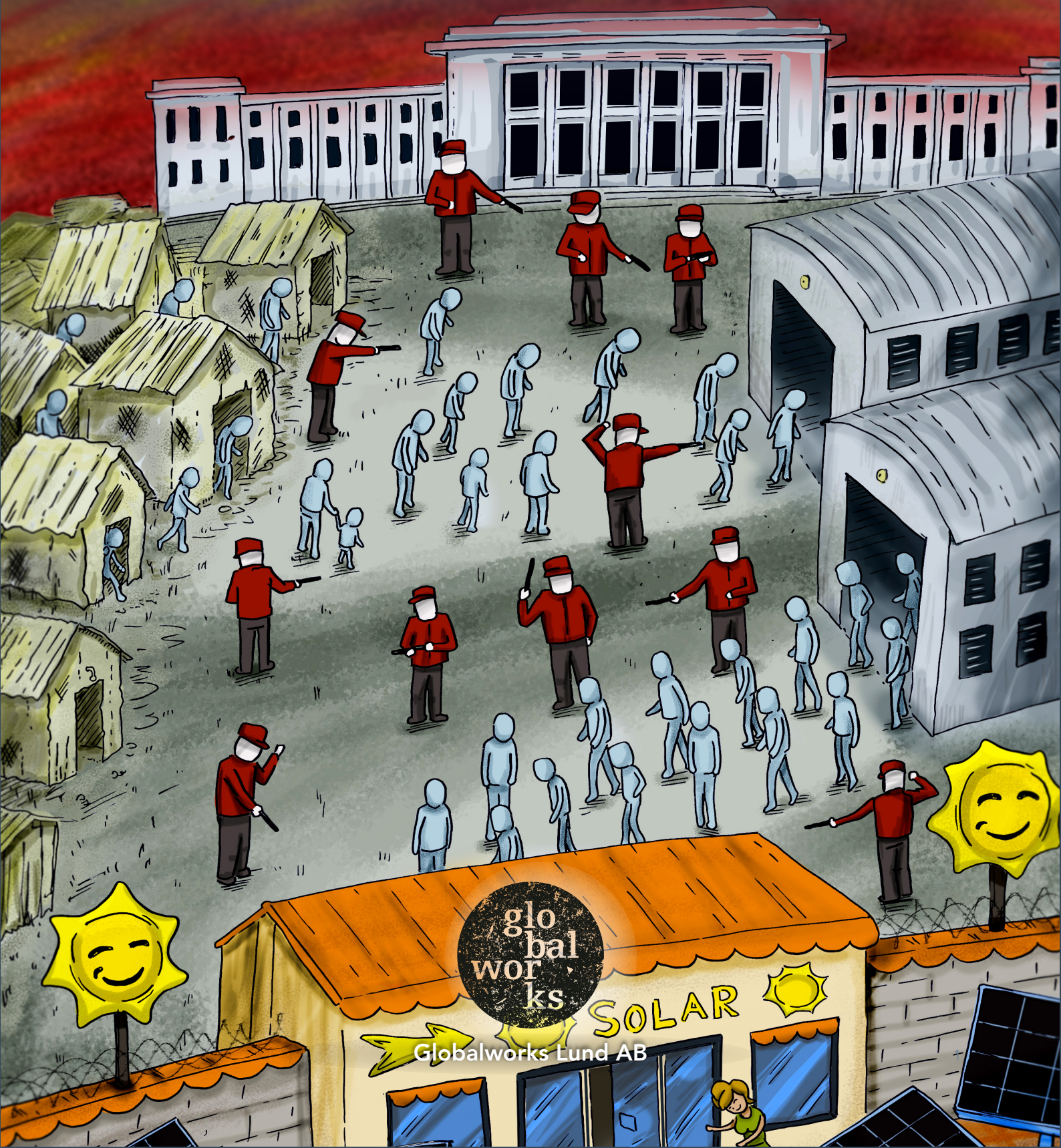


State-Imposed Forced Labour in the Solar Panel Sector in China

A HUMAN RIGHTS DUE DILIGENCE ANALYSIS



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A Human Rights Due Diligence Analysis

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Contents

List of Abbreviations	i
Executive Summary	ii
I. Introduction	1
II. Mapping the Field.	3
II.1. Overview	3
II.2. Systematisation of Forced Labour	5
II.3. Forced Labour Due Diligence	7
II.4. Spatial Distribution of Forced Labour Risks	10
II.5. Method and Data.	11
III. Context Analysis	14
III.1. State-Imposed Forced Labour in Xinjiang	14
III.2. State-Imposed Forced Labour beyond Xinjiang	18
III.3. Photovoltaic Poverty Alleviation	25
IV. Supplier Risk Data and Assessment	32
IV.1. Canadian Solar	32
IV.2. Anhui Huasun	35
IV.3. CHINT Group.	36
IV.4. Golden Concord Holdings Limited (GCL)	40
IV.5. China Railway and Rolling Stock Corp. (CRRC)	45
IV.6. DAS Solar.	50
IV.7. Delta Electronics	51
IV.8. DMEGC	54
IV.9. Hongfa Electroacoustic	55
IV.10. Huawei	56
IV.11. JA Solar	59
IV.12. Jiangsu Zhongneng.	60
IV.13. Jinko Solar	61
IV.14. Risen	65
IV.15. Runnergy	67
IV.16. Sumec Energy.	68
IV.17. Taoistic	69
IV.18. Tongwei	69
IV.19. LONGi.	71
IV.20. Trina Solar.	74
IV.21. Yingli Energy	76
V. Conclusion.	78
Appendix I	80
Appendix II.	82
Company Responses.	84
Context Setting from IRBC Agreement for the Renewable Energy Sector	85

List of Abbreviations

AI	Artificial Intelligence
Agri-PV	Agriculture–photovoltaic (agrivoltaics)
C4ADS	Center for Advanced Defense Studies
CCP	Chinese Communist Party
CECC	Congressional-Executive Commission on China
CFA	Confirmatory Factor Analysis
CRRC	China Railway and Rolling Stock Corporation
CSO	Civil Society Organisation
EPC	Engineering, Procurement and Construction
EU	European Union
EV	Electric Vehicle
GIS	Gas-insulated switchgear
GCL	Golden Concord Holdings Limited
GW	Gigawatt (unit)
GW (org.)	Globalworks (organisation, report author)
HRDD	Human Rights Due Diligence
ILO	International Labour Organization
IoT	Internet of Things
JA (JA Solar)	Jing’ao Solar (company)
kWh	Kilowatt-hour
MW / GW	Megawatt / Gigawatt (units)
MWp	Megawatt-peak
MWh	Megawatt-hour
MGS	Metallurgical-grade silicon
OECD	Organisation for Economic Co-operation and Development
OHCHR	UN Office of the High Commissioner for Human Rights
PRC	People’s Republic of China
PV	Photovoltaic
PVPA	Photovoltaic Poverty Alleviation
PVP	Photovoltaic Poverty
RMB	Renminbi (Chinese currency)
SOE	State-owned enterprise
TBIJ	The Bureau of Investigative Journalism
TPA	Targeted Poverty Alleviation
UFLPA	Uyghur Forced Labour Prevention Act (U.S.)
UK MSA	United Kingdom Modern Slavery Act (2015)
UN	United Nations
UNGPs	UN Guiding Principles on Business and Human Rights
XUAR	Xinjiang Uyghur Autonomous Region
XPCC	Xinjiang Production and Construction Corps
VETC	Vocational Education (and Training) Centres

Executive Summary

This report provides a comprehensive human rights due diligence (HRDD) analysis of state-imposed forced labour risks in China’s solar panel sector, with a particular focus on the intersection of poverty alleviation policies, ethnic minority governance, and global supply chains. Drawing on publicly available Chinese-language documents, government notices, company communications, and local media reports, the study systematically assesses the prevalence and mechanisms of forced labour, especially as they relate to the global solar energy supply chain.

1. Key Findings

The report maps state-imposed forced labour risks in solar panel manufacturing across China. Essential findings of this research are:

Prevailing upstream risks: The study corroborates previous findings highlighting the central role of the Xinjiang Uyghur Autonomous Region as a global hub for critical photovoltaic (PV) inputs. The region’s dominance in quartz mining, silicon, and polysilicon production propagates forced labour risks at these stages downstream to processing and manufacturing sites (wafers, cells, modules) through material blending. The report confirms that leading solar panel producers (e.g., Canadian Solar, GCL, LONGi, JA Solar, Jinko Solar, Trina Solar) are directly or indirectly linked to these upstream risks.

Midstream and downstream risks: The report documents state-imposed forced labour practices at the manufacturing and assembly stages of solar panels across China. The analysis reveals that state-imposed forced labour is embedded in the operational practices through:

- **Poverty alleviation programs:** Factories across China participate in government-mandated labour transfers, resettlement schemes, and vocational training pipelines. These programs often target registered poor households and ethnic minorities, compelling participation through administrative quotas, surveillance, economic incentives, and ideological pressure.
- **On-site coercion:** At the factory level, workers, especially those from minoritized groups, are subject to restricted mobility, close monitoring, and ideological education. The “menace of penalty” is frequently indirect but effective, with threats of loss of welfare, land rights, or even detention for non-compliance.
- **Resettlement and land transfers:** The report details how solar panel manufacturing sites are often co-located with resettlement zones. In these zones, displaced rural populations are channelled into wage labour under local government supervision. Furthermore, land transfers for PV projects may dispossess farmers, increasing their vulnerability to become drawn into China’s forced labour regime.
- **Photovoltaic Poverty Alleviation (PVPA) projects:** In this report we show how PVPA initiatives, intended to boost rural incomes, often result in increased debt burdens, loss of land rights, and forced transitions from subsistence to wage labour. These projects are implemented in both minority and Han-majority regions. The risks connected to the implementation of PVPA projects are the highest in ethnic autonomous areas where economic marginalisation and political repression intersect.
- **Digital and energy infrastructural enablers:** Documents in this report indicate that technology companies such as Huawei play a significant role in enabling surveillance in Xinjiang. Additionally, in the new energy sector, Huawei collaborates with a state-owned energy provider with a documented record of state-imposed forced labour. The expansion of digital infrastructure and support of state-run energy providers reinforces coercive labour practices.

2. Company-Specific Risk Profiles

The report provides risk assessments for 21 major solar panel manufacturers and their partners, evaluating both direct and indirect links to state-imposed forced labour. Key findings include:

- Many leading firms are involved in a range of activities relating to China's forced labour regime in respect to registered poor and non-Han ethnic Chinese. They take part in state-organized recruitment schemes and labour transfers as well as employment-assistance workshops, often in collaboration with local authorities.
- Some companies (e.g., Canadian Solar, CHINT, GCL, CRRC, Jinko Solar, LONGi, Huawei) face "very high" legal and reputational risks due to their ongoing or expanding operations in Xinjiang and/or their participation in state-imposed forced labour schemes at manufacturing sites elsewhere in China.
- Even companies that claim to have left Xinjiang or established "clean" supply chains remain linked to forced labour in Xinjiang through supply chain relationships, joint ventures, and/or indirect sourcing.

3. Structural and Systemic Nature of Forced Labour

The report demonstrates that the presence of forced labour in China's solar panel industry is not an isolated or exceptional phenomenon but is structurally embedded in national industrial and rural development policies. The mechanisms of coercion, such as administrative quotas, grid-style community management, ideological education, and digital surveillance, are deployed nationwide, with varying degrees of severity.

4. Conclusions and Recommendations

Endemic and multi-layered risks: Forced labour risks are endemic throughout the Chinese PV supply chain, from raw material extraction to module assembly. The risks are highest in Xinjiang and other minority regions but are also present at manufacturing sites across China due to the pervasive reach of state policies.

Due diligence imperative: Multinational enterprises must adopt a holistic HRDD approach that scrutinizes not only upstream suppliers but also manufacturing sites, resettlement-linked factories, and supply chain relationships. Legal and reputational risks are escalating with the introduction of new regulations (e.g., EU Forced Labour Regulation).

Collective action is needed: Isolated audits or supply chain bifurcation are insufficient. The report brings to the fore the need for sector-wide responses aligned with the UN Guiding Principles on Business and Human Rights, emphasizing transparency, leverage, and, where necessary, disengagement from high-risk relationships.

I. Introduction

China’s photovoltaic (PV) sector, i.e. its solar panel sector, is at the heart of both the global energy transition and an intensifying debate about state-imposed forced labour. Prior research has documented extensive links between upstream solar panel inputs in the Xinjiang Uyghur Autonomous Region (XUAR) from quartz and metallurgical-grade silicon to polysilicon and global solar value chains. Consequently, state-imposed forced labour propagates downstream into wafers, cells, and modules. Building on that work, our report focuses on Chinese solar panel manufacturers by collecting new primary data and offering a systematic human-rights-due-diligence (HRDD).

In the first part of this report, we review academic articles and reports that elaborate on the concept of state-imposed forced labour in general and within the Chinese context. The discussion shows that identifying state-imposed forced labour in China is intrinsically difficult. Coercion frequently operates through indirect “menace of penalty” signals such as surveillance, ideological pressure, administrative quotas, and the threat of loss of welfare or livelihood rather than through explicit threats at the point of employment. Narratives of care, development, and “poverty alleviation” can mask these dynamics.

Based on these insights, we seek to identify state-imposed forced labour indicators from publicly accessible online materials: Chinese-language government documents and notices, company communications, and local media, complemented by relevant laws and secondary scholarship. We systematically queried major Chinese web portals and vetted approximately 5,000 documents, and retained about five per cent for close analysis. No field interviews or site visits were conducted; all findings are source-linked and reproducible from the public record.

To interpret this material, we distinguish state-tolerated from state-imposed forms of forced labour and foreground indicators that capture distributed, state-orchestrated coercion (e.g., politically enforced labour transfers, resettlement tied to work placement, and vocational “training” pipelines). We also incorporate a spatial risk lens built from province-level quantitative data on rural income, ethnic minority share, and political repression, recognising that risks concentrate where economic marginalization, ethnic governance, and political coercion intersect.

Our HRDD framing follows the UN Guiding Principles on Business and Human Rights, which expects companies to identify, prevent, mitigate, and account for adverse impacts they cause, contribute to, or are directly linked to through business relationships. We translate that responsibility into an operational risk taxonomy that grades exposure from “moderately high” to “very high” across intersecting vulnerabilities (poverty registration, ethnicity, and political repression) and then map those grades onto concrete value-chain positions and corporate ties (ownership, joint ventures, and customer relationships).

We divide our primary-source analysis into two parts. The first addresses contextual dynamics and fills specific gaps in prior research by examining state-imposed forced labour inside and beyond the Xinjiang Uyghur Autonomous Region and by analysing photovoltaic (PV) poverty-alleviation schemes as potential vehicles of coercion. The discussion sets out how labour transfers, resettlement-linked placement, “training” pipelines, grid-style social management, and performance-quota regimes operate in provinces outside Xinjiang, and how these instruments intersect with solar panel build-out and poverty-alleviation programmes. It provides empirical examples from new primary data to illustrate the mechanisms through which state-orchestrated coercion can be embedded in recruitment, placement, and retention practices in contexts directly relevant to the manufacturers analysed in this report.

Against this backdrop, the second part turns to company-specific exposure. Our assessment covers the solar panel manufacturers listed in Appendix 1 and, where relevant, their Chinese equity and joint-venture partners. We reviewed and evaluated empirical material on individual solar panel manufacturers, systematically searching for state-imposed forced-labour risk indicators linked to their operations, subsidiaries, joint ventures, investment partners, and geographically proximate labour-transfer programmes. For each entity we compile documentary links to labour-transfer schemes, poverty-alleviation workshops, resettlement-based employment, and Xinjiang-related operations. We then classify the nature of involvement, cause/contribute versus linked, consistent with UNGP commentary on leverage and relationship management.

Taken together, the report offers a document-based, context-aware human rights due diligence analysis of solar panel supply and value chains in China. It is not an audit and does not propose corrective-action plans for individual factories. Instead, the report identifies recurring state-linked practices and structural risk patterns that require sector-wide responses consistent with UNGPs.

The remainder of this report is structured as follows: Part I, “Mapping the Field”, clarifies concepts and indicators and sets out our HRDD approach and methods. Part II, “Context Analysis”, examines state-imposed forced labour in Xinjiang and beyond, showing how poverty-alleviation and resettlement policies function as labour-control infrastructures. Part III, “Supplier Risk Data and Assessment”, presents company-level findings and risk gradings derived from the above framework.

Prior to publication, all companies assessed in this report were given the opportunity to review the findings and submit comments. As the research team had no pre-existing channels of communication with any of the companies, civil society organisations, or private individuals connected to the solar panel sector in China, contact points were identified through company websites, sustainability reports, and other corporate communications. Most contacts were associated with ESG, CSR, investor relations, or sustainability functions, though some were less clearly labelled. Where necessary, multiple contacts within the same company were approached to ensure effective outreach.

The report was distributed to all companies simultaneously. Companies implicated in both this report and the companion Labour Rights Violations report received two separate emails and were asked to comment on each individually. All companies were given two weeks to respond.

At the time of writing, three companies have submitted comments on the labour rights violations report. These responses are presented in the section “Company Responses” in full.

II. Mapping the Field

The Chinese government announced in April 2022 that it would ratify the International Labour Organisation’s Forced Labour Convention, 1930 (No. 29), and the Abolition of Forced Labour Convention, 1957 (No. 105).² This commitment stood in stark contrast to the realities unveiled in Amnesty International’s landmark report “Like We Were Enemies in a War: China’s Mass Internment, Torture, and Persecution of Muslims in Xinjiang”, published less than a year earlier.³ Across more than 160 pages, Amnesty detailed the systematic use of arbitrary detention, torture, and forced labour targeting Uyghurs, Kazakhs, and other Muslim minorities in Xinjiang since 2017, concluding that many such practices “amounted to crimes against humanity.”

II.1. Overview

From 23 to 28 May 2022, Michelle Bachelet, then United Nations High Commissioner for Human Rights, visited China. She spent two monitored days in Xinjiang, where she toured major cities like Ürümqi and Kashgar. During this highly scrutinised visit, Bachelet refrained from commenting on the mass internment of Uyghurs.⁴ However, her office subsequently published the long-awaited “Assessment of Human Rights Concerns in the Xinjiang Uyghur Autonomous Region” in August 2022.⁵ That report directly addressed the issue of forced labour among Uyghurs and other Muslim minorities, noting that state-backed labour transfer schemes, framed as “poverty alleviation” or “vocational training”, were likely coercive in nature. It concluded that the scope and severity of the abuses could constitute crimes against humanity, including forced labour.

