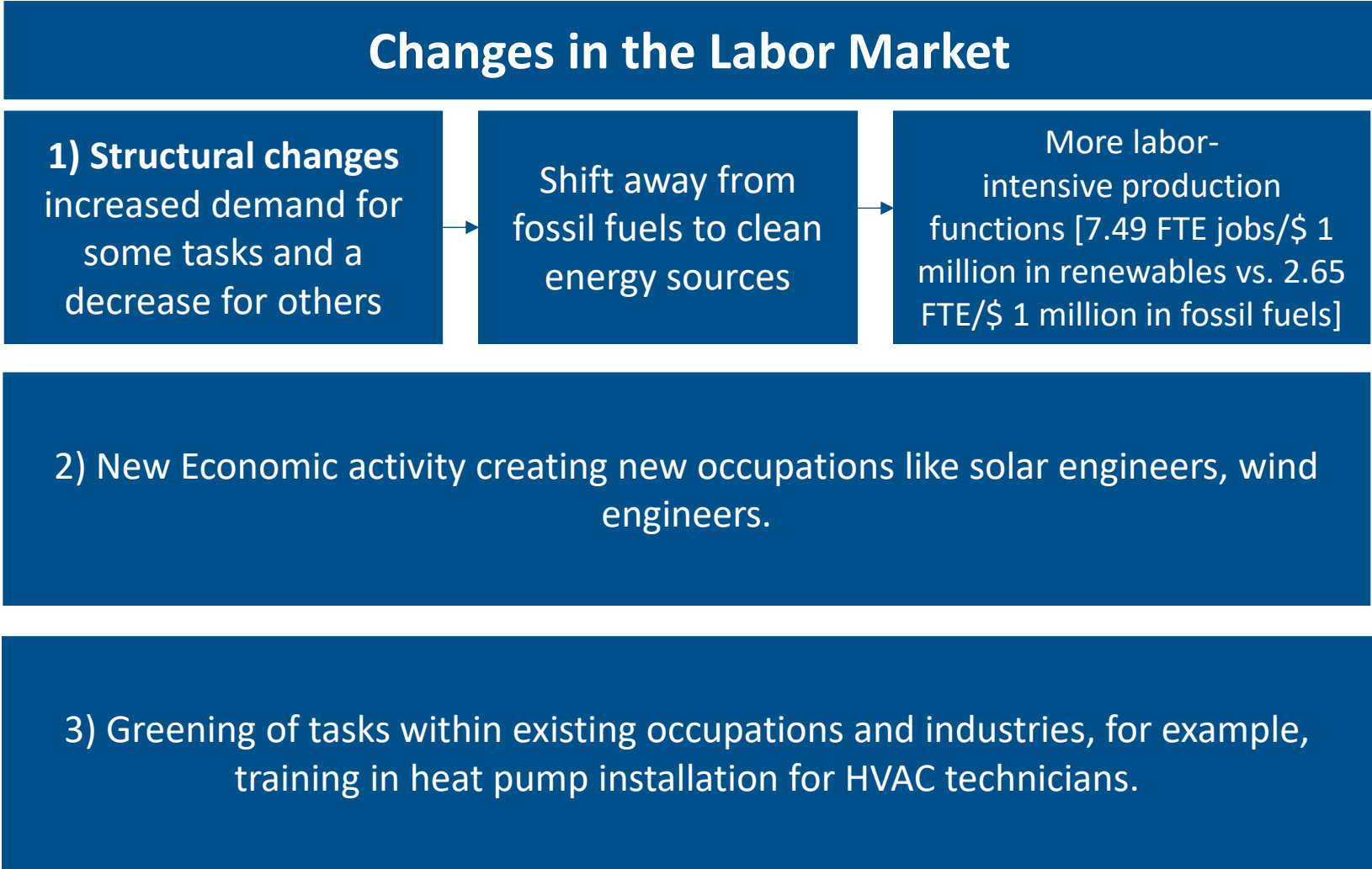
- To what extent is there a mismatch between the current and future supply and demand of professionals with green skills in the energy sector of select provinces in China?
- What policy and operational responses are required to reduce the supply-demand mismatch?

Selected Provinces : Gansu, Hubei, Inner Mongolia, Shaanxi, and Shanxi

Research Framework: Green Skills Assessment in energy sector



Transition to green economy implies shift in skills demanded by the labor market



The education system needs to respond to the changing demands



Changes in the Labor Market

Response by the Education System

1) Structural changes increased demand for some tasks and a decrease for others

Shift away from fossil fuels to clean energy sources

Different production functions [7.49 FTE jobs/\$ 1 million in renewables vs. 2.65 FTE/\$ 1 million in fossil fuels]