II.1.1. Forced Labour through Poverty Alleviation

The Chinese government has defended its policies in Xinjiang as counterterrorism measures aimed at safeguarding national unity. According to Chinese Communist Party (CCP) leadership, the root cause of radicalisation is a backward way of thinking and living, and the remedy is modernisation through development. Pursuing this goal, President Xi Jinping declared in 2015 the fight against poverty a key national priority, requiring attention across party and state organisations.⁶ In 2020, the government claimed that it had eliminated absolute poverty in ethnic minority areas through vocational training and the employment of so-called surplus labour.⁷ Since then, poverty alleviation has evolved into a broad policy framework designed to raise living standards and prevent households from falling back into poverty.

While the aim of eradicating poverty through access to higher-income work is in itself commendable, the implementation and consequences of these programmes often undermine the rights of the people they purport to benefit. Xinjiang, for example, treats resistance to government assistance programmes

2 Nicola Macbean, “China’s Ratification of the ILO Forced Labour Conventions: A Hollow Gesture?,” *Made in China Journal*, 2022, <https://madeinchinajournal.com/2022/07/04/chinas-ratification-of-the-ilo-forced-labour-conventions-a-hollow-gesture/>.

3 Amnesty International, “Like We Were Enemies in a War: China’s Mass Internment, Torture and Persecution of Muslims in Xinjiang,” Amnesty International, 2021.

4 Macbean, “China’s Ratification of the ILO Forced Labour Conventions.”

5 OHCHR, “OHCHR Assessment of Human Rights Concerns in the Xinjiang Uyghur Autonomous Region, People’s Republic of China,” OHCHR, accessed July 31, 2025, <https://www.ohchr.org/en/documents/country-reports/ohchr-assessment-human-rights-concerns-xinjiang-uyghur-autonomous-region>.

6 “Xi Pledges Stronger Support to Rid All Chinese of Poverty by 2020 - China - Chinadaily.Com.Cn,” accessed September 11, 2022, https://www.chinadaily.com.cn/china/2015-10/16/content_22204202.htm.

7 China’s Xi Declares Victory in Ending Extreme Poverty, 2021, <https://www.bbc.com/news/world-asia-china-56194622>.

as an indicator of "religious extremist activities".⁸ To avoid detention, some households have been pressured to accept state-sponsored labour transfers, where workers are kept under close surveillance and control. Often, the coercion involved is implied rather than explicit, which makes state-imposed forced labour difficult to identify.⁹ Moreover, narratives of care, reform, or development frequently obscure these coercive practices. As a result, human rights risk assessments in this context depend heavily on interpreting indirect signals, rather than on direct or unambiguous evidence.

II.1.2. Links to Global Supply Chains

The Uyghur forced labour system is deeply embedded in both Xinjiang's and China's broader economies. The "Uyghurs for Sale" report, published on 1 March 2020 by the Australian Strategic Policy Institute and authored by Vicky Xu et al., was the first comprehensive study to connect 27 factory sites, some resembling detention facilities, with features like watchtowers, barbed wire, and restricted movement, to 83 major global brands, including Apple, BMW, Gap, Huawei, Nike, Samsung, Sony, and Volkswagen.¹⁰ Since then, researchers and civil society organisations have identified Uyghur forced labour in the production of a wide array of goods: rare earth and minerals; electronics; automobiles; apparel; seafood; tomatoes; cotton; metals; and silicone. At the time of writing, the End Uyghur Forced Labour website listed 35 reports published between 2019 and 2025, the majority of which traced global supply chain connections.¹¹ Laura Murphy at Sheffield Hallam University and Adrian Zenz at the Victims of Communism Memorial Foundation have done extensive research in the field and published numerous reports and academic articles on the subject. More recently, the Bureau of Investigative Journalism, along with Daniel Murphy, has contributed substantial evidence by analysing Uyghur worker videos posted to Douyin (the Chinese version of TikTok) and conducting onsite visits, demonstrating that participation in labour transfers and poverty alleviation schemes remains compulsory and may be even more widespread than previously thought.¹²

Many industries and global brands remain entangled with Xinjiang's state-imposed forced labour regime. While the links vary, some sectors are particularly dependent on the region. In addition to cotton, the solar industry stands out for its reliance on natural resources and manufactured components sourced from the XUAR. Three major reports, *In Broad Daylight* (2021)¹³, *Sins of a Solar Empire* (2022)¹⁴, and *Over-exposed* (2023)¹⁵, have traced the solar industry's supply chain links and documented the structural difficulties in shifting production away from the region. Two more reports, *Fractured Veins* (2023)¹⁶ and *Risk at the Source* (2025)¹⁷, investigate the presence of Uyghur forced labour in upstream segments of the critical mineral and refinery sectors. In this report, we build on the existing body of research and provide additional insights from primary empirical material to contextualise our findings and offer a comprehensive assessment of the human rights risks associated with sourcing from the Chinese solar panel manufacturing.

8 Laura Murphy, *Laundering Cotton: How Xinjiang Cotton Is Obscured in International Supply Chains*, Sheffield Hallam University Helena Kennedy Centre for International Justice, 2021.

9 Adrian Zenz, "Measuring Non-Internment State-Imposed Forced Labor in Xinjiang and Central Asia: An Assessment of ILO Measurement Guidelines," *Journal of Human Trafficking*, Routledge, n.d., 1–27, <https://doi.org/10.1080/23322705.2023.2270366>.

10 Vicky Xiuzhong Xu et al., *Uyghurs for Sale: 'Re-Education', Forced Labour and Surveillance beyond Xinjiang*, La Trobe, 2021.

11 Coalition to End Forced Labour in the Uyghur Region, *Reports*, 2025, <https://enduyghurforcedlabour.org/home/reports/>.

12 Daniel Murphy, "China's Economy Runs on Uyghur Forced Labour," *TBIJ*, 2025, <https://www.thebureauinvestigates.com/stories/2025-05-29/chinas-economy-runs-on-uyghur-forced-labour>.

13 Laura Murphy and Nyrola Elimä, *In Broad Daylight: Uyghur Forced Labour in Global Solar Supply Chains*, Sheffield Hallam University Helena Kennedy Centre for International Justice, 2021.

14 The Breakthrough Institute, "Confronting the Solar Manufacturing Industry's Human Rights Problem," *The Breakthrough Institute*, 2022, <https://thebreakthrough.org/issues/energy/sins-of-a-solar-empire>.

15 Alan Crawford and Laura Murphy, *Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing*, Sheffield Hallam University, 2023.

16 Anna Wheeler, "Fractured Veins," *C4ADS*, 2023, <https://c4ads.org/reports/fractured-veins/>.

17 Global Rights Compliance, "Risk at the Source: Critical Mineral Supply Chains and State-Imposed Forced Labour in the Uyghur Region – New Report," 2025, <https://globalrightscompliance.org/cm/>.

II.1.3. State-imposed Forced Labour beyond Xinjiang

The coercive transformation of poor farmers and herders into industrial or wage labourers is not unique to Xinjiang or Turkic ethnic groups. A government document from Henan province makes this explicit. It states:

*“From the perspective of actual practice, it is difficult for some poor people to eliminate their lazy habits. Therefore, to increase income for poor families, the government must use ideological education to motivate them to participate in poverty alleviation workshops.”*¹⁸

Such language reveals that participation in government programmes is not always optional. Because poverty alleviation is practised across China, this report argues that the risk of state-imposed forced labour should be understood as a product of three intersecting, cumulative factors: poverty, ethnic minority status, and values or lifestyles considered nonconformist by CCP standards such as religious practices, resistance to state planning, or a refusal to transition from subsistence livelihoods to formal labour markets.

II.1.4. Report Disposition

This report consists of three parts. In part 1, “Mapping the Field”, we provide an overview of the concept of forced labour and how we operationalise it in this research project. The second part, “Context Analysis”, presents our background research on the issue of state-imposed forced labour in China. We relied on Chinese language documents and academic research to explore risks of state-imposed forced labour in Xinjiang as well as in other parts of China. Furthermore, we elaborate on potential human rights risks arising from photovoltaic poverty alleviation. The insights from our context analysis are carried forward in part 3, “Supplier Risk Data and Assessment”, where we present our findings related to the solar panel manufacturer list that we received for this study.

The remainder of this part is divided into three chapters. The following chapter provides a systematisation of the forced labour concept and introduces indicators for state-imposed forced labour. We then outline how human rights due diligence is conceptualised in this report, followed by a section on method and data.

II.2. Systematisation of Forced Labour

ILO Convention No. 29 defines forced labour as “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.”¹⁹ To provide guidance on identifying forced labour situations, the ILO lists eleven indicators:

- Abuse of vulnerability
- Deception
- Restriction of movement
- Isolation
- Physical and sexual violence
- Intimidation and threats
- Retention of identity documents
- Withholding of wages
- Debt bondage
- Abusive working and living conditions
- Excessive overtime

¹⁸ Camille Boullenois, “Poverty Alleviation in China: The Rise of State-Sponsored Corporate Paternalism,” *China Perspectives* 2020, no. 3 (2020): 3, <https://doi.org/10.4000/chinaperspectives.10456>.

¹⁹ SAP-FL, “ILO Indicators of Forced Labour,” Brochure, October 1, 2012, http://www.ilo.org/global/topics/forced-labour/publications/WCMS_203832/lang-en/index.htm.

Sometimes the presence of one indicator is sufficient to conclude that a labour relationship is not voluntary, whereas in other cases, several indicators in combination are necessary. The ILO provides an e-learning tool²⁰ and a handbook²¹ to support the identification of forced labour and promote appropriate action.

II.2.1. State-tolerated and State-imposed Forced Labour

The risks associated with forced labour in China vary. Therefore, we systematised forms of forced labour, as shown in Figure 1. In the context of export manufacturing in China, the menace of penalty can be divided into **state-imposed** and **state-tolerated** forms. State-tolerated forms refer to corporate management practices that abuse power asymmetries between employers and workers. These may include wage deductions or wage arrears, which are used as a punishment for not committing to overtime or unpaid extra working hours. Another common example of state-tolerated forced labour is administrative barriers and financial penalties for workers who want to resign. We refer to these practices as "state-tolerated forced labour" because the private sector initiates and implements them, whereas state authorities support business interests with regulatory leeway and weak law enforcement. State-tolerated forced labour in China applies mainly to migrant workers and vocational school students. Enterprise regulations often formalise this form of forced labour, leaving victims unaware of their exposure.

	State-imposed forced labour	State-tolerated forced labour
Origin	State-level	Corporate-level
Targets	Registered poor, and non-Han ethnic groups	Migrant workers, and vocational school students
Measures	Economic coercion, and existential threats	Obstacles to resign (financial penalties, delayed or declined processing of formal resignation)

Figure 1: Globalworks' Systematisation of the Chinese Forced Labour Regime

Forms of state-imposed forced labour refer to practices that are either state-organised or state-endorsed. In China, the two most common forms fall under this category: industrial poverty alleviation programmes and vocational training agreements between schools and the private sector. State-imposed forced labour targets specific groups in registered poor households and non-Han ethnic groups. These categories can overlap with groups subject to state-tolerated forced labour. State-imposed forms can be further subdivided into two modes of enforcement: **economic coercion** and **existential threats**. Economic coercion is used to leave targeted individuals with little choice but to accept state-imposed employment or vocational training. The menace of penalty in this context refers to measures such as cutting off poor farmers from social guarantees or withdrawing land use rights if they are unwilling to accept state-imposed wage labour. 'Existential threats' refer to the deployment of detention, imprisonment, torture, or other forms of physical and psychological violence.

20 "Online Course: Preventing and Addressing Forced Labour and Trafficking in Persons in east and south-east Asia," Course, March 22, 2016, http://www.ilo.org/asia/events/WCMS_462316/lang-en/index.htm.

21 "Tools and Resources for Business on Forced Labour," Resource list, December 13, 2022, http://www.ilo.org/empent/areas/business-helpdesk/tools-resources/WCMS_144883/lang-en/index.htm.

II.2.2. Indicators of State-imposed Forced Labour

State-imposed forced labour is difficult to prove, not least because the "menace of penalty" is often not explicit but permeates perpetrators' behaviour and victims' understanding of their situation indirectly. Adrian Zenz argues that the ILO's 11 forced labour indicators were designed to help recognise forced labour in individualised workplace settings, typically involving private employers. They were not designed to measure mass mobilisation campaigns organised by the state or widespread structural coercion in regions with high political repression, such as Xinjiang. The ILO indicators regularly expect an employer to be the main perpetrator, whereas state-imposed forced labour regimes rely on distributed responsibilities involving schools, police, government authorities, the military, and businesses. What is more, the ILO indicators expect that the "menace of penalty" rests on some form of explicit, direct threat. In the context of state-imposed forced labour, however, coercion may be less overt because fear of retaliation, surveillance, or loss of service replaces direct threats. As a result, the ILO's forced labour indicators struggle to capture the diffuse, collective, and systemic forms of coercion that characterise state-imposed forced labour regimes, especially in politically oppressive contexts where victims are unlikely to self-report and "consent" is often performed out of fear.²²

Zenz refers to various signs of state-imposed forced labour in the context of Xinjiang's poverty alleviation through labour transfers.²³ Such clues include both structural coercion and restrictive conditions that eliminate worker choice:

- Participation in labour transfers is frequently non-voluntary, as rural surplus labour is assigned training and job placements based on top-down administrative targets rather than individual preferences. Local governments are pressured to meet quotas for employment and transfers, which leads to the compulsory mobilisation of workers, often without transparent consent processes.
- So-called "voluntariness" is undermined by state surveillance and political pressure. Workers, particularly ethnic minorities, are subject to ideological education and social assessments, where non-compliance with employment directives may lead to political labelling, reduced welfare access, or worse, even placement in re-education facilities. This produces a climate of fear and compulsion rather than free choice.
- Restrictions on mobility and worksite monitoring, including conditions where workers are placed under regimented schedules, surveillance by cadres, and disciplinary measures that resemble penal or military environments. These controls often extend to housing, movement, and communication, making it difficult for workers to leave their positions or negotiate better terms.

The combination of administrative coercion, ideological pressure, punitive consequences for refusals, and a lack of meaningful freedom to refuse or exit employment indicates state-imposed forced labour.

II.3. Forced Labour Due Diligence

Zenz recommends that analysts dealing with state-imposed forced labour move beyond the ILO's 11-indicator checklist and instead examine structural and contextual markers.²⁴ Specifically, analysts should look for the following signs in the context of China:

²² Zenz, "Measuring Non-Internment State-Imposed Forced Labor in Xinjiang and Central Asia: An Assessment of ILO Measurement Guidelines."

²³ Adrian Zenz, "The Conceptual Evolution of Poverty Alleviation through Labour Transfer in the Xinjiang Uyghur Autonomous Region," *Central Asian Survey*, Taylor & Francis, 2023, 1–25.

²⁴ Zenz, "Measuring Non-Internment State-Imposed Forced Labor in Xinjiang and Central Asia: An Assessment of ILO Measurement Guidelines."

- Presence of state-mandated production or employment quotas (e.g., “every able person must be employed” policies in Xinjiang);
- Use of surveillance, grid governance, and community-based mobilisation (e.g., village work teams enforcing quotas door-to-door);
- Lack of meaningful choice or possibility of refusal—including threat of punishment such as loss of land-use rights, wages, or access to welfare;
- Normalisation of “voluntary” participation under duress, especially where individuals sign forms or make public statements under pressure;
- State ownership or control over land, institutions, or employment pathways (e.g., re-education-to-factory pipelines).

For this report, Globalworks (GW) collected available documents online that entail information on the above-identified risk indicators. We then systematically analysed these insights in terms of the significance of state-imposed forced labour. To this end, GW developed a four-grade risk classification that takes into account the intersectionality of state-imposed forced labour. The classification reflects the Chinese context and is applicable to various industries, including the solar panel sector.

- **Moderately high risk:** All Chinese citizens registered as poor and all vocational school students participating in mandatory internships face the risk of being assigned jobs against their will or being prevented from resigning in accordance with labour legislation.
- **Medium-high risk:** The risk of abusing the vulnerabilities of economically marginalised citizens and students increases when they belong to ethnic minorities.
- **High risk:** Politically repressed minorities are frequently the target of poverty alleviation programmes and vocational training not only to increase income but also because these measures are considered essential for implementing political control and re-education. The combination of economic marginalisation, social stigmatisation, and deprivation of political rights results in a high risk of forced labour.
- **Very high risk:** Uyghurs and other Turkic minorities in Xinjiang, as well as Tibetans, are subject to systematic political repression and coercive measures. Indicators of vulnerability are the same as those under “high risk”. Due to the explicit and implicit use of existential threats, the risk of becoming a victim of forced labour practices increases at a very high level.

The responsibility to prevent and end forced labour involves not only government authorities and legislative bodies but also multinational enterprises and other firms sourcing from countries where regulations to protect workers from forced labour are lacking or are not enforced. In this context, the UN Guiding Principles (UNGPs) on Business and Human Rights require enterprises to conduct regular Human Rights Due Diligence (HRDD). This refers to the process through which businesses can identify, prevent, mitigate, and account for how they address their actual and potential adverse human rights impacts. The UNGP general framework is supplemented with specific documents, such as the ILO’s 2014 Protocol to the Forced Labour Convention, which calls on member states to “develop a national policy and plan of action for the effective and sustained suppression of forced or compulsory labour in consultation with employers’ and workers’ organisations.” The UN 2030 Agenda for Sustainable Development leveraged this call in 2015, as it demands, under Target 8.7, “accelerated action to eradicate forced labour, modern slavery, human trafficking, and child labour.”

Section 13 of the United Nations Guiding Principles on Business and Human Rights stipulates that business enterprises shall:

- Avoid **causing or contributing** to adverse human rights impacts through their activities and address them when they occur.
- Seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products, or services by their business relationships, even if they have not contributed to those impacts.

Businesses that cause or contribute to forced labour may face legal charges; those linked to it through business relationships currently face no legal repercussions. However, failing to identify forced labour risks can lead to sanctions.²⁵ As intended and progressively so, states are putting legislation in place to implement the national-level system of justice as stated in the UNGPs. In France, for example, large corporations can be held legally accountable according to the 2017 Corporate Duty of Vigilance Law.²⁶ In the UK, corporations have hitherto only risked reputational damage, as the Home Office is prepared to name and shame businesses that are not compliant with the 2015 UK Modern Slavery Act (MSA).²⁷ But with the debated overhaul of the MSA with the Modern Slavery Bill, the legislation is turning far stricter, and transgression of the regulations will lead to sanctions. More recently, the EU Forced Labour Regulation, in force since December 2024 and applicable from December 2027, bans the placing, availability, and export of products made with forced labour on the EU market. The prohibition is universal, covering all products and industries as well as every stage of the supply chain, from raw material extraction to processing. Companies must be able to demonstrate that their products are free from forced labour. Investigations and enforcement will be carried out by the European Commission and national authorities, with penalties for violations. Firms may, however, demonstrate good faith through robust due diligence efforts.²⁸

If a brand's manufacturer is found to be linked to forced labour, commentaries on the UN Guiding Principles and the OECD Guidelines for Multinational Enterprises specify that appropriate action will depend on the degree of leverage the company has over its business relationships.

- If the company can lessen the negative impact, it should, as it would have to if it caused it.
- If the company lacks leverage, it should try to increase it.
- If the company finds increasing its leverage impossible, it should consider terminating the relationship.²⁹

In this report, we distinguish between corporations that cause or contribute through their actions and those linked through business relationships along the lines of ownership:

- When corporations wholly or partly own the factories or production sites where we observe forced labour, the corporations actively **cause/contribute** to the presence and occurrence of forced labour. Furthermore, corporations contribute to forced labour when they collaborate with equity or joint-venture partners involved in the Chinese state-imposed forced labour regime, provided that the partners' business operations are complementary or similar to those of the corporation.

25 Diane Marie Amann, "Capital Punishment: Corporate Criminal Liability for Gross Violations of Human Rights Symposium: Holding Multinational Corporations Responsible under International Law," *Hastings International and Comparative Law Review* 24, no. 3 (2000): 327–38.

26 "Towards a Mandatory EU System of Due Diligence for Supply Chains | Think Tank | European Parliament," accessed September 11, 2022, [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2020\)659299](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2020)659299).

27 "Demystifying the Modern Slavery Act 2015 for Corporate Lawyers," *Practical Law*, accessed September 11, 2022, [http://uk.practical-law.thomsonreuters.com/w-025-6078?transitionType=Default&contextData=\(sc.Default\)&firstPage=true](http://uk.practical-law.thomsonreuters.com/w-025-6078?transitionType=Default&contextData=(sc.Default)&firstPage=true).

28 "EU Forced Labour Regulation - EU - 2024/3015 - EN - EUR-Lex," accessed September 19, 2025, <https://eur-lex.europa.eu/eli/reg/2024/3015/oj/eng>.

29 Nicolas Bueno and Claire Bright, "Implementing Human Rights Due Diligence Through Corporate Civil Liability," *International & Comparative Law Quarterly* 69, no. 4 (2020): 789–818, <https://doi.org/10.1017/S0020589320000305>.

- When corporations buy products and services or otherwise link their operations to factories or production sites where we observe forced labour, the corporations are **linked** to forced labour through their business relationships.

The Commentary to the Guiding Principle 13 highlights that *“business enterprises may be involved with adverse human rights impacts either through their own activities or as a result of their business relationships with other parties”*, where business relationships are understood to include also relationships with *“entities in its value chain and any other non-State or State entity directly linked to its business operations, products or services”*. Thus human rights due diligence under the UNGPs is not restricted to a corporation’s **supply chain** but includes its entire **value chain**. The former usually encompasses the resources, activities, and business relationships that feed into a product or service (upstream relationships), while the latter includes the delivery, consumption, and end use of a product or service.³⁰ In this report, we adopted a value chain perspective and included the state-imposed forced labour risks as a result of downstream customer links.

II.4. Spatial Distribution of Forced Labour Risks

Employment allocated through poverty alleviation programmes in China cannot be presumed to be voluntary. And while the Uyghurs and Tibetans face the highest level of political repression, other non-Han ethnic groups may still be forced into vocational training and labour exchange programmes that are based on similar forms of abuse, military drills, and ideological education. The average share of non-Han citizens in China is approximately 15%. Minoritised groups, however, are unequally distributed across the country. For example, in Jiangxi Province, 99.7% are Han Chinese. In Tibet, by contrast, more than 90% of the population are of non-Han ethnic origin. The provinces with the most non-Han citizens are Tibet, Xinjiang, Qinghai, Yunnan, Guizhou, Guangxi, and Ningxia. Other provinces with above-average non-Han population shares are Hainan, Inner Mongolia, and Liaoning. The concentration of non-Han ethnic groups in certain areas gives rise to a spatially uneven distribution of state-imposed forced labour risks. Ethnicity is frequently associated with other risk factors, in particular economic marginalisation and political repression.

In Xinjiang, Tibet, and some parts of Qinghai (Tibetan areas in the southwest of Qinghai), poverty alleviation and vocational education are intimately connected to state-repressive policies in the name of the Chinese government’s fight against terrorism and religious extremism. Rights violations are embedded into a (local) totalitarian state apparatus. They are difficult to verify and, if discovered, non-negotiable. Areas where state-imposed forced labour mainly relies on economic coercive means are Yunnan, Guizhou, Guangxi, Ningxia, Inner Mongolia, Liaoning, and Hainan. Increasing income by giving up traditional livelihoods and transitioning into industrialised wage labour is a hard target for local cadres and a duty of the registered poor. Consequently, the risk of state-imposed forced labour increases the lower the income of a household or jurisdiction.

To provide an overview of the spatial distribution of state-imposed forced labour risks, we calculated a compound risk index based on three variables (for details see Appendix II): per capita disposable income in rural areas, the share of minoritised ethnic groups, and the level of political repression. The first two indicators are retrieved from official Chinese statistics. We approximate the third variable with the number of protests by province. We use data from China Labour Bulletin, a Hong Kong-based civil society organisation that has systematically collected information about protests from social media.³¹ All variables are calculated as averages of the past ten years. To aggregate the index, we deployed confirmatory factor analysis (CFA) and then normalised the values on a scale from 0 to 100, where 0 represents the highest risk and 100 the lowest.

³⁰ “Supply Chains - National Action Plans on Business and Human Rights,” <https://Globalnaps.Org/>, n.d., accessed July 28, 2025, <https://globalnaps.org/issue/supply-chains/>.

³¹ In May 2025, China Labor Bulletin became a target of the political repression as the organisation shut down its website and servers over night and announced that ended operations.

Compound Risk Index

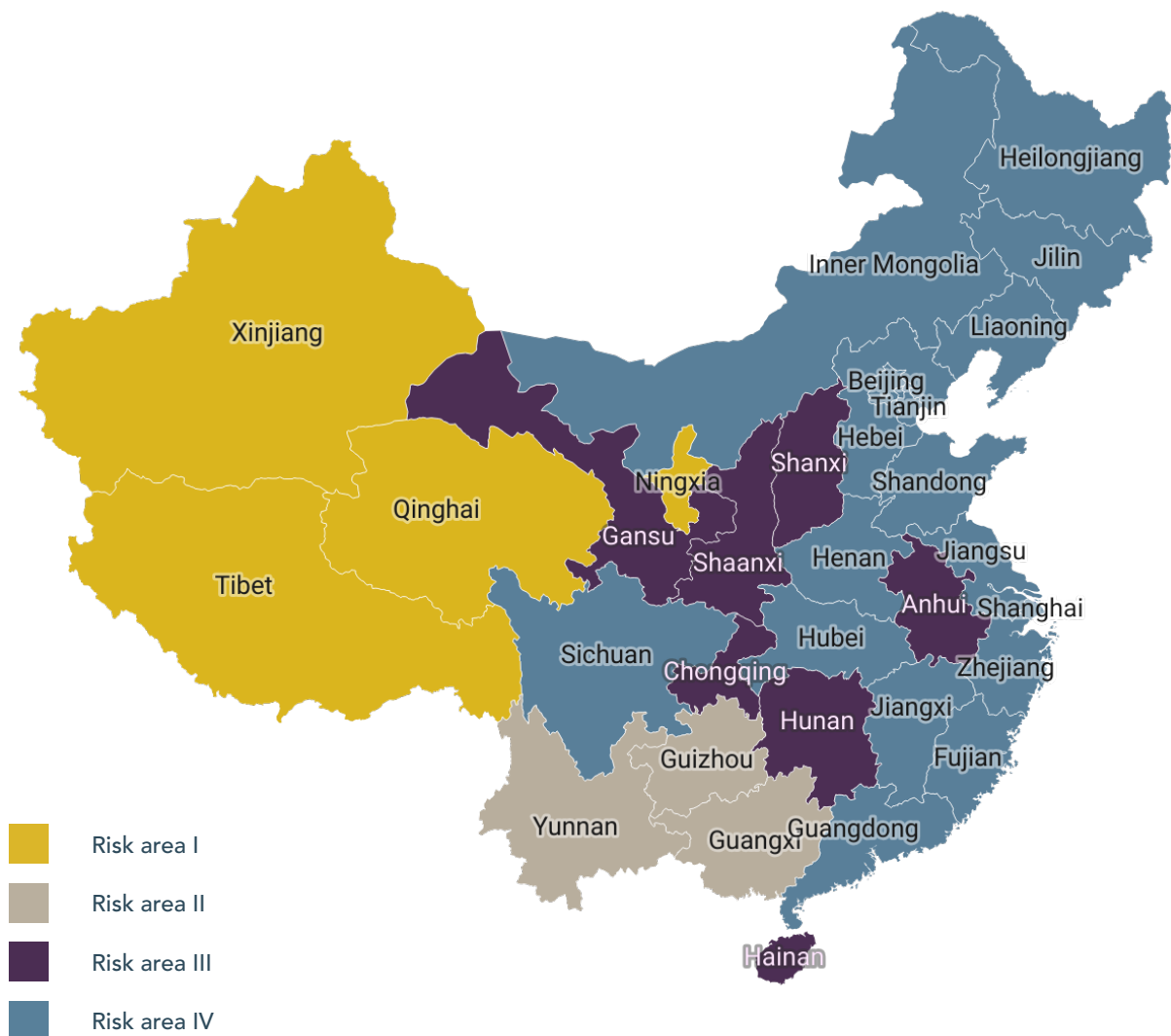


Figure 2: Regional distribution of state-imposed forced labour risks

Figure 2 shows that Xinjiang, Tibet, Qinghai, and Ningxia fall into the highest risk category (risk area I). The second highest risk category consists of the cluster Yunnan, Guizhou, and Guangxi (risk area II). The third highest risk area is somewhat more dispersed, consisting of relatively poor provinces in Central China (risk area III). Provinces with scores above 40 are mainly located along the economically wealthy east coast as well but also include Inner Mongolia, Sichuan, Hubei, and Henan (risk area IV). Our document analysis suggests that solar panel manufacturers' state-imposed forced labour risks are mainly linked to the risk areas I–III as well as Inner Mongolia in risk area IV.

II.5. Method and Data

II.5.1 Scope of This Research

This report explores forced labour risks in the photovoltaic value chain in China. The basis for the investigation are the manufacturers listed in appendix 1. In addition to these brands, we investigated major Chinese equity and joint-venture partners related to them. To this end, we used a company registration database and business reports to identify major shareholders and collaboration partners.

Part III (supplier risk assessment) includes only those solar panel manufacturers for which our search generated relevant information. It is important to note that not being mentioned in this assessment is not the same as having no issues because we cannot know why we could not find relevant information. Thus, the overall risk patterns identified in this report still can be relevant and useful for other solar panel suppliers, as many of them share common practices and, by extension, human rights risks.

II.5.2. Risk Matrix

Corporations associated with human rights risks receive risk grades based on an overall assessment (sections under each brand). Besides a presentation of the data and an interpretation in light of human rights, we provide for each solar panel manufacturer with findings a risk matrix (see figure 3) that captures the previously introduced forced labour systematisation (section III) and identified spatial risk patterns (section IV).

Due to the highly repressive context in risk area I, the classification spectrum is narrow (very high – high). The lower bound widens for risk area II (very high – medium) and for risk areas III and IV (very high – moderate). When a company directly causes or contributes to human rights violations, human rights violations represent legal risks, while being linked to adverse human rights impacts entails mainly reputational risks. Risk classifications apply only to fields with findings.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause / contribute	Very high – high Legal risks	Very high – medium Legal risks	Very high – moderate Legal risk	Very high – moderate Legal risks
	Linked	Very high – high Reputational risks	Very high – medium Reputational risks	Very high – moderate Reputational risks	Very high – moderate Legal risks

Figure 3: Risk matrix template

II.5.3. Data

Data for the analysis in this report come exclusively from publicly available internet sources. No information was retrieved through onsite visits, interviews, or solicitations from individuals or organisations.

We collected documents from WeChat (Weixin, a major social media platform in China) and conducted a general search through China’s largest search engine, Baidu. For each query, we went through the 100 most relevant hits, i.e., pages 1–10 in search results. We used company names in conjunction with functional keywords such as "transfer" or "poverty alleviation", as well as regional keywords such as "Xinjiang" or specific jurisdictions that are known for participating in labour transfers. We limited our search to hits after 2014, i.e., when President Xi Jinping began to deploy labour transfers as a means of poverty alleviation and political control. Occasionally, however, we look back further in time to identify patterns or trends.

Besides Chinese language sources, we refer to legal documents, academic articles, CSO reports, and English language newspaper articles to provide context, assess implications, and broaden the perspective.

II.5.4. Methodology

After identifying relevant sites to investigate, we searched for (Chinese language) government documents, reports, and news articles online. WeChat, government websites, and online news outlets are the main platforms for communicating public information on poverty alleviation and labour transfer schemes, as well as national unity policies (which are often cited as the main framework for justifying political repression against targeted ethnic groups).

The analysis for this report was not automated. This means that we read all information and decided on its relevance based on our subject matter expertise and additional context research. We evaluated approximately 5000 government documents, articles, and reports. 5% of these documents were relevant, and they included an analysis of suppliers' links to labour transfers and vocational training in the context of poverty alleviation programmes.

III. Context Analysis

This part of the report reviews current research on state-imposed forced labour practices in Xinjiang and beyond. The findings indicate that poverty alleviation policies requiring Uyghurs to participate in government-organised labour transfer programmes are also enforced across other ethnic minority areas in China. Additionally, the report addresses industry-specific human rights due diligence concerns related to photovoltaic poverty alleviation (PVPA) programmes.

III.1. State-Imposed Forced Labour in Xinjiang

The Chinese government officially adopted in 2014 the Targeted Poverty Alleviation (TPA) as the main political strategy to get rid of poverty in Xinjiang and other western and central provinces. TPA consists of three distinct enforcement layers:

- Fixed-point poverty alleviation schemes (dingdian fupin) pair central-level party and government organisations as well as state-owned enterprises (SOEs) with impoverished counties or villages.
- Counterpart poverty alleviation (dukou fupin) matches wealthy provinces and cities in China with poor regions in western and central China.
- Paired assistance (jiedui bangfu) assigns individual local leaders, cadres, public employees, and party members direct responsibility for helping designated households get rid of poverty.³²

To increase their incomes, registered poor farmers and herdsman are channelled into wage labour.³³ Policies related to this objective go under the term 'industrial poverty alleviation' (chanye fupin). Registered poor are either employed at factories close to their homes in poverty alleviation workshops, relocated within their home province to resettlement sites adjacent to industrial areas, or transferred (temporarily or permanently) to factories in other provinces. Employers benefit from state-organised labour programmes because they can assign these workers tasks and positions that are not popular among the regular workforce. In addition, employers receive job stabilisation subsidies, which reduces labour costs.

III.1.1. Poverty Alleviation as a Means of Control and Repression

In Xinjiang and increasingly in Tibet, industrial poverty alleviation and vocational education have become part of the Chinese government's national unity policies. According to the government's white paper "Employment and Labour Rights in Xinjiang", dated September 2020, terrorists, separatists, and religious extremists in southern Xinjiang are a root cause of poverty, as they "*incite the public to resist learning the standard spoken and written Chinese language, reject modern science, and refuse to improve their vocational skills, economic conditions, and the ability to better their lives.*"³⁴ Turkic ethnic groups are sent to "Vocational Education Training Centres" (VETC) and, upon "graduation", transferred to factories in Xinjiang or other provinces. The Xinjiang report of the Office of the United Nations High Commissioner for Human Rights states:

32 Qingjie Zeng, "Managed Campaign and Bureaucratic Institutions in China: Evidence from the Targeted Poverty Alleviation Program," *Journal of Contemporary China* 29, no. 123 (2020): 400–415.

33 Tsai, Wen-Hsuan, and Xingmiu Liao. "Mobilizing cadre incentives in policy implementation: Poverty alleviation in a Chinese county." *China Information* 34, no. 1 (2020): 45-67.

34 "OHCHR Assessment of Human Rights Concerns in the Xinjiang Uyghur autonomous region, People's Republic of China," OHCHR, accessed March 13, 2023, <https://www.ohchr.org/en/documents/country-reports/ohchr-assessment-human-rights-concerns-xinjiang-uyghur-autonomous-region>.

[T]he VETC system amounts to large-scale arbitrary deprivation of liberty through involuntary placements in residential facilities and compulsory “training”. Individuals in the system are, as a result, under a constant “menace of penalty”. For example, detainees in the VETC facilities told OHCHR they had to work within the VETC facilities as part of the “graduation process”, with no possibility of refusal for fear of being kept longer at the facilities. Additionally, rules in the XUAR Regulation on De-extremification and other laws require businesses and trade unions to help reduce extremism, using the law’s broad definition of what counts as religious “extremism”.³⁵

Uyghurs and other ethnic groups in Xinjiang can also be sent directly—without “vocational education”—to factories as surplus labour. Originally introduced as part of national poverty alleviation strategies, labour transfers were framed by the Chinese government as a legitimate means of modernising the workforce, reducing rural surplus labour, and increasing income levels. In practice, implementation involves tight administrative control, top-down quotas, a mix of direct placement, incentivised migration, and the construction of satellite factories near resettlement zones to “send work to the doorstep.” In Xinjiang, these transfers are often carried out in tandem with other state programmes such as land rights transfers and poverty registration, forming part of a larger social engineering effort.³⁶

While some labour transfers across China may seem voluntary or economically beneficial, multiple sources document that the programme has become coercive, constitutes forced labour, and violates human rights.³⁷ Xinjiang’s 13th Five-Year Plan on Poverty Alleviation admits that labour transfers and employment are not voluntary, as there is “*insufficient willingness of the poor people to gain employment, making it difficult to transfer jobs and increase income.*” Implementation of the forced labour regime in Xinjiang and Tibet relies on the same system of delegated responsibilities as in other ethnically autonomous regions. Adrian Zenz, a leading scholar in the field of forced labour in Xinjiang and Tibet, cites official Chinese government documents stating that the aim of eradicating poverty is commensurate with “military command” and that every administrative level imposes pressure on each successive lower level to “consolidate poverty alleviation responsibilities and increase the effectiveness of accountability.”³⁸

The coercion stems not only from the threat of internment for refusal to comply but also from political indoctrination, surveillance, and militarised training regimens that accompany these placements. Transfers are justified under a so-called “civilising mission”, aimed at transforming Uyghur and other minority populations into compliant, industrial workers aligned with Han cultural norms. Many transferred individuals are subjected to strict discipline, are separated from their families, and have limited or no say in their placement. Scholars like Michael Clarke and Jan Švec document how these programmes blend economic aims with ideological control, functioning within a settler-colonial framework that seeks to dissolve ethnic identity through social re-engineering.³⁹ Thus, labour transfers operate not only as labour market tools but also as mechanisms of assimilation, displacement, and systemic repression.