Increased enrollment in existing programs for engineering and technical skills

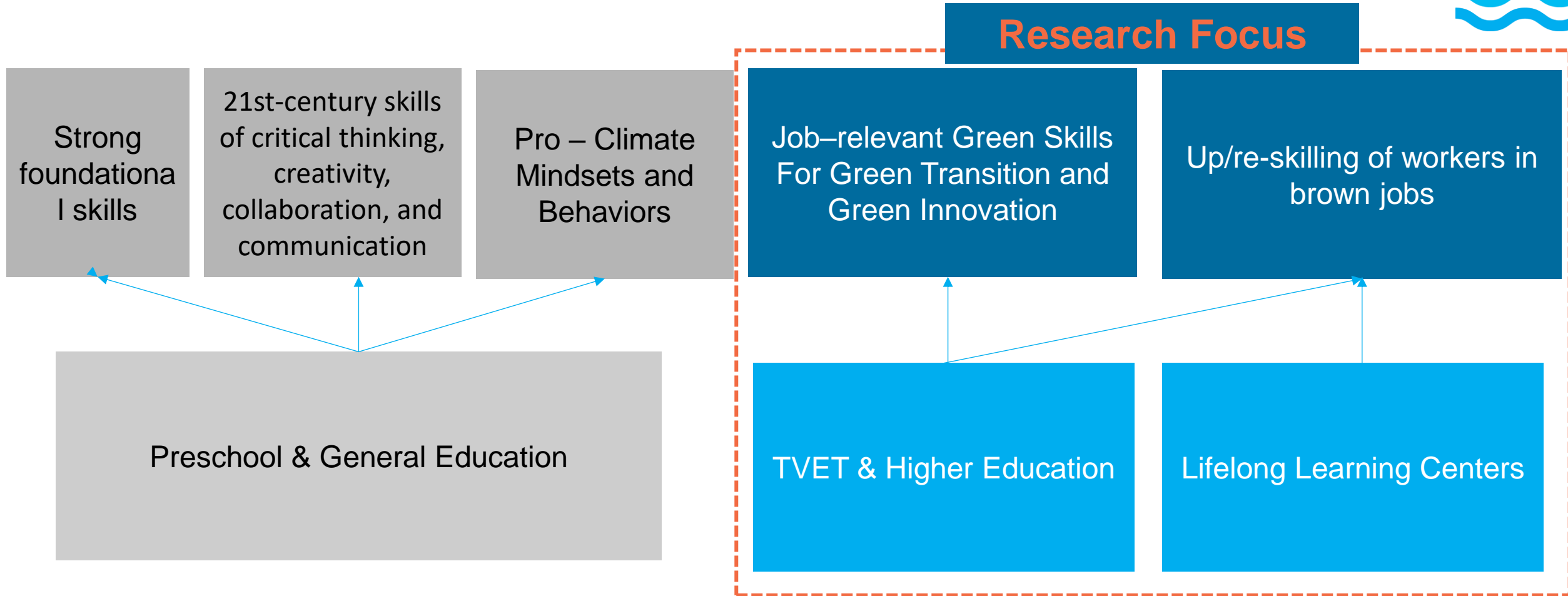
2) New economic activity creating new occupations like solar engineers, wind engineers.

Development of new qualifications and training frameworks, for example, energy storage science and engineering

3) Greening of tasks within existing occupations and industries, for example, training in heat pump installation for HVAC technicians.

Adjustments to the current training and qualification frameworks for future workers and continuing trainings for current workers

Focus: TVET, Higher Education and Lifelong Learning Centers





Section 4. Strategic Partnerships with KGGTF for Green Workforce Development and Transition

Strategic partnership with KGGTF and Energy Team



- **Decade-Long Partnership with Korean Government:** Over 10 years of collaboration on skills development with a focus on innovation and workforce readiness.
- Initiatives "**Preparing for the 4IR: The Future of Skills Development and Job Creation in East Asia**" and "**Strengthening Digital Skills in EAP**" have set the foundation for transformative skills development across the region.
- **Expanding Focus to Green Skills:** Building on prior successes, the Education GP aims to develop green skills training, addressing workforce needs for the energy sector's just transition.
- **Collaborating with Energy GP:** Partnership with the Energy GP to design targeted interventions, supporting the shift to sustainable energy and preparing workers for green job opportunities.

Cooperation Area 1: Labor Market Analysis for Changing Skills Demand and Gaps



Assess the evolving skills requirements in the energy sector, focusing on the **transition from carbon-intensive roles to green jobs.**

Skills Demand Assessment:

Examine industry trends and growth projections for green energy roles like renewable energy engineers and energy auditors.

Skills Gap Analysis:

Identify workforce skill gaps for emerging green energy jobs, focusing on high-demand areas

Stakeholder Consultations:

Engage energy employers, training providers, and policy experts to pinpoint skill needs and workforce challenges

Cooperation Area 2: Upskilling and Lifelong Learning Programs for Just Transition



Support **workers transitioning from carbon-intensive roles to green energy jobs** through targeted upskilling and reskilling initiatives.

Flexible Learning Modules:

Provide short courses and micro-credentials for skills in green jobs like energy-efficient HVAC and renewable energy.

Digital Learning Platforms:

Use online tools to reach a broad audience, including remote communities.

Industry Collaborations:

Partner with energy companies for hands-on learning, internships, and apprenticeships.

Collaboration Area 3: Policy Recommendations Based on Labor Market Findings



Develop **data-informed policy recommendations** to support a just transition in the energy sector and facilitate green skills development.

Policy Frameworks for Green Skills:

Develop policies to incentivize green training, support lifelong learning, and address energy sector needs.

Government and Industry Collaboration:

Align policies with industry trends and government sustainability goals.

Industry Collaborations:

Partner with energy companies for hands-on learning, internships, and apprenticeships.

Expected Impact and Conclusion



**Expanding Workforce Capacity for
the Renewable Energy Sector**

**Broadening Access to Green
Skills through Digital Learning**

**Supporting Just Transitions to
Sustainable Employment**

**Building Policy and Institutional
Capacity for Long-Term Green
Skills Development**



Thank you!