35 “OHCHR Assessment of Human Rights Concerns in the Xinjiang Uyghur autonomous region, People’s Republic of China.”

36 Adrian Zenz and I-Lin Lin, “Forced Labor, Coercive Land-Use Transfers, and Forced Assimilation in Xinjiang’s Agricultural Production,” Published by the International Network for Critical China Studies, 2024.

37 See Jan Švec, “Labour Transfers as a Means of ‘Civilizing’ and Forcibly Assimilating Ethnic Minorities in Western China,” *Central Asian Survey* 41, no. 3 (2022): 385–401; Zenz and Lin, “Forced Labor, Coercive Land-Use Transfers, and Forced Assimilation in Xinjiang’s Agricultural Production”; Adrian Zenz, “The Conceptual Evolution of Poverty Alleviation through Labour Transfer in the Xinjiang Uyghur Autonomous Region,” *Central Asian Survey* 42, no. 4 (2023): 649–73.

38 Adrian Zenz, *Beyond the Camps: Beijing’s Long-Term Scheme of Coercive Labor, Poverty Alleviation and Social Control in Xinjiang* | *Journal of Political Risk*, n.d., accessed October 10, 2022, <https://www.jpplrisk.com/beyond-the-camps-beijings-long-term-scheme-of-coercive-labor-poverty-alleviation-and-social-control-in-xinjiang/>.

39 Jan Švec, “Labour Transfers as a Means of ‘Civilizing’ and Forcibly Assimilating Ethnic Minorities in Western China,” *Central Asian Survey* 41, no. 3 (2022): 385–401; Michael Clarke, “Xinjiang in the 21st Century: Surveillance, Social Reengineering and Settler Colonialism in Xi Jinping’s New Era,” in *Critical Issues in Contemporary China* (Routledge, 2025).

In Xinjiang, the Chinese military has a central role in planning and managing state-imposed forced labour. In this context, a key actor is the Xinjiang Production and Construction Corps (XPCC), which functions as a regional government, paramilitary organisation, and large-scale corporate enterprise. The XPCC runs prisons, media outlets, schools, farms, enterprises, and mines in Xinjiang. A report from Sheffield Hallam University investigates the role of the XPCC and concludes that:

*XPCC is involved in a pervasive programme of egregious rights violations that affect the most marginalised people in the Uyghur Region. The region, its people, and their identities are considered critical security threats to China's cultural integrity, the stability of the state's borders, and the absolute authority of the CCP. In the last five years, in particular, the XPCC has played a critical role in suppressing Uyghur life, culture, and identity through the following means: extrajudicial internment and imprisonment, land expropriation, forcible migration of people, repressive preemptive policing, social engineering, religious persecution, and forced labour.*⁴⁰

III.1.2. Labour Supply Through State-managed Transports

Aiding Xinjiang through fixed points and counterparty assistance continues to fuel the region's economy, and with these poverty alleviation schemes, the risk of state-imposed forced labour remains high. Xinhua reports that during an aid promotion ceremony in Hotan City in December 2024, aid contracts worth RMB 120 billion (about € 14.2 billion) were signed and more than 400 enterprises participated.⁴¹ There are strong indications that farmers and herdsmen do not move freely or independently but are channelled through organised labour exports. For example, a work report from January 2024 on the orderly transport of farmers from Xinjiang to Jiangxi states:

"The meeting fully acknowledged the proactive measures taken by the Jiangxi Front Command for Xinjiang Assistance in promoting the orderly transfer of labour. Positive results were noted in building a labour cooperation bridge between Jiangxi and Xinjiang, carrying out vocational training, and leveraging the support benefits of aid-to-Xinjiang projects. The meeting emphasised the need to raise political awareness that employment is the foundation of people's livelihoods, and employment assistance for Xinjiang is a key aspect of the partnership assistance work. Effectively carrying out employment assistance plays a vital role in promoting local economic development, enhancing ethnic unity, and maintaining social stability in recipient areas."



Figure 4: Counterparty assistance from Tai'an City in Shandong to Yuepuhu County in Xinjiang is represented under the slogan "Organise youth to seek employment outside their hometowns, promoting job creation and increasing income for the community." July 2024⁴²

40 Laura T. Murphy et al., "Until Nothing Is Left," China's Settler Corporation and Its Human Rights Violations in the Uyghur Region: A Report on the Xinjiang Production and Construction Corps. Sheffield Hallam University Helena Kennedy Centre for International Justice. Ons/3/38/% E5 85 (2022): A8.

41 "2024年新疆第四场产业援疆集中推介签约超1200亿元-新华网," 2024, <http://www.xj.xinhuanet.com/20241212/5359bda6ff90488cafd0d8a034d886af/c.html>.

42 "组织青年外出就业·促进群众就业增收 - 今日头条," 2024, <https://www.toutiao.com/article/7393630127164277263/>.

The XUAR regulations for 2023 regarding support for transferring surplus rural labour indicate a preference for exporting farmers and herdsmen in an "organised" manner and on a "large scale". The financial subsidies escalate in proportion to the distance of new employment from the workers' homes in Xinjiang and the length of time they remain at the factory.⁴³ Another indication of institutionalised labour transports comes from a note from the Kuqa public employment service published in March 2025, which refers to regulations according to which local governments, townships, villages, and job brokers can be reimbursed for costs arising from the organised transport of surplus rural labour to factories.⁴⁴



Figure 5: Workers from Lanping County, Yunnan, are "exported" to Urumqi, Xinjiang, for picking cotton.⁴⁵

Xinjiang does not only export workers; it also receives labour transfers from other provinces. For instance, the Ningxia Labour Service reports that the province has set up 10 labour service stations in Xinjiang, tasked with coordinating labour exports. According to the note, labour stations "actively build close cooperative relations with enterprises in Xinjiang" and "realise the optimal allocation of labour resources."⁴⁶ In Ningxia, many farmers and herders belong to the Hui ethnic group. Many Muslims in Ningxia face similar threats to Turkic people in China.

Besides a growing network of cross-provincial labour transports, aid to Xinjiang also comes in the form of East Coast companies building factories in the XUAR. Shandong, for instance, runs a scheme through which companies establish regional headquarters in XUAR counties. Companies then connect these headquarters to microindustry parks in townships, small-scale satellite factories in villages, and so-called family poverty alleviation workshops.⁴⁷

III.1.3. Uyghur Forced Labour in the Photovoltaic Sector

The photovoltaic (PV) or solar panel sector is systemically linked to Uyghur forced labour, primarily through the upstream segments of its supply chain, including quartz mining, metallurgical-grade silicon (MGS), and polysilicon production. These stages are dominated by production facilities located in the Xinjiang Uyghur Autonomous Region. Reports by Murphy and Elimä (In Broad Daylight, 2021)⁴⁸

43 "新疆维吾尔自治区农村富余劳动力转移就业以奖代补政策," Weixin Official Accounts Platform, 2023.

44 "关于劳务输出过程中所发生的相关费用支出的公示," 2025, <https://www.xjkc.gov.cn/zwwgk/fwgk/20250507/11168705.html>.

45 兰坪县融媒体中心, "兰坪县102名劳动力转移就业人员赴新疆乌鲁木齐务工," Weixin Official Accounts Platform, 2022.

46 网易, "宁夏驻新疆劳务工作站再添新成员," 2024, <https://www.163.com/dy/article/J1L79LPM0550TYQ0.html>.

47 "就业援疆结硕果_光明网," 2023, https://politics.gmw.cn/2023-09/17/content_36838418.htm.

48 Murphy and Elimä, In Broad Daylight: Uyghur Forced Labour in Global Solar Supply Chains.

and Crawford and Murphy (Over-exposed, 2023)⁴⁹ document how key solar material suppliers, such as Hoshine Silicon Industry, Daqo New Energy, TBEA/Xinte, GCL-Poly, and East Hope, participate in these government-run programmes by receiving “surplus” labourers. The two reports show that programme participants are under constant surveillance, ideological training, and coercive incentives, including threats to their families or restrictions on mobility and wages. Companies located in industrial parks governed by the Xinjiang Production and Construction Corps (XPCC) benefit from government subsidies and infrastructure support while absorbing transferred labour.

Uyghur forced labour is linked to the global solar panel manufacturing value chain. Polysilicon produced in the Uyghur Region accounted for around 45 per cent of the global supply in 2020 and still comprised 35 per cent as of 2022. In addition, the region produces an estimated 32 per cent of global MGS. Since polysilicon and MGS are blended during manufacturing, exposure to forced labour at any upstream stage can contaminate the entire downstream product chain, including wafers, cells, and modules.

The report “Over-Exposed” reveals that many leading solar companies remain tied to the XUAR through direct sourcing or sub-suppliers, including Canadian Solar, Trina Solar, LONGi, JA Solar, and Jinko Solar. While some companies claim to have created bifurcated supply chains that exclude XUAR inputs for exports to the United States under the Uyghur Forced Labour Prevention Act (UFLPA), evidence suggests that these represent only a small share of global output. From a UNGP perspective, the separation of supply chains for different markets does not constitute an adequate or even relevant mitigation approach. Moreover, many of these firms still rely on suppliers who themselves remain exposed to forced labour, and blending of materials makes full segregation nearly impossible without extensive reengineering of supply chains.

III.2. State-Imposed Forced Labour Beyond Xinjiang

While state-imposed forced labour in Xinjiang is relatively well established, there is little research on other regions and provinces in China where similar poverty alleviation programmes have been implemented. To assess the risk of state-imposed forced labour beyond Xinjiang, we reviewed academic research as well as Chinese government documents. The following sections present our findings suggesting that:

- Poverty alleviation serves as a pretext for surveillance. The main instruments in this context are resettlements, which subject the poor to intensified grid governance. The latter divides communities into small, cellular units or grids, each monitored by designated cadres that are responsible for reporting on residents’ activities, resolving disputes, and enforcing state directives. The information that the cadres act upon increasingly comes from a comprehensive data-driven system that monitors registered individuals living in poverty nationwide.
- Registered poor and marginalised ethnic groups are subjected to the same poverty alleviation measures as Turkic groups in Xinjiang, including labour transfers, resettlement, state-organised job placements, skill training, and ideological re-education.
- Similar to the case of Xinjiang, enforcement of poverty alleviation policies relies on quotas and targets with strong political and economic incentives to meet these objectives through persuasion and coercion.
- The principal difference between the state-imposed forced labour regime in Xinjiang and other regions is the involvement of military repression and existential threats.

49 Crawford and Murphy, Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing.

Not all poverty alleviation employment is involuntary, but none of them can be presumed to be a free choice without clear evidence. However, it is challenging, if not impossible, to obtain meaningful confirmation that government-allocated employment does not amount to state-imposed forced labour, as acknowledging that recruitment or employment has been non-consensual would indicate a lack of gratitude and loyalty towards the party's beneficial policies. In Xinjiang, this would be a sign of religious extremism. In other regions, the consequences are probably not as harsh, but the threat is serious enough to constitute a “menace of penalty”. As a result, poverty alleviation through labour programmes in other western and central regions of China also entails a high risk of state-imposed forced labour, as there is an imminent threat of punishment for those who refuse state-allocated employment.

III.2.1. Non-voluntary Participation in Poverty Alleviation Measures

The following analysis shows that state-allocated employment of registered poor cannot be assumed to be a free choice, whether it is at their doorstep or thousands of kilometres away in another part of China. On the one hand, cadres and government officials have strong political incentives to persuade or even force registered poor into state-allocated employment. These incentives come from an administrative system that evaluates individuals and organisations based on quotas and comparative performances. On the other hand, poverty and its solution through labour are embedded in a discourse on values, character, mental models, and political loyalty. This discourse is mobilised to make job offers a duty. Declining an offer is not a choice but signals the need for education, which will inevitably lead to employment. In the following sections, we will discuss these two elements of coercion by examining previous research, Chinese government documents, and relevant case examples.

III.2.2. Policy Quotas and Administrative Competition

Administrative units assigned with the task to implement poverty alleviation policies are subject to regular performance evaluations. Fixed point and counterpart units receive a grade: excellent, satisfactory, average, or poor performance. Only the top 30% are considered excellent or acceptable performers according to the State Council's assessment methods.⁵⁰ Thus, performance is measured against other organisations, which creates pressure to report success and outperform them. The need to perform well and, if possible, to stand out generates political pressure that is handed down to grassroots CCP cadres and government employees who do the groundwork of implementing poverty alleviation. A work report from a Yunnan village demonstrates the regular connection between labour arrangements and poverty alleviation targets.

We assigned 177 poor households to 18 staff members, ensuring that each household had a designated support contact. As scheduled, our commission made several visits to impoverished families and vulnerable groups [...]. We provided technical training for young adults in the village and arranged employment for some villagers in the industrial park to address job challenges. [...] Thanks to this comprehensive support, Guandu Village in Liuchi Township lifted 14 households (70 people) out of poverty this year, successfully fulfilling its annual goals.⁵¹

50 Zhongyuan Wang, “Designated Accountability: Pair-Making Mechanisms and Evolving Central-Local Relations in China’s Targeted Poverty Alleviation,” *Journal of Contemporary China* 34, no. 152 (2025): 232–52.

51 “2024 年度扶贫工作自查报告 - 文档之家,” accessed June 15, 2025, <https://www.doczj.com/doc/5a11806616.html>.

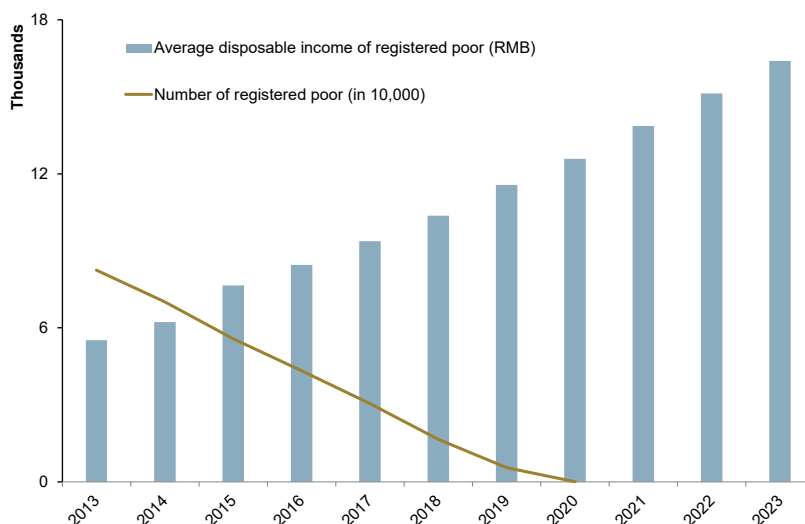


Figure 6: Official statistics on poverty alleviation progress (Source: China National Bureau of Statistics)

Another example comes from Baotou city in Inner Mongolia, where not only the number of people transferred represents a performance indicator but also the employment period: “As of the end of June 2024, 205,300 rural and pastoral labourers in the city had been transferred to employment, completing 103.67% of the target task, of which 173,000 had been transferred for more than 6 months, completing 101.76% of the target task.”⁵² Official statistics on poverty reduction and disposable income of registered poor illustrate the effect of top-down imposed poverty alleviation targets. In line with preset quotas, absolute poverty was linearly reduced during the first phase from 2014 to 2019 (figure 6).

III.2.3. Administrative Coercion and Persuasion

Academic research demonstrates the high motivation of cadres to resort to extreme measures to meet their quotas.⁵³ For example, a case study from a village in Shanxi province reports how local government officials sold agricultural land cultivated by impoverished farmers so that these would be forced to accept resettlement and work in a factory.⁵⁴ Another study showed how villagers in Gansu province were coerced into resettlement and wage labour when the local government threatened to cut them off from basic state support. To ensure that the resettled farmers would not return, the local government revoked their local household registration and sold their land.⁵⁵

The above-mentioned cases are associated with unambiguous forced labour indicators, as the menace of penalty is imminent. Most often, however, the coercion and persuasion preceding state-imposed forced labour arrangements are less overt but not necessarily less forceful. Such disguised forms are embedded in the work of poverty alleviation cadres. Their tasks are structured and evaluated along three elements: precise identification, tailored assistance, and effective management.⁵⁶ Each of these elements entails the risk of facilitating state-imposed forced labour.

A. Precise Identification

During this first phase, cadres must collect detailed information from rural households and identi-

52 “三送’举措促农村牧区劳动力转移就业-包头市人民政府,” 2024, <https://www.baotou.gov.cn/info/1145/262185.htm>.

53 Qingjie Zeng, “Managed Campaign and Bureaucratic Institutions in China: Evidence from the Targeted Poverty Alleviation Program,” *Journal of Contemporary China* 29, no. 123 (2020): 400–415, <https://doi.org/10.1080/10670564.2019.1645489>.

54 Kathryn Gomersall, “Imposition to Agonism: Voluntary Poverty Alleviation Resettlement in Rural China,” *Political Geography* 82 (October 2020): 102250, <https://doi.org/10.1016/j.polgeo.2020.102250>.

55 Yi Xiaocuo, “Recruiting Loyal Stabilisers: On the Banality of Carceral Colonialism in Xinjiang,” *Made in China Journal*, October 25, 2019, <https://madeinchinajournal.com/2019/10/25/recruiting-loyal-stabilisers-on-the-banality-of-carceral-colonialism-in-xinjiang/>.

56 Zeng, “Managed Campaign and Bureaucratic Institutions in China: Evidence from the Targeted Poverty Alleviation Program.”

fy those who should be registered as poor. Each poor household then receives a card for electronic storage of information such as family status, cause of poverty, income, and name of the cadre who is responsible for lifting the household out of poverty. A report from Sucheng county in Jiangsu province illustrates how resisting individuals are singled out through processes of precise identification: “*Counselling volunteers first visit households to understand their living conditions, home environments, and income sources, then categorise and address their psychological issues accordingly. Those identified as high-risk for returning to poverty, lacking the ability to become prosperous, or suffering from low confidence and weak willpower are targeted as key groups for counselling. At the same time, poverty alleviation policies are explained and promoted, helping them regain confidence in life and the courage to pursue a better future.*”⁵⁷

B. Tailored Assistance

During the second phase, responsible cadres are tasked with identifying the root causes of poverty and drawing solutions according to each household’s need.⁵⁸ There is a widely shared belief that the causes of poverty are psychological rather than social. Consequently, resistance to participate is not considered a free choice but a psychological disposition that requires treatment. For example, a research project at the Chinese Academy of Sciences funded by the Chinese National Science Foundation elaborated on the field of “*psychological poverty alleviation*”. The research found that “poor families tend to place more emphasis on consumption expenditure, believing that excessive spending is the cause of their poverty; in contrast, non-poor families focus more on income, believing that insufficient income is the main reason for their financial difficulties. These differing attributions lead to significant differences in attitudes and actions toward poverty alleviation and wealth generation. Poor families often undervalue education and have very low willingness to invest in it, making it especially difficult to break the cycle of intergenerational poverty.” In response to this analysis, the researchers carried out experiments in Inner Mongolia with the aim of “refining specific poverty alleviation measures” and “promoting sustainable behaviour among impoverished populations.” The project was also carried out in kindergartens to “break the cycle of intergenerational poverty” by “fostering scientific early education awareness and capabilities among young children’s parents and kindergarten teachers.”⁵⁹

C. Effective Management

The process of documenting, monitoring, and evaluating a poverty alleviation case is known as effective management. Digital applications record all measures and the performance of all involved parties. Local governments then analysed the data to rank cadres and hold aid officials accountable.⁶⁰ The Chinese Central Government published in April 2025 an article providing insights into the next phase of effective management, which will commence in 2026. The document explains that China has shifted from manual identification of vulnerable households (“people finding people”) to a more efficient, data-driven approach (“data finding people”) to monitor and deliver targeted support. This system integrates real-time data from multiple provincial departments, such as household registration, education, healthcare, and income, through a unified electronic governance platform. With over 44 datasets shared across 13 departments, the system can automatically flag individuals or regions at risk of falling back into poverty. The document exemplifies the new system, stating that if a household member suddenly falls ill, the system generates an alert, prompting local grid workers (for grid governance, see section VII) to conduct home visits, verify the situation, and initiate support measures like medical aid or employment services. It is claimed that this digital model reduces administrative burden, improves the accuracy and timeliness of poverty monitoring, and ensures that interventions are both responsive and precisely targeted.⁶¹

57 “舒城县高峰乡：心理疏导助力贫困户脱贫 - 安徽经济新闻网,” 2020, <http://la.ahenews.com.cn/luan/xzcx/2020-05-18/10790.html>.

58 Zeng, “Managed Campaign and Bureaucratic Institutions in China: Evidence from the Targeted Poverty Alleviation Program.”

59 “在贫困治理中加强心理扶贫_新民时政_新民网,” 2025, <https://shanghai.xinmin.cn/xmsz/2021/01/08/31880287.html>.

60 Wang, Zhongyuan. “Designated accountability: Pair-making mechanisms and evolving central-local relations in China’s targeted poverty alleviation.” *Journal of Contemporary China* 34, no. 152 (2025): 232-252.

61 王洋, “脱贫地区与其他地区差距持续缩小__中国政府网,” 2025, https://www.gov.cn/yaowen/liebiao/202504/content_7018063.htm.

III.2.4. Performing Gratitude to the Party

Since the late 1990s, the CCP has been trying to instil a "new morality" in Chinese citizens. According to CCP ideology, citizens should display a "high quality" (gao suzhi) based on four virtues: high moral standards, noble ideals, and high levels of education and discipline. In this discourse, poverty and backwardness are synonymous with a lack of suzhi. "New morality" has been further developed and institutionalised under Xi Jinping. Various regulations from the central to the local level require citizens to abide by and obey discipline (jilü), which includes "working discipline" and striving for "self-discipline". Thus, when farmers and herdsmen are reluctant to be channelled into factory work, they do not just decline a job offer or end employment prematurely, but they also demonstrate, from the CCP's perspective, a lack of morality and political loyalty, which justifies the use of ideological education and, if necessary, coercion. A report from Wudu, a district in Longnan City, Gansu Province, shows that helping people find jobs is not just a chance for the poor; it is a duty:

*"By paying close attention to the needs of those they are helping, the township has focused on unemployed workers from important groups like poor people who aren't looking for work, those being monitored for poverty, and struggling households. [...] Many previously unwilling-to-leave, 'idle at home' villagers were organised to visit the families of regular migrant workers and entrepreneurs. Experiencing firsthand the changes brought about by earned income and hearing about the evolution of their lives has motivated those at home to shift from 'I have to go' to 'I want to go'. These heart-to-heart talks have actively inspired people's sense of initiative and responsibility to seek work, fully promoting the traditional Chinese virtue of achieving prosperity through diligence."*⁶²

The right attitude towards poverty alleviation is also a necessary means to demonstrate loyalty towards the CCP. Education on the topic of "listen to the party, be grateful to the party, and follow the party" intimately connects with poverty alleviation.⁶³ Registered poor across the entire nation have to attend classes in gratefulness to the CCP, listen to speeches on gratefulness, and on various occasions tell their own story of gratefulness. The work plan on implementing poverty alleviation in Yichun City in Jiangxi Province illustrates the high relevance of ideological education in this vein. The workplan states, "In response to the problems of some poor people being content with the status quo, having a strong 'wait and rely' mentality, and having insufficient ability to get rid of poverty, we have carried out the 'Grateful to the Party, Listen to the Party, and Follow the Party' theme activity."⁶⁴ The workplan then details how learning to be grateful will put an end to "nanny-style poverty alleviation" and put an end to "the policy of raising lazy people".⁶⁵



Figure 7: Performing Gratitude at a Poverty Alleviation Workshop in Quanzhou City, Fujian Province

62 “陇南武都郭河：劳务输转一对一助推乡村振兴_中国发展网,” 2021, <http://www.chinadevelopment.com.cn/news/zj/2021/12/1756475.shtml>.

63 Yu Cheng, “Securing Legitimacy Through Poverty Alleviation: How China’s Communist Party Strengthens Grassroots Control,” *Journal of Contemporary China*, Taylor & Francis, 2025, 1–21.

64 “开展‘感党恩听党话跟党走’主题活动 深化扶贫扶志感恩行动工作方案 | 袁州区政府网,” 2019, <http://www.yzq.gov.cn/yzqrmzf/zwdt78da/201909/9ee3648075344c61a01124b9b1f7ad87.shtml>.

65 Ibid.

It is important to note that ideological education on morality and political loyalty is not confined to those who resist a state-allocated workplace, but it applies to all registered poor. Figure 7 depicts an example from an activity at a poverty alleviation workshop where workers gather with CCP cadres and the company management to present rehearsed narratives of gratefulness to the party. The worker in the picture is cited:

*"I tell my children, without the Communist Party of China, you wouldn't even be able to go to school. Without the Party's beneficial policies, our family wouldn't be living such a positive life today. When you grow up... you must be grateful to the Party, serve the country, and contribute back to society!"*⁶⁶

In combination with permanent monitoring of the registered poor and those considered to be at risk of falling back into poverty, ideological education accumulates into a display of political power that makes it difficult to resign or pursue a different livelihood without approval from responsible poverty alleviation cadres.

III.2.5. Working Conditions for Registered Poor Households

Registered poor farmers and herdsmen may find employment in poverty alleviation workshops (PAW) either locally or within their home province. These are small-scale factories operating as (informal) suppliers to larger companies. PAWs are typically set up near poor households, making it easier for villagers, especially women and the elderly, to engage in wage labour without migrating to distant urban centres. Their primary goal is to transition rural residents from agricultural dependence to wage income through low-skilled, labour-intensive manufacturing, such as textile production, electronic assemblies, handicrafts, and agricultural processing (Zenz, 2019; Springer Nature, 2024).

An article series at Sixth Tone on the impact of poverty alleviation campaigns on village life reported on the challenging working conditions at a poverty alleviation workshop in Lüeyang, Shaanxi province, where many residents are employed in low-paid, labour-intensive jobs such as assembling electronics. Workers, primarily women, often earn between 1,200 and 1,500 yuan per month, which is significantly less than what some had previously earned as migrant workers. Payment is based on output rather than time, and workers do not have formal labour contracts, social insurance coverage, or guaranteed wages. Workdays can be long and physically demanding, with no means to defend their legal rights. Supervisors, often drawn from local village leadership, also face difficulties securing stable orders and managing operations effectively, which entails the risk that adverse working conditions can turn even worse.⁶⁷

PAWs receive government subsidies for employing registered poor people, and workers are allocated with the help of job-matching services using digital platforms like WeChat.⁶⁸ A best practice case [sic] from Sichuan illustrates that performance in poverty alleviation is not merely related to work tasks but assesses values and attitudes that tie back to the previously introduced *suzhi* discourse. The case study report claims, "*This programme aimed to replace unconditional government subsidies with conditional cash rewards to incentivise excellent production, increased labour income, and adherence to proper social etiquette.*" *The poor were, among other things, evaluated based on a "moral point system", and "repeat offenders of negative behaviour faced reasonable penalties"*.⁶⁹

66 全州县人社局, "全州县'脱贫感党恩·奋进新起点'主题活动进企业(扶贫车间)交流座谈会日前举行," Weixin Official Accounts Platform, 2021.

67 Yuan Ye, "This Year, Remote Lüeyang Beat Poverty. Now Comes the Hard Part.," SixthTone, October 2020, <https://www.sixthtone.com/news/1006333/https%3A%2Fwww.sixthtone.com%2Fnews%2F1006333%2Fthis-year%252C-remote-l%25C3%25BCEyang-beat-poverty-now-comes-the-hard-part>.

68 International Poverty Reduction Center in China. "Sichuan Poverty Alleviation Incentive Scheme." In *Poverty Alleviation Case Analysis In China: Poverty Alleviation Best Practice via Practices and SDG Strategies*, pp. 83-89. Singapore: Springer Nature Singapore, 2024.

69 Ibid, p. 88-89.

Similar to workers in PAWs, farmers and herdsmen transferred as surplus labour across provinces may fall victim to coercive practices once they enter the factory. With respect to the Yi minority, academic research suggests ethnic minority status leads to discrimination in the same way as gender, race, and migration status allow for wage segmentation and precarious employment conditions.⁷⁰ What is more, employment agencies may further complicate the situation for workers. When workers are supplied as dispatched labour, there will be no labour contract between the factory and the worker. Wages will be paid by the dispatch agent. In case wages are withheld or social insurance contributions are not paid, it will be difficult for the worker to determine whether it is the factory or the agency that is not compliant. Having been dispatched far from home implies yet another problem. It can be difficult for the workers to simply leave and go back home since they might lack the financial means to travel such a long distance.

Publicly accessible information on the working conditions of the registered poor points to several risk areas.

- First, very little is known on the subject due to a lack of transparency and access to worksites, which undermines effective human rights due diligence.
- Second, many of the state-allocated jobs are in small-scale workshops or satellite factories with informal, precarious working conditions and low wages. Such factories may operate outside monitored supply chain links, thereby increasing the likelihood that multinational corporations sourcing from China benefit from state-imposed forced labour.
- Third, being registered as poor and an ethnic minority comes with enhanced political control and surveillance on the one hand and greater difficulties claiming legal rights and interests on the other. Hence, state-imposed employment entails a high risk of exposing workers to despotism that goes beyond the arbitrariness that other migrant workers experience.
- Fourth, state-imposed forced labour is used to re-educate and assess the poor. This objective builds a pretext for intrusive monitoring and excessive privacy violations, as well as stigmatising and humiliating treatment. Consequently, state-imposed forced labour carries a high risk of causing severe psychological harm.

III.2.6. Resettlement

Under China's Targeted Poverty Alleviation strategy, resettlement has become a central instrument for addressing rural poverty. Rather than dispersing resources across inaccessible or environmentally degraded villages, the state constructs large-scale, high-density resettlement sites into which selected poor households are relocated. National-level plans guide these projects, but provincial adaptations facilitate their implementation. Policies seeking to establish National Unity Demonstration Zones (NUDZ) frequently guide the resettlement of minoritised ethnic groups in China. These are state-designated areas aimed at promoting ethnic harmony, social stability, and the integration of ethnic minorities into the dominant political and cultural order. NUDZ serve both as symbolic showcases of ethnic unity and as practical governance mechanisms for disciplining difference and accelerating development, particularly in regions with large ethnic minority populations such as Xinjiang. In practice, they often involve state-led initiatives like bilingual education, industrial job placements, and ideological training to align minority populations more closely with Han-centric national norms.⁷¹

⁷⁰ Xinrong Ma and Heidi Østbø Haugen, "How Ethnicity Matters in Labour Studies: Harnessing Ethnic Marginality in Chinese Manufacturing," *Journal of Ethnic and Migration Studies* 48, no. 19 (2022): 4712–29.

⁷¹ Lindsey Christine Cook, "Unity and Diversity in Tension: China's National Ideology and Ethnic Theory Reflected in The Social Policies of Yunnan" (Aston University, 2023).

Local authorities are tasked with creating industrial parks, agricultural hubs, and training programmes to ensure that at least one working-age member per household can secure wage employment. In some cases, relocated villagers are also encouraged or forced to transfer their land rights to cooperatives or agribusinesses in exchange for dividends, further embedding resettlement into broader land governance reforms.⁷² Since farmland is rarely reallocated, resettlements mark a shift away from rural to urban-style housing and livelihoods, a change that facilitates greater surveillance and political control. For example, the spatial layout of resettlement sites allows local authorities to implement grid-style governance, with designated cadres responsible for surveillance, ideological work, and dispute resolution within each residential block. Political education sessions and regular home visits are used to inculcate loyalty to the Communist Party and to detect signs of dissent or non-compliance. Additionally, by removing residents from familiar social environments and placing them in unfamiliar, state-managed settings, the resettlement process itself disrupts traditional community networks and reinforces dependence on formal governance structures.⁷³

Resettlement is often not free; it necessitates levies that partially cover the costs for the relocated and impoverished. As a result, resettlements impose a significant financial burden on poor households, which leads to high levels of debt caused by increased housing costs, interruptions in income, and the loss of subsistence livelihoods. Numerous studies have documented such outcomes.⁷⁴ More recently, national regulations emphasised that relocation should be combined with wage labour. In Shaanxi province, for example, post-resettlement employment has taken the form of a structured “1–2–3–4” strategy. This framework aims to distribute employment opportunities across four categories: 10% of poor households are placed in public welfare jobs within the resettlement community (such as maintenance or sanitation), 20% are encouraged to become self-employed or operate small businesses in nearby towns, 30% are absorbed into industrial parks, agricultural parks, or tourism zones that are established near the new communities, and 40% are expected to engage in seasonal or long-distance labour migration.⁷⁵ With respect to employment policies in resettlement sites in Yunnan, Cook (2023) observes, “*Although the surplus rural labour transfer has been an issue for years, it has been picked up by government departments, particularly in the past five years or so, as a piece in the puzzle of poverty alleviation. Since 2019, the government has become more involved. The Ministry of Human Resources and Social Credit has gone from guiding and suggesting work in job fairs to going house to house and encouraging jobs repeatedly until accepted and then organising everything from training to shipping out to following up with workers after employment.*”⁷⁶

III.3. Photovoltaic Poverty Alleviation

Photovoltaic poverty alleviation (PVP) has been a complement to other income-increasing measures since the launch of Xi Jinping's comprehensive policy framework in 2014. During the past decade, PVP projects have added more than 26 GW of energy production capacity and involved 60,000 poor villages and 4.15 million registered poor households. Financial profits from this energy source have been used to finance public welfare jobs, and it fuels factories and agricultural businesses, providing employment to the registered poor.⁷⁷

72 Sarah Rogers et al., “China’s Rapidly Evolving Practice of Poverty Resettlement: Moving Millions to Eliminate Poverty,” *Development Policy Review* 38, no. 5 (2020): 541–54.

73 Cook, “Unity and Diversity in Tension: China’s National Ideology and Ethnic Theory Reflected in The Social Policies of Yunnan.”

74 See for example Lynette H. Ong, “State-Led Urbanization in China: Skyscrapers, Land Revenue and ‘Concentrated Villages,’” *The China Quarterly* 217 (2014): 162–79; Kevin Lo et al., “Spatial Restructuring through Poverty Alleviation Resettlement in Rural China,” *Journal of Rural Studies* 47 (2016): 496–505; Wenlue Wang et al., “Impact of the Ecological Resettlement Program on Participating Decision and Poverty Reduction in Southern Shaanxi, China,” *Forest Policy and Economics* 95 (2018): 1–9.

75 Rogers et al., “China’s Rapidly Evolving Practice of Poverty Resettlement: Moving Millions to Eliminate Poverty.”

76 Cook, “Unity and Diversity in Tension: China’s National Ideology and Ethnic Theory Reflected in The Social Policies of Yunnan,” 50.

77 NE-SALON, “屋顶光伏发电不够还贷款，全村欠下200多万债务，” Weixin Official Accounts Platform, 2024.

There are four main types of PVP:

1. Household PV projects using rooftops and courtyards,
2. Village-level PV power stations installed on land collectively owned by all villagers,
3. PV-agricultural projects where solar arrays are installed in a way that allows the continued use of farmland and/or provides energy to facilitate agricultural production,
4. Ground-mounted photovoltaic (PV) stations on barren land, hills, or other unused areas for large-scale energy production.

The initiation, organisation, management, and financing of PVP projects involve multiple parties, such as the Chinese Central Government; local governments (province, prefecture, municipality, and county); village committees (collectives); energy enterprises; local businesses; and the registered poor, i.e., farmers and herdsmen.

III.3.1. PVPA Regulation and Its Discontents

Photovoltaic power generation differs from traditional energy infrastructure in its relationship to land. Unlike fossil fuel facilities, many solar projects do not require extensive changes to land use or topography. This has given rise to new models such as “agrivoltaics”, “forest-PV”, and “fishery-PV” systems, which aim to integrate energy generation with continued agricultural or aquacultural activity. To define the use of land for solar panel projects, the Chinese government has released a series of policy documents. The 2015 document No. 5 states that land can be leased without government approval for solar panel installations on unused land, such as deserts or barren hills, if the project does not alter the surface or land function. However, any portion of a solar panel project involving permanent structures, such as substations or control centres, must go through the formal process of reclassification and approval as construction land.⁷⁸

The 2017 Document No. 8 introduced special provisions for PV poverty alleviation projects. These projects, typically located in impoverished areas and often aimed at supplying electricity and income to poor households, were granted greater flexibility. For example, solar arrays installed on farmland not designated as permanent basic farmland could be treated as continued agricultural use, provided they did not disrupt the land’s agricultural productivity. Such composite or “dual-use” PV projects are not defined in the 2017 policy, but the document encouraged local governments to set their own standards regarding array height, land surface protection, and ongoing agricultural viability.⁷⁹

Despite its potential benefits, PVPA presents numerous issues that heighten the vulnerability of those who are registered as poor:

- **Debt through co-financing requirements:** Although the government provides partial subsidies for solar panel installations, many rural households are still required to self-finance a substantial portion of the investment. Lacking savings or income, these farmers often take out bank loans or use all their remaining capital to cover the upfront costs. Instead of lifting them out of poverty, this often increases their financial vulnerability.⁸⁰

78 “《关于支持新产业新业态发展促进大众创业万众创新用地政策的意见》解读_政策法规解读_中国政府网,” 2015, https://www.gov.cn/zhengce/2015-09/19/content_2935263.htm.

79 “【政策】关于支持光伏扶贫和规范光伏发电产业用地的意见,” 2017, https://www.sohu.com/a/197166521_595960.

80 “让无数农户负债累累·光伏究竟是国家扶贫·还只是世纪最大骗局? - 今日头条,” 2023, <https://www.toutiao.com/article/7300467928783520297/>.

- **Operational challenges:** Once installed, solar panel systems require technical maintenance. However, many rural areas lack the necessary skilled personnel and operational frameworks. As a result, systems frequently fail to operate effectively, leading to little or no financial return, which further exacerbates the debt burden on farmers.⁸¹
- **Land transfer problems:** solar panel projects are often built on arable farmland, displacing farmers from their primary livelihood. The process of land transfer or leasing is often opaque and poorly regulated, leading to unfair contracts and the loss of long-term farming prospects. Farmers may sign unclear contracts and later find themselves without either income from the land or reliable solar panel revenue.⁸²
- **Low agricultural productivity:** Attempts to combine solar installations with greenhouses or specific crops like mushrooms have largely failed due to poor technical implementation, lack of local agricultural expertise, or economic infeasibility. Few projects achieve the promised synergy of clean energy production and sustainable agriculture. Furthermore, without proper industry standards or regulations, many solar-agriculture projects have devolved into land grabs masked as green innovation.⁸³
- **Governance and distribution issues:** In some regions, local governments collaborate with private companies to run solar panel systems, but the benefits are often unevenly distributed. There are complaints about mismanagement and unequal sharing of profits, undermining the idea that solar panel build-out is a public-good intervention.⁸⁴

Similar to other labour transfers, PVPA transforms the livelihoods of farmers and herdsmen. Some PVP projects will leave the poor worse off. But even when the measures are financially beneficial, they still make targeted citizens more vulnerable, in the sense that long-term financial commitments and diminished yields from agricultural subsistence increase the need to move into state-organised wage labour arrangements. In the following sections, we detail why PVPA should be regarded as a tool of state oppression and a means to leverage state-imposed forced labour.

III.3.2. Land Transfers and State-imposed Forced Labour

Land rights for solar panel projects can be obtained through lease agreements (both from state and collective landholders), land allocations for eligible utility infrastructure, and, in some cases, public transfer via bidding or auction. The promotion of lease-before-sale models marks a shift toward more flexible and cost-effective land use arrangements.⁸⁵ Despite these regulations, land use rights may be taken away unlawfully from tenants, or local governments may pressure them into transferring them. A case illustrating the issue occurred in 2022 in Shangbei Town, Hebei Province, where villagers claimed that their contracted farmland was forcibly cleared by construction teams associated with a PV power station project, without their consent or legal agreements in place. Though the project, initiated by Xingte New Energy, a subsidiary of the major energy company TBEA, had received formal approval and was categorised as a legitimate “agrivoltaic” (agriculture + solar) initiative, the actual on-the-ground implementation diverged from lawful procedures. By April 2022, over 1000 mu (approximately 165 acres) of land had been transferred, but more than 40 mu still belonged to 14 households who had neither signed land transfer authorisation forms nor lease contracts.⁸⁶ In this case public

81 “光伏扶贫工程为何‘晒太阳’-新华网,” 2020, https://www.xinhuanet.com/politics/2020-10/20/c_1126633730.htm.

82 腾讯网, “只见光伏, 不见农业: 光伏农业的神话与现实_腾讯新闻,” 2023, <https://news.qq.com/rain/a/20231127A07PKO00>.

83 腾讯网, “只见光伏, 不见农业: 光伏农业的神话与现实_腾讯新闻.”

84 “让无数农户负债累累, 光伏究竟是国家扶贫, 还只是世纪最大骗局? - 今日头条.”

85 吴永高, “对光伏用地还有疑问的, 看完这篇就全明白了~,” Weixin Official Accounts Platform, 2021.

86 每日经济新闻, “农民未签土地流转合同, 麦田还是被铲平! 光伏电站项目负责人被抓, 镇书记和镇长被免职,” 2022, <https://finance.sina.com.cn/jjxw/2022-05-20/doc-imcwipik0851210.shtml>.

authorities intervened; however, this is rarely the case because farmers and herdsmen usually do not dare to challenge local authorities and give up their use rights under pressure.

The risk of involuntary land transfers increases when tenants belong to economically and politically marginalised ethnic groups or are poor, and the project is deemed a measure to lift them out of poverty. In the context of Xinjiang, A recent article authored by Zenz and Lin show how land-use rights transfers are used as a mechanism to facilitate state-imposed forced labour by dispossessing minority peasants of their traditional agricultural livelihoods and pushing them into wage labour under coercive conditions.⁸⁷ The Chinese state pressures rural households to relinquish their land-use rights, often through intermediaries such as village committees or cooperatives, and transfers those rights to large agribusinesses or state-linked enterprises. Once dispossessed, farmers are often left with no viable means of subsistence and are compelled to work for the entities that now control their former land. In some cases, they remain on the same land but under strict production mandates, while in others, they are transferred to industrial zones or other regions for low-paid or unpaid labour.⁸⁸



Figure 8: Photovoltaic project close to Aral City, Xinjiang ⁸⁹

Land transfers not only sever farmers' ties to land and tradition but also enable tighter state surveillance, ideological indoctrination, and labour exploitation under the guise of rural modernisation. The energy created with photovoltaic poverty alleviation projects is used to scale agricultural businesses, which in turn allows for further land transfers. For example, the First Division of the Xinjiang Production and Construction Corps, in Aral City, Xinjiang, collaborates with Nanjiang Energy Group to build a "photovoltaics with modern agriculture" facility on a 17-acre area using flexible brackets. The company is installing pipes in the flexible photovoltaic area to transport fertiliser and water from a fish pond to the vacated land.⁹⁰ Such projects require infrastructure investments and benefit from economies of scale. They rely on centralised ownership of land use rights, which increases the risk of land transfers under duress.

87 Zenz and Lin, "Forced Labor, Coercive Land-Use Transfers, and Forced Assimilation in Xinjiang's Agricultural Production."

88 Zenz and Lin, "Forced Labor, Coercive Land-Use Transfers, and Forced Assimilation in Xinjiang's Agricultural Production."

89 腾讯网, "新疆阿拉尔: 立足沙漠资源优势 '农光互补' 促土地集约化利用_腾讯新闻," 2024, <https://news.qq.com/rain/a/20241210A08CHL00>.

90 腾讯网, "新疆阿拉尔: 立足沙漠资源优势 '农光互补' 促土地集约化利用_腾讯新闻."

III.3.3. Small-scale PVPA in Resettlements

Solar energy projects for poverty alleviation are frequently small-scale and rely on distributed layouts, i.e., arrays are installed across a wider area, on rooftops or on multiple land patches. Resettled farmers and herdsmen often integrate their new homes into such photovoltaic poverty alleviation projects when they relocate to new villages. Most distributed projects require financial commitments from the poor, covering between 30 and 95% of the costs. Farmers and herdsmen are eligible for dedicated PVPA loans.⁹¹ During the loan period, the electricity fees collected are mostly used to repay the loan and interest, and after the loan is repaid, all the income from the power station belongs to the farmers.⁹² Thus, while PVPA can increase poor households' income in the long run, they first have to shoulder an increased financial burden. In the context of resettlements or village committee-initiated PVPAs, loans cannot be assumed to be voluntary commitments, because individual households have little choice but to go along with such initiatives. As a result, PVPA finance pressures farmers and herdsmen to depart from traditional livelihoods and instead engage in wage labour.



Figure 9: Distributed PV poverty alleviation project in Batang County, Sichuan Province⁹³

In remote areas with underdeveloped power grids, distributed PVPA projects can meet energy needs. Yet, in the context of forced resettlement, solar panel projects are not neutral technologies but rather facilitators of state-imposed forced labour. Farmers and herdsmen do not just enjoy improved access to electricity; they are also expected to transition to a lifestyle that is commensurate with the Suzhi discourse and the idea that modernisation and labour discipline will make ethnic minorities more controllable. An example is the resettlement of the Jiaying Township in Batang County, located in the Tibetan part of Sichuan Province. According to a CCP report, almost 400 people were relocated in 2019 after having lived a life that was so secluded that the elderly had not seen cars before. The article states, *“To alleviate poverty, we must first strengthen resolve; we help the poor, not the lazy,”* said Zhaxi Ciren, the township chief of Jiaying Township. All houses in the new village were equipped with solar panels on their

91 “光伏扶贫主要扶持的是哪些项目? - 太阳能发电, 光伏电站, 并网发电站, 太阳能路灯_晶昶能官网,” No date, <http://www.jcnsolar-jx.com/articles/GuangFuFuPinZhu.html>.

92 媒体滚动, “警惕‘光伏贷’成为损害农户的‘套路贷,’” July 20, 2022, <https://finance.sina.com.cn/jjxw/2022-07-20/doc-imizirav4504556.shtml>.

93 赵雁周璐铭, “壮丽70年 | 易地搬迁走出穷境 光伏发电照亮前程,” Weixin Official Accounts Platform, 2019.

rooftops, and the energy generated was directed towards integrating resettled farmers and herdsmen into a new state-sanctioned and state-controlled economy. With respect to equipping resettlements with PVPA, the report says:

“These follow-up support measures will be actively pursued to broaden income channels for the people and ensure that those who relocate can move out, stay settled, attain growth, and become prosperous. The focus will be on vigorously developing production, cherishing the new homes, and relying on their own hard work to proactively escape poverty and build a joyful and fulfilling life.”⁹⁴

The logic of PV poverty alleviation as political instruments of assimilation and control extends to Xinjiang, where solar energy from distributed projects fuels small-scale factories at resettlement sites. An article in the People’s Daily reports on a photovoltaic poverty alleviation project in Agdala Town, Xinjiang, stating that the purpose is to “provide sufficient electricity to help local industrial poverty alleviation projects expand production capacity, improve efficiency, and absorb poor people into employment.” Another article in the People’s Daily on photovoltaic poverty alleviation in Qinghe County, Xinjiang, suggests that the income from such projects is used to finance targeted poverty alleviation measures: “Zhang Lu, manager of Qinghe County Zhonghui Photovoltaic Power Co., Ltd., stated, “Building village-level photovoltaic power stations is a concrete initiative by the Party and the state to help Qinghe’s poor households escape poverty. It is also a key measure in implementing targeted poverty alleviation in Qinghe County. While driving industrial development, the photovoltaic power stations have also become livelihood projects that benefit people of all ethnic groups.”⁹⁵

III.3.4. Large-scale PV Projects and State-imposed Forced Labour

In the context of Xinjiang, there are many large-scale solar energy projects that are associated with state-imposed forced labour risks. For example, the Xinjiang Daily reported in April 2024 on the solar panel project at the Aral Textile Industrial Park in Chang'an Town, Aral City, which is one of the largest single-unit photovoltaic bases under the Xinjiang Production and Construction Corps. Upon full completion, the project is expected to supply 5 billion kilowatt-hours of green electricity annually.⁹⁶ The project and its colocation with a textile industrial park illustrate how solar energy is becoming a commodity for industries that run on state-imposed forced labour. These upstream links are rapidly growing, as there are several large-scale projects in the making, such as a 10 GW project in Mulei County, Changji Hui Autonomous Prefecture, Xinjiang, or the 500 MW project in Atushi City, Kizilsu Prefecture, Xinjiang.⁹⁷ In the coming years, a further acceleration of solar-powered industries is to be expected as the Xinjiang Uygur Autonomous Region Development and Reform Commission, together with State Grid Xinjiang Electric Power Co., Ltd., issued a notice titled “On Deepening the Reform of New Energy Development Management and Optimising the Construction Management of New Energy Projects.” The notice stipulates that the approval authority for wind and photovoltaic projects will be delegated from the autonomous region level to local city and prefecture governments. This move aims to continuously expand the scale of new energy and accelerate the establishment of a new power system centred on renewables.⁹⁸

94 赵雁, “壮丽70年 | 易地搬迁走出穷境 光伏发电照亮前程。”

95 “新疆青河县: 光伏扶贫照亮群众的脱贫之路,” 2020, <http://xj.people.com.cn/n2/2020/0704/c394722-34133572.html>.

96 “航拍新疆 | 兵团单体容量最大的光伏基地加紧施工 - 天山网 - 新疆新闻门户,” 2024, https://www.ts.cn/xwzx/jjxw/202404/t20240426_20648532.shtml.

97 “超1100亿! 新疆光伏项目洪潮引领能源变革_建设_投资_转型,” 2025, https://www.sohu.com/a/871514612_121956422.

98 “新疆将风电光伏项目由自治区级备案下放至地州市_部门动态_新疆维吾尔自治区人民政府网,” 2024, <https://www.xinjiang.gov.cn/xinjiang/bmdt/202408/bb283dd8587b406083b28914e835d34c.shtml>.

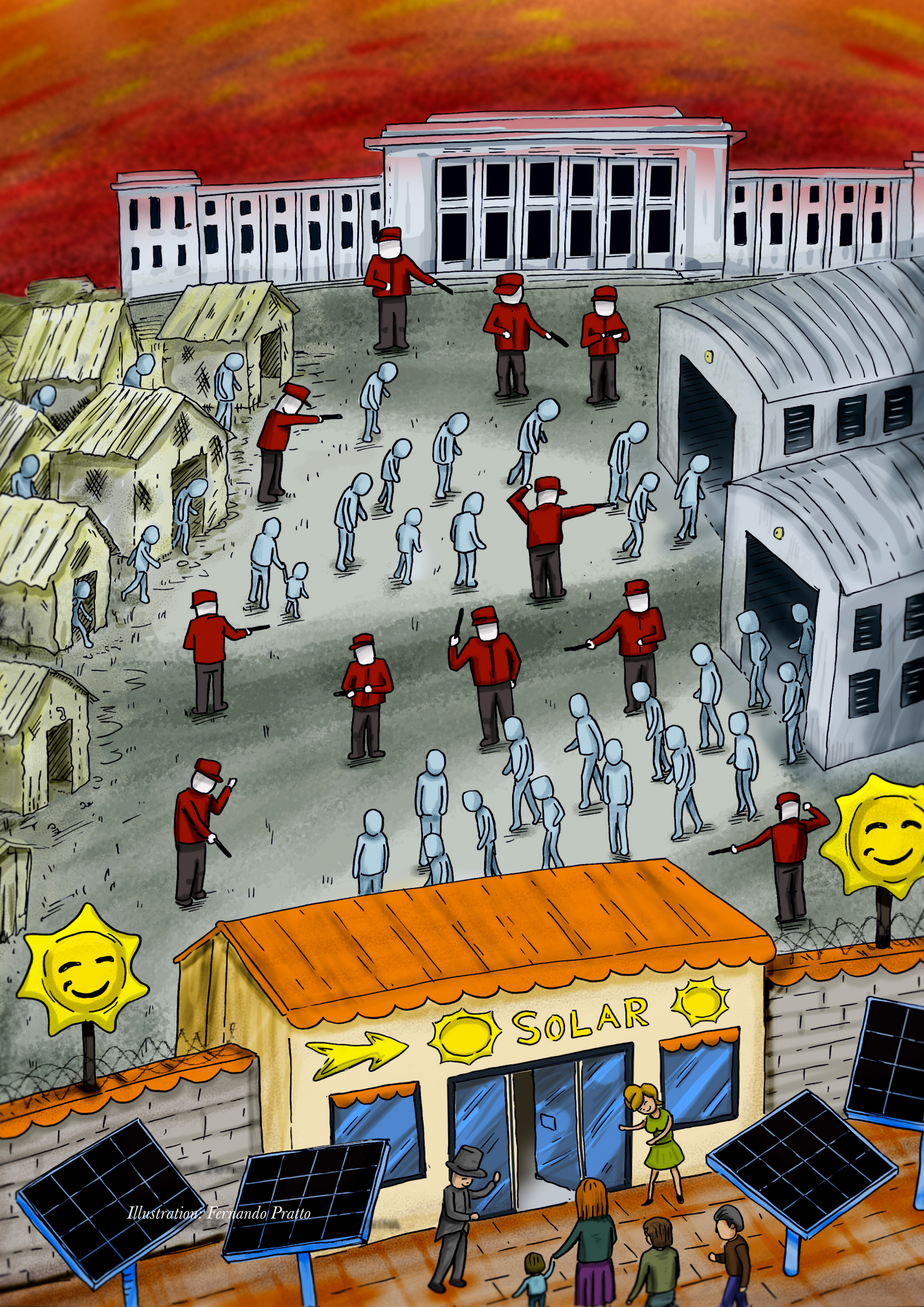


Illustration: Fernando Pratto

IV. Supplier Risk Data and Assessment

The following company risk assessment is based on the research outlined in previous sections in this report. We gathered data on all manufacturers listed in appendix I and then highlight relevant information for each company in a dedicated section. The data is organised by risk areas (area I vs. area II-IV), as well as the risks arising from photovoltaic poverty alleviation projects. After presenting the findings, we discuss and categorise the emerging human rights issues using a risk matrix. The section reports only on issues that we could directly attribute to a specific company.

IV.1. Canadian Solar

IV.1.1. Links to Xinjiang

The report “In Broad Daylight” from 2021 suggested that Canadian Solar maintains supply chain links to Xinjiang due to its sourcing relationship with GCL-Poly. In 2023, Crawford and Murphy analysed Canadian Solar’s upstream supply chain and found that the company is likely to continue sourcing from the XUAR. However, due to a lack of transparency, such relationships cannot be corroborated.

Our research suggests that Canadian Solar is about to increase its Xinjiang exposure. We accessed a report stating that in February 2024, Jinghe County signed an investment agreement with Canadian Solar, marking a major step in the region’s industrial transformation through renewable energy development. The agreement focuses on constructing a production base for solar power station components (support brackets and photovoltaic modules). According to the report, Canadian Solar committed to positioning Jinghe as a strategic hub for its expansion in northwest China. The company also expressed interest in promoting Jinghe more broadly through its global business network, aiming to attract further capital and talent.⁹⁹ A work report from the Jinghe county government mentions a follow-up visit in March 2024, during which the Party Secretary of the autonomous prefecture expressed strong support for the project.¹⁰⁰



Figure 10: Canadian Solar and Jinghe County signing an investment agreement ¹⁰¹

99 “精河县与阿特斯阳光电力(新疆)有限公司举行太阳能光伏电站配套产业链支架及组件生产项目签约仪式,” Weixin Official Accounts Platform, 2024.

100 “自治州领导在精河县调研,” Weixin Official Accounts Platform, 2024.

101 Weixin Official Accounts Platform, “精河县与阿特斯阳光电力(新疆)有限公司举行太阳能光伏电站配套产业链支架及组件生产项目签约仪式.”

We reviewed recent policies and labour transfer reports for Jinghe County, where Canadian Solar is investing. These documents do not only show that the county is deeply involved in the Xinjiang state-imposed forced labour regime but also that new energy and the photovoltaic sector are considered core partners in this vein. In particular, Jinghe County has implemented a comprehensive strategy to promote rural labour transfers and increase incomes. This strategy emphasises improving employment coordination, conducting detailed household-level surveys to identify labour resources, and providing skill training that aligns with industrial demands.¹⁰² In the first eight months of 2023, the county successfully transferred 17,253 rural surplus labourers, achieving 93.26% of its annual target. Among them were 1,335 individuals from formerly impoverished households.¹⁰³ To support these transfers, the local government initiated extensive cross-regional cooperation. It partnered with counties in southern Xinjiang (such as Kashi and Hotan) to match local workers with industries like textiles, solar photovoltaic manufacturing, and timber processing.¹⁰⁴ Officials conducted door-to-door employment assessments and matched workers to key sectors such as green mining and renewable energy.¹⁰⁵

IV.1.2. Photovoltaic Poverty Alleviation

Canadian Solar is involved in a diverse array of photovoltaic projects throughout China. The company's involvement includes a 150 MW agri-PV project in Guangxi as well as a 100 MW fishery-solar project in Jiangsu that combines aquaculture with clean energy production. In Shanxi, Canadian Solar has contributed to mountainous terrain projects and PV systems under the national poverty alleviation programme, including installations in Yuanqun and Shilou that total 40 MW. In Henan's Yucheng County, it has supported a 690 million RMB agri-PV project designed to fund rural employment and economic revitalisation. The company is also expanding its exposure to Xinjiang through supplying 1.5 GW of high-efficiency modules to the large-scale Tianshan North Slope New Energy Base in Hami.

Project Name / Location	Project Type	Capacity/ Investment	Description	Timeline
Laibin, Guangxi ¹⁰⁶	Agri-PV (Agriculture + Solar)	150 MW (installed: 148.9 MW)	Dual-use of land for farming and solar; uses BiHiKu7 high-efficiency bifacial modules (595–600W)	Under construction as of March 2023
Taizhou & Xuzhou, Jiangsu ¹⁰⁷	Fishery-PV Integration	100 MW total	Uses N-type bifacial modules; supports aquaculture jobs; annual power generation ~110 million kWh	Completed by 2023

102 “精河人社局抓实‘三个环节’推动农村劳动力转移就业-精河县政府网,” 2024, <https://www.xjjh.gov.cn/info/3061/179407.htm>.

103 “精河县劳动力转移就业铺就幸福致富路-精河县政府网,” 2023, <https://www.xjjh.gov.cn/info/2963/164841.htm>.

104 “行走新疆 | 精河:天山北坡经济带上的明珠,” Weixin Official Accounts Platform, 2016.

105 Weixin Official Accounts Platform, “自治州领导在精河县调研.”

106 “一地多用·促农增收 | 阿特斯高效组件助力广西来宾150兆瓦‘农光互补’项目·为乡村振兴增添绿色动能!,” Weixin Official Accounts Platform, 2023.

107 “光伏板下的宝藏!阿特斯如何用N型技术重塑江苏渔光互补新模式_项目_能源_发电量,” 2025, https://www.sohu.com/a/881415349_122001006.



Tianyu Solar Station, Zuoquan, Shanxi ¹⁰⁸	Mountain Terrain Solar Plant	63.5 MW	Built on 25° slopes; uses 600W+ modules; model for complex terrain installations	Operational as of late 2023
Yuanqu & Shilou, Shanxi ¹⁰⁹	PV Poverty Alleviation Projects	Yuanqu: 10 MW, Shilou: 30 MW	First-round poverty alleviation solar plants under the 13th Five-Year Plan	Commissioned during 2016–2020
Yucheng, Henan ¹¹⁰	Agri-PV Poverty Alleviation	RMB 690 million investment	Combines agriculture and solar; earnings fund rural public welfare jobs and land development	Started around 2019–2020
Hami City, Xinjiang (Tianshan North Slope Base) ¹¹¹	Module Supply for Utility-Scale Solar	1.5 GW (1500 MWp); RMB 1.02 billion bid amount	Canadian Solar selected as one of three suppliers; modules to be used in large solar farms	Procurement announced June 2023

IV.1.3. Risk Assessment

Canadian Solar is involved in distributed and agricultural photovoltaic projects through state-led poverty alleviation and rural revitalisation initiatives. These projects may indirectly support repressive governance and social control through debt finance, land use rights transfers, and industrial poverty alleviation employment. While this risk is moderate for most of Canadian Solar’s engagements, the Hami city energy project in Xinjiang links the company’s value chain to a very high risk of state-imposed forced labour, land expropriation, and coercive labour transfers.

Canadian Solar’s plan to build a production base in Xinjiang raises warning flags. Once operational, the company runs a very high risk of contributing to severe human rights violations. The company’s willingness to engage more instead of less with the XUAR raises doubts that the Canadian Solar’s management is committed to fighting forced labour.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	(Very high) (Legal risks)	No Findings	No Findings	No Findings
	Linked	High Reputational risks	High Reputational risks	High Reputational risks	High Reputational risks

108 “山地攻坚新标杆!阿特斯210组件赋能左权天峪光伏电站_技术_地形_土地,” 2025, https://www.sohu.com/a/www.sohu.com/a/880977071_122001006.

109 奔流写作小组, “阿特斯不相信眼泪,但相信瞿晓铎,” Weixin Official Accounts Platform, 2023.

110 奔流写作小组, “阿特斯不相信眼泪,但相信瞿晓铎.”

111 “晶科、阿特斯、正泰入围重能新疆天山北麓新能源基地项目组件采购订单-北极星太阳能光伏网,” 2024, <https://guangfu.bjx.com.cn/news/20241125/1412735.shtml>.

IV.2. Anhui Huasun

IV.2.1. Industrial Poverty Alleviation

Anhui Huasun received employment and social insurance subsidies for employing registered poor. Documents from 2023 and 2024 indicate that the company regularly participates in poverty alleviation placements and receives financial support.¹¹² Huasun is located in the Xuancheng Economic and Technological Development Zone in Anhui Province, which manages labour transfers, poverty alleviation, and resettlement-related employment through targeted job placement, enterprise collaboration, and financial incentives. Local poverty alleviation cadres actively match individuals from registered poor households to suitable positions in local firms and also organise household relocation.¹¹³ The development zone organises “direct recruitment buses” and on-site job matching to mobilise registered poor and migrant workers.¹¹⁴

Anhui Huasun also builds a new production facility in Tongliao City, Inner Mongolia.¹¹⁵ While this project is not operational yet, a review of industrial poverty alleviation in this jurisdiction indicates that the employment context is coercive and resembles some of the practices applied in Xinjiang. In particular, Tongliao’s approach to poverty alleviation through employment revolves around the systematic transfer of rural and pastoral labourers into wage employment, as outlined in the city’s “Three-Year Action Plan for the Transfer of Rural and Pastoral Labourers (2020–2022)” and further explained in the employment service policy interpretation document.

The three-year action plan issued by the Tongliao Municipal Government Office prioritises large-scale organised labour transfers among low-income and poor populations. The plan details targets of increasing the number of relocated farmers and herdsmen each year by 100,000 and specifies a number of 424,000 farmers and herdsmen until 2025.¹¹⁶ Vocational training programmes are to be aligned with market needs with an “order-based” system that seeks to match labour supply with employer demand.¹¹⁷

IV.2.2. Large-scale PV Projects

In October 2024, Anhui Huasun New Energy Technology Co., Ltd. announced that it started a comprehensive partnership project with Xinjiang Silu New Energy Development Co., Ltd., which is wholly owned by the military-run Xinjiang Production and Construction Corps’ (XPCC) Fourth Division in the Horgos Economic Development Zone.

The project aims at the industrialisation and deployment of high-efficiency heterojunction (HJT) photovoltaics. Under the agreement, Huasun will annually supply Xinjiang Silu with more than 1 GW of advanced heterojunction photovoltaic products, including silicon wafers, solar cells, and modules. The parties frame this collaboration as a strategic milestone that will strengthen Xinjiang’s role in the global solar panel market and create a new industrial cluster for high-efficiency solar energy in the region.¹¹⁸

112 “开发区2023年8月‘春风行动’就业和社会保险补贴申报情况公示-宣城经开区管委会,” 2023, <https://xceda.xuancheng.gov.cn/News/show/1507477.html>; “经开区‘春风行动’就业和社会保险补贴申报情况公示-宣城经开区管委会,” 2024, <https://xceda.xuancheng.gov.cn/News/show/1533981.html>.

113 “媒体聚焦 | 宣城经开区: 精准帮扶助就业,” Weixin Official Accounts Platform, 2020.

114 “惊喜! 安徽农民工春暖就业行动, 让家门口就业变成现实! _企业_家乡_宣城,” 2025, https://www.sohu.com/a/www.sohu.com/a/860550096_121956425.

115 “奇·达楞太带队赴安徽华晟新能源考察对接并见证项目签约,” 2024, https://tongliao.gov.cn/zwgk/szf/szfld/sz/qdlt/zyhdjh/202403/t20240326_644671.html.

116 “通辽市人民政府办公室关于印发《通辽市农牧民转移就业三年行动计划(2020–2022年)》的通知,” 2020, https://www.tongliao.gov.cn/zwgk/zfxgk/zc_13893/qtwj/202307/t20230722_372773.html?slb=true.

117 “内蒙古通辽: 力争年内新增新能源并网4GW、总量突破18GW-国际风力发电网,” 2025, https://wind.in-en.com/html/wind-2457380.shtml?utm_source=chatgpt.com.

118 “GW级! 华晟与新疆丝路签署战略合作, 加速异质结技术产业化进程 - 市场动态 - 江苏省光伏产业协会,” 2025, <http://www.jspv.org.cn/PlatformNews/46875.html>.

IV.2.3. Risk Assessment

Anhui Huasun is a state-owned enterprise and, therefore, operates not only as a commercial business entity but also as a facilitator for political objectives. The company is actively involved in poverty alleviation programmes, and a review of industrial poverty alleviation programmes applied to the jurisdictions where Huasun is operating indicates that there is a moderate (location in Anhui) to medium-high (prospective location in Tongliao) risk of contributing to state-imposed forced labour. In addition, the company’s involvement in a large-scale PV project in Xinjiang links Hansun’s value chain with a high risk of state-imposed forced labour.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	Moderate Legal risks	Moderate Legal risks
	Linked	High Reputational risks	No Findings	No Findings	No Findings

IV.3. CHINT Group

IV.3.1. Industrial Poverty Alleviation

CHINT Group employs minoritised farmers and herdsmen through various government policies and initiatives:

Turkic ethnic groups: CHINT built a 300 MW solar module factory in Jiuquan City, Gansu Province.¹¹⁹ In this context, the company signed a strategic collaboration agreement with Akesai Kazakh Autonomous County, which belongs to Jiuquan City. This agreement will ensure a stable labour supply, as local officials from Jiuquan and Akesai emphasised the broader goal of building a national demonstration zone for the renewable energy industry.¹²⁰ Kazakhs are one of the Turkic minorities next to Uyghurs who face existential threats and severe political repression in China.

Jiuquan borders Xinjiang in the west, and the city government signed a strategic cooperation agreement with neighbouring Bayingol city in Xinjiang. In this context, a high-level delegation from Bayingol visited CHINT’s production site in Jiuquan, which suggests a link between this factory and Xinjiang.¹²¹ A review of Jiuquan’s labour transfer policies and poverty alleviation schemes corroborates the coercive context of this region. Labour transfers are facilitated through “point-to-point” and “one-stop” services, often via chartered buses or trains, which enhances possibilities for surveillance and reduces possibilities to opt out.¹²² The city collaborates with other cities and provinces like Xinjiang, Guang-

119 “正泰民族团结进步工作在京获表彰,” Weixin Official Accounts Platform, 2019.

120 “正泰新能源与阿克塞县签订独立储能合作项目_中国经济网—国家经济门户,” 2023, http://finance.ce.cn/stock/gsgdbd/202307/20/t20230720_38639714.shtml.

121 “新疆巴州党政考察团来酒泉市考察交流,” 2024, <https://www.jiuquan.gov.cn/jiuquan/c100028/202410/9f2811b282a047518113e7b825833258.shtml>.

122 “酒泉市人力资源和社会保障局,” n.d., accessed July 14, 2025, <https://rsj.jiuquan.gov.cn/rsj/c106790/202406/b382b9e0b01d4a75b614f4c14703babf.shtml>.

dong, and Jiangsu to align labour demand and supply across regions. Worker mobilisation is framed within politically defined targets. As of mid-2024, the city reports that it had transferred 17.05 million labourers, surpassing its annual target.¹²³

Dai ethnic group: In 2019, CHINT Electric participated in an employment-based poverty alleviation programme targeting poor, registered households from Xishuangbanna Dai Autonomous Prefecture in Yunnan Province for labour transfers to Songjiang District of Shanghai. The programme was part of a broader government initiative to resettle farmers and herders within the context of poverty alleviation policies.¹²⁴ The Dai, like other minoritised ethnic groups in China, experience political repression and economic marginalisation. In particular, land expropriation to establish large-scale rubber plantations provides the pretext for their relocation to other parts of China.¹²⁵

Hui ethnic group: In 2021, CHINT Electric participated in labour transfers and job relocations organised by the local government in Laiwu, Shandong Province. According to a government report, CHINT Electric was one of four enterprises selected by the Laiwu District Human Resources and Social Security Bureau in Jinan, Shandong Province, to participate in an East–West labour cooperation with Linxia Prefecture’s Kangle County in Gansu Province.¹²⁶ Kangle County is located in the Linxia Hui Autonomous Prefecture. The majority of the Hui are Muslims and are increasingly facing the same existential threats and political repression as Turkic ethnic groups.¹²⁷

Yi ethnic group: A 2024 report mentions CHINT New Energy Technology Co., Ltd. in the context of labour transfers from Yan County, Yunnan Province, to Haining, Zhejiang. County-level authorities from Yan County visited Haining for planning meetings, including direct negotiations with CHINT New Energy. Yan County is home to the Yi ethnic group. Traditionally, they engage in subsistence agriculture and pastoralist lifestyles, which makes them targets for state-organised employment programmes.

Year	Project/Activity	Description
2011	Solar module factory in Jiuquan, Gansu	CHINT built a 300 MW solar module plant in Jiuquan, targeting job creation for minority communities and integrating with regional poverty alleviation and industrial development strategies.
2019	Labour transfer project from Xishuangbanna to Songjiang, Shanghai	CHINT Electric participated in a poverty alleviation programme that relocated registered individuals from the Dai minority in Yunnan to work in Shanghai.
2021	East–West labour cooperation between Kangle (Gansu) and Laiwu (Shandong)	Local authorities chose CHINT Electric to employ Hui Muslim workers who relocated from Linxia Prefecture as part of politically framed labour transfers.

123 “酒泉市人力资源和社会保障局,” 2024, <https://rsj.jiuquan.gov.cn/rsj/c106790/202406/b382b9e0b01d4a75b614f4c14703babf.shtml>.

124 “【乐业上海 · 就业扶贫】2019年松江--西双版纳州建档立卡人员异地来沪转移就业工作顺利完成!,” Weixin Official Accounts Platform, 2019.

125 “Power and Privilege – Deforestation in Xishuangbanna, China,” No date, <https://chinaenv.colgate.edu/deforestation/power-and-privilege/>.

126 “首批东西部劳务协作甘肃省临夏州康乐县籍务工人员抵达莱芜区,” Weixin Official Accounts Platform, 2021.

127 “Hui Muslims and the ‘Xinjiang Model’ of State Suppression of Religion | CECC,” 2021, <http://www.cecc.gov/publications/commission-analysis/hui-muslims-and-the-%E2%80%9Cxinjiang-model%E2%80%9D-of-state-suppression-of>.

2023	Strategic agreement with Akesai Kazakh Autonomous County	CHINT signed a cooperation agreement with Akesai (in Jiuquan), praised for its role in regional development and framed as part of building a national renewable energy demonstration zone.
2024	Labour transfer planning between Yan County (Yunnan) and Haining (Zhejiang)	CHINT New Energy is involved in a county-led labour export programme from the Yi minority communities in Yan County to its operations in Haining.
2024	Delegation visit from Bayingol, Xinjiang, to CHINT in Jiuquan	Jiuquan and Bayingol have a strategic agreement that places CHINT near labour transfer channels that deal with Turkic minorities and issues related to forced labour.

IV.3.2. Links to Xinjiang

CHINT has a long-standing history of supporting national development policies in Xinjiang and donated solar household systems to border units of the Xinjiang Production and Construction Corps (XPCC) in 2013.¹²⁸ For more than 15 years, the company supplied high- and low-voltage electrical equipment across Xinjiang to promote rural revitalisation policies.¹²⁹ What is more, since 2010, CHINT has supported the transfers of high school children from ethnic minority households in Xinjiang to the Zhejiang-based Wenzhou High School Xinjiang division. The company has paid scholarships for more than 2,258 students so far.¹³⁰

CHINT is also economically vested in the XUAR due to several large-scale PV projects. An early project was a 20 MW photovoltaic (PV) power station located in Baicheng County, Aksu Prefecture, which began operations in December 2013.¹³¹ More recently, CHINT participated in constructing the Ruoqiang 4 GW PV project, completed in 2025, representing one of the world's largest single-site solar panel installations. The project is situated near the Taklamakan Desert, and CHINT provided electrical components, including transformers and gas-insulated switchgear (GIS).¹³² Additionally, in 2024, CHINT supplied 500 MW of solar modules for the first phase of the Aral Photovoltaic Base, another major solar energy facility in Aral City, producing 1.22 billion kWh of electricity annually.¹³³

128 “正泰集团牢牢把握民族工作主线，画好民族团结进步同心圆。” 2024, https://mzzj.wenzhou.gov.cn/art/2024/4/28/art_1208534_58880115.html; “【厂商动态】正泰‘正’能量，光耀大新疆!” Weixin Official Accounts Platform, 2014.

129 “正泰集团牢牢把握民族工作主线，画好民族团结进步同心圆。”

130 “正泰集团牢牢把握民族工作主线，画好民族团结进步同心圆。”

131 Weixin Official Accounts Platform, “【厂商动态】正泰‘正’能量，光耀大新疆!”

132 “正泰助力新疆若羌全球最大单体光伏项目建设_中国工业新闻网,” 2025, <https://www.cinn.cn/p/366468.html>.

133 “500MW! 正泰新能助力阿拉尔光伏基地项目并网-北极星太阳能光伏网,” 2024, <https://guangfu.bjx.com.cn/news/20241209/1415633.shtml>.

Year	Type of Engagement	Project Activity	Location	Description
2012-2013	Solar Project	Baicheng Solar PV Station	Baicheng County, Aksu	A 20 MW PV station has been in operation since December 25, 2013. The station generates approximately 100,000 kWh per day.
2013	Charitable Initiative	Solar Household Systems Donation	XPCC Border Outposts	Western Guangcai Foundation provided 600 solar household systems to remote border units.
From 2010 (ongoing)	Educational Charity	CHINT Merit Scholarship	Wenzhou High School, Xinjiang Division	Support for over 2,258 students from various ethnic minorities in Xinjiang with an annual scholarship donation of RMB 100,000.
2023	Investment & Charity	Guangcai South Xinjiang Initiative	Kashgar, Aksu, XPCC	Signing of an RMB 10 billion agreement for solar energy investment and donated RMB 2.1 million in charitable funds.
2024	Solar Project	Aral Photovoltaic Base (Phase 1)	Aral City (North Taklamakan Desert)	Providing 500 MW solar modules for a 1 GW (phase 1) PV base. Total investment is RMB 3.83 billion, producing 1.22 billion kWh annually, and it incorporates ecological restoration (grassland recovery).
2025	Solar Project	Ruoqiang 4GW PV Project	Ruoqiang County, Taklamakan Desert	The world's largest single solar panel installation (4 GW), with a total investment of RMB 15.588 billion. CHINT provided 800 transformers and GIS equipment.
Over 15 years (ongoing)	Industrial Engagement	Grid and Electrical Equipment Supply	Throughout Xinjiang	Providing high- and low-voltage electrical equipment, contributing to local grid modernisation and improving conditions for rural and pastoral communities.

IV.3.3. Risk Assessment

CHINT Group has been involved in labour transfers, resettlement, and poverty alleviation initiatives targeting various ethnic minoritised groups across China. A government report praises CHINT due to its “good resettlement conditions and strong political responsibility”,¹³⁴ and the company boasts of itself as an advocate of China’s “ethnic national unity” policy.¹³⁵ The labour transfers entail different degrees of state-imposed forced labour risks, from very high for Turkic groups and Hui to high for other ethnic groups (Dai and Yi).

134 Weixin Official Accounts Platform, “首批东西部劳务协作甘肃省临夏州康乐县籍务工人员抵达莱芜区。”

135 Weixin Official Accounts Platform, “正泰民族团结进步工作在京获表彰。”



		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	High Legal risks	Very High Legal risks	No Findings
	Linked	Very High Reputational risks	No Findings	No Findings	No Findings

CHINT also maintains multiple links to Xinjiang. Some of these ties signal political support for the regime in the XUAR, such as donations, transfer of schoolchildren, and engagement in rural revitalisation initiatives. These activities entail a very high risk of contributing to severe human rights violations. The company is also economically vested due to several large-scale PV projects, business relationships and political activities that establish links between the company and China’s state-imposed forced labour regime. CHINT’s economic ties to Xinjiang represent a very high risk of being linked to severe human rights violations.

IV.4. Golden Concord Holdings Limited (GCL)

IV.4.1. Industrial Poverty Alleviation

In 2024, the Mouding county in Yunnan launched its twelfth rural labour transfer employment recruitment bulletin as part of a broader initiative to facilitate the off-farm employment of surplus rural workers. The bulletin, published on February 23, 2024, presents various job opportunities aimed at transferring rural labourers to formal employment. GCL System Integration, headquartered in Wuhu, Anhui Province, was one of the enterprises participating in the labour transfer initiative.¹³⁶

IV.4.2. Links to Xinjiang

According to the report in Broad Daylight, GCL was linked to state-imposed forced labour through its subsidiary, Xinjiang GCL New Energy Materials Technology Co., Ltd., which is located in the Zhundong Economic and Technological Development Zone. The report explicitly names this industrial zone as one of the key locations in Xinjiang where state-sponsored labour transfers take place. The report highlights that GCL benefits from these state-organised labour transfers, which target minority workers' relocations from southern Xinjiang to Zhundong.¹³⁷

In March 2025, GCL Group announced that it had completely withdrawn from its direct and indirect investments related to Xinjiang Goens and Siemens process polysilicon production.¹³⁸ Yet, this must not be conflated with GCL having exited Xinjiang. For example, Xinjiang GCL Smart Energy is owned by GCL Systems through its ownership of Suzhou Smart Energy.¹³⁹ Xinjiang Mobile Energy is

136 “牟定县2024年农村劳动力转移就业招聘专栏(第十二期),” Weixin Official Accounts Platform, 2024.

137 Murphy and Elimä, In Broad Daylight: Uyghur Forced Labour in Global Solar Supply Chains.

138 “Investor Relations Center - Handelsblatt Online,” 2024, <https://www.handelsblatt.com/channelizer/einspaltig/equity-story/>.

139 “新疆协鑫智慧能源服务有限公司,” 爱企查, 2025, https://aiqicha.baidu.com/company_detail_19860628019159.

owned by Chengdu GCL Energy Technology¹⁴⁰, which is indirectly held (87.5%) by GCL New Energy Technology.¹⁴¹ Furthermore, GCL has engaged in several large-scale projects and investments in Xinjiang since 2024:

- In 2025, during the 18th SNEC International Photovoltaic and Energy Storage Exhibition in Shanghai, GCL Integration signed a 1.2 GW photovoltaic module supply contract with Sheneng Hefeng New Energy Company. The modules will be used for a 2 GW solar project initiated in 2024 in the Hefeng Industrial Park of Buxel Mongolian Autonomous County, Xinjiang, scheduled for grid connection in 2025.¹⁴²
- In 2025, Xinjiang GCL Smart Energy's blockchain-powered "Integrated Energy Service Application System" passed final acceptance by the Xinjiang Science and Technology Department. Developed over three years, the system combined blockchain, AI, and distributed storage to enhance industrial energy management and data security. It covered over 90% of commercial energy users in the Zhundong Economic Zone's West Heishan Industrial Park.¹⁴³
- In 2024, GCL Integration was awarded a 1.2 GW component supply contract as part of Sheneng Group's 2.4 GW PV procurement project in Xinjiang's Tacheng and Buxel Counties. The bid, valued at 818.4 million yuan, covered high-efficiency bifacial N-type modules with scheduled delivery between May and October 2025.¹⁴⁴
- In 2024, GCL Integration, via its subsidiary GCL Green Energy Systems Technology Co., Ltd., signed a 1.217 billion yuan EPC contract for a 310 MW wind project integrated with storage and transmission infrastructure in the West Heishan Industrial Park of the Zhundong Development Zone. Construction began in March 2024, with grid connection scheduled for October 2024.¹⁴⁵
- In 2024, GCL Energy Technology's GCL Smart Energy (Suzhou) signed a pre-acquisition agreement to acquire 100% of Xinjiang Guoxin New Energy, which owns a flexible coal retrofit project in Qitai County combining 350 MW wind and 50 MW solar. The transaction, valued at 1.68 billion yuan, was part of efforts to improve GCL's renewable energy portfolio and reduce intra-group competition, with full grid connection required by the end of 2025.¹⁴⁶
- In 2024, GCL Integration secured a 1.56 GW component supply contract for China Resources New Energy's solar projects in Hotan Prefecture, Xinjiang. The deal, worth over 1.37 billion yuan, included deliveries to Lop, Pishan, and Hotan and underlined GCL's participation in high-volume solar buildout in western China.¹⁴⁷

140 "新疆协鑫移动能源科技有限公司," 爱企查, 2025, https://aiqicha.baidu.com/company_detail_94429556855456.

141 "协鑫焕动能源科技(绍兴)有限公司," 爱企查, 2025, https://aiqicha.baidu.com/company_detail_88723960851473.

142 "协鑫集成在SNEC展会上签署1.2GW光伏组件大单," Weixin Official Accounts Platform, 2025.

143 赵宗鑫, "新疆协鑫智慧能源科技援疆项目通过自治区科技厅验收," Weixin Official Accounts Platform, 2025.

144 "协鑫、天合中标新疆塔城和布克赛尔县2.4GW组件采购订单-北极星太阳能光伏网," 2024, <https://guangfu.bjx.com.cn/news/20241216/1417007.shtml>.

145 "协鑫集成在SNEC展会上签署1.2GW光伏组件大单," Weixin Official Accounts Platform, 2025.

146 "拟收购新疆国信新能源公司股权 协鑫能科加大新能源布局_中证网," 2024, https://www.cs.com.cn/ssgs/gsxw/202409/t20240919_6440537.html; 网易, "协鑫能科加大新能源布局 拟收购新疆国信新能源公司股权," 2024, <https://www.163.com/dy/article/JCEIG6Q805199FB7.html>.

147 "协鑫集成中标华润新疆1.56GW N型组件集采订单," Weixin Official Accounts Platform, 2024.

Year	Category	Event
2025	GCL in Xinjiang	GCL signed a 1.2 GW module supply deal at SNEC for Sheneng's Xinjiang 2 GW project in Hefeng Industrial Park.
2025	GCL in Xinjiang	GCL Smart Energy's integrated energy system based on blockchain technology passed final acceptance in Zhundong Economic Zone.
2024	GCL in Xinjiang	GCL secured a 1.2 GW supply contract as part of Sheneng's 2.4 GW PV procurement in Tacheng and Buxel.
2024	GCL in Xinjiang	GCL signed a 1.217 billion yuan EPC contract for a 310 MW wind-storage project in West Heishan Industrial Park.
2024	GCL in Xinjiang	GCL announced acquisition plans for a 1.6 GW wind-solar-storage project in Mulei, Changji Prefecture.
2024	GCL in Xinjiang	GCL Smart Energy signed a pre-acquisition deal for 100% equity in a 400 MW hybrid project in Qitai County.
2024	GCL in Xinjiang	GCL won a 1.56 GW supply contract for solar panel projects by China Resources New Energy in Hotan Prefecture.
2024	Poverty alleviation and labour transfers	Moudding County issued its 12th bulletin about recruiting rural labour transfers to support wage employment and reduce rural poverty.
2018	Poverty alleviation and labour transfers	GCL completed a 39 MW PV poverty alleviation project in Jianghua County, Hunan, connected to the grid in June 2018.
2017	Poverty alleviation and labour transfers	GCL won an 80 MW EPC contract for a PV poverty alleviation project in Zhenping County, Henan.

As the overview table illustrates, GCL is engaged in various parts of the XUAR, but most of the company's Xinjiang-related businesses remain tied to the Zhundong Economic and Technological Development Zone in Changji Prefecture, which Murphy and Elimä (2021) identified as a major destination for labour transfers. A review of recent policies suggests that its role may have become even more important.

A report from the Human Resources and Social Security Bureau in 2024 says that the Changji Prefecture government created special policies to help rural workers find jobs in Zhundong. These policies include advertising campaigns, skill training, and financial support provided to the area through transfer payments. These subsidies support enterprises with costs related to social insurance, vocational training, and internship programmes.¹⁴⁸ Zhundong was also included in the 2024 "Spring Breeze Action" recruitment campaign, which set a target for creating 11,500 jobs, including more than 5,000 for people facing employment difficulties and 1,500 for surplus rural labourers to be transferred to the zone. Fulfilment of these quotas was achieved a.o. through recruitment fairs across several counties, including Jimusaer, Qitai, Mulei, and Changji, which led to 330 employment agreements.¹⁴⁹

148 “到准东去!做好就业这篇大文章_人力资源和社会保障部,” 2024, <https://www.cj.gov.cn/p120/bmyw/20240419/242691.html>.

149 “到准东去!做好就业这篇大文章_人力资源和社会保障部.”

IV.4.3. Photovoltaic Poverty Alleviation

GCL New Energy, a subsidiary of the GCL Group, has been a major participant in China's national photovoltaic poverty alleviation programmes since 2015.¹⁵⁰ The company has developed an extensive portfolio of PV projects that aligns its operations with China's broader targeted poverty alleviation strategy. The following is a chronological overview of GCL's poverty alleviation engagements:

- 2024: GCL Systems provided maintenance management services for 160 village-level photovoltaic poverty alleviation power stations with a total capacity of 78 megawatts in Henan, Anhui, and Inner Mongolia.¹⁵¹
- 2020: On China's 7th National Poverty Alleviation Day, GCL reaffirmed its commitment to long-term PV-based poverty alleviation, highlighting its 1,196.5 MW installed capacity supporting over 33,000 households and its shift to a 3.0 model that integrates PV with agriculture and rural industry development.¹⁵²
- 2019: The second batch of the national renewable energy subsidy catalogue included 229.5 MW of GCL's PV poverty alleviation projects in April 2019. These projects were recognised for turning "blood transfusion" assistance into "blood generation" through land lease income, labour wages, and sustainable agriculture.¹⁵³
- 2018: In a high-level industry event, GCL launched the 3.0 poverty alleviation model that integrated solar power generation with the cultivation of oilseed peonies. This model was deployed across 13 bases in Jiangsu, Anhui, Henan, and Shanxi provinces, covering over 8,000 mu (approximately 530 hectares) of land, with a goal to expand to 30,000 mu by 2020.¹⁵⁴
- 2018: GCL Systems completed a major photovoltaic poverty alleviation project in Jianghua County, Hunan. By June 30, 2018, the 39 MW initiative, spanning over 1,300 mu across several villages, successfully connected to the grid. The project was delivered as a full EPC package and exemplified GCL's role in deploying distributed solar panel systems to support local income-generation goals under China's targeted poverty alleviation strategy.¹⁵⁵
- 2017: GCL reported a total of 1,290 MW of PV poverty alleviation projects completed by year-end, including 120 MW in EPC contracts via GCL Integration and 1,170 MW under GCL New Energy's ownership. These projects aimed to support 37,935 registered poor households.¹⁵⁶
- 2017: GCL Systems, via its subsidiary GCL Energy Engineering Co., Ltd., won a bid for the second phase of a village-level photovoltaic poverty alleviation project in Zhenping County, Henan. The 80 MW EPC contract, valued at approximately 478 million yuan, aimed to create stable solar energy income for poor villages over a 25-year period by deploying arrays of solar panels on barren land, rooftops, and degraded terrain.¹⁵⁷

150 "GCL New Energy Holdings Ltd-投资开发," No date, <http://gclnewenergy.shwebspaces.com/site/investment-development>.

151 "同升一面旗 | 南疆转移就业人员: '参加升国旗仪式, 是我最大的光荣,'" 2021, <https://www.btzx.com.cn/web/2021/10/3/ARTI1633228004867557.html>.

152 "协鑫新能源: 战略调整与模式创新双管齐下 光伏+助力能源扶贫大计," 金融界, 2020, <https://stock.jrj.com.cn/2020/10/19074031080415.shtml>.

153 "协鑫新能源近230MW光伏扶贫电站进入第二批补助目录—中国新能源网," 2019, http://newenergy.giec.cas.cn/tyn/xydt/201910/t20191017_520564.html.

154 "协鑫3.0扶贫模式打造绿色发展与粮油安全双赢新局面 - 能源界," 2018, <https://www.nengyuanjie.net/article/8414.html>.

155 "协鑫集成成功入围2021中国十大分布式光伏品牌评选," Weixin Official Accounts Platform, 2021.

156 "GCL New Energy Holdings Ltd-投资开发."

157 "协鑫集成中标镇平光伏扶贫电站项目光伏-有色金属新闻-中国有色网-中国有色金属报主办," 2017, <https://www.cnmn.com.cn/ShowNews1.aspx?id=382520>.



- 2016: GCL initiated extensive public outreach and community engagement in connection with its solar panel installations, including education campaigns and participation in poverty alleviation events in Shanxi and Inner Mongolia.¹⁵⁸

The company's PVPA approach has evolved through several stages of innovation. Initially relying on grid-tied solar income (version 1.0), GCL later developed a new poverty alleviation model (version 2.0) by integrating land rents, labour wages, and policy subsidies for rural residents. More recently, GCL introduced a “3.0 model” combining photovoltaic infrastructure with agricultural production.¹⁵⁹

GCL’s poverty alleviation initiatives have not been without controversy. A 2020 investigative report by Sina Finance highlighted major issues with delayed payments for PV poverty alleviation construction projects. For example, GCL’s 9.79 MW PV station in Mianchi County, Henan, commissioned in June 2018, faced delays of over 3,200 million RMB in engineering payments even two years after grid connection. This problem was not isolated. Similar delays were reported for other GCL projects in Nanyang and Zhumadian, also in Henan. Overall, the total unpaid engineering fees for GCL’s PV poverty alleviation projects in Henan alone reached 130 million RMB.¹⁶⁰

IV.4.4. Risk Assessment

A review of publicly available documents suggests that GCL is actively participating in PVPA in various ethnic minority areas. These projects pose a moderate risk of contributing to government-imposed forced labour by providing the infrastructure and institutional prerequisites that give farmers and herdsmen little choice but to accept state-allocated employment.

Even though GCL divested from Xinjiang Goens, the company maintains a strong presence in Xinjiang. Consequently, there is a very high risk that GCL contributes to the XUAR forced-labour regime. Furthermore, GCL is vested in the XUAR and particularly in the Zhundong Economic and Technological Development Zone through value chain links. The latter continues to serve as a major destination for labour transfers. Thus, the risk that GCL Group and its subsidiaries are linked to state-imposed forced labour is very high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	High Legal risks	Very High Legal risks	No Findings
	Linked	No Findings	No Findings	Moderate Reputational risks	Moderate Reputational risks

158 “协鑫新能源把绿色能源带进生活专题_新华能源_新华网,” No date, <https://www.xinhuanet.com/energy/2016zt/01.htm>.

159 “协鑫3.0扶贫模式打造绿色发展与粮油安全双赢新局面 - 能源界.” “协鑫3.0扶贫模式打造绿色发展与粮油安全双赢新局面 - 能源界.” “光伏扶贫工程款为何屡遭拖欠?,” 2020, <https://finance.sina.com.cn/wm/2020-05-19/doc-iirczymk2473102.shtml>.

160 “这就是中车!扶贫成绩单彰显央企担当_国务院,” 202 AD, https://www.sohu.com/a/www.sohu.com/a/429039968_233479.

IV.5. China Railway and Rolling Stock Corp. (CRRC)

IV.5.1. Industrial Poverty Alleviation

The CRRC is a large-scale state-owned enterprise, which was formed in 2015 through the merger of China North and South Locomotive Companies. The State Council's asset management administration has included the CRRC in its framework for poverty alleviation through fixed-point assistance. The company's main responsibilities are Maiji District and Gangu County in Gansu Province as well as Jingxi and Napo Counties in the Guangxi Zhuang Autonomous Region.¹⁶¹



Figure 11: CRRC poverty alleviation workshop in Gangu¹⁶²

Aligned with targeted poverty alleviation policies, the CRRC's work is based on the "one village, one policy" and "one person, one policy" approach. The company is engaged in industrial poverty alleviation and requires participation from company party committees and senior managers.¹⁶³ Lou Qiliang, the company's Party Secretary, stressed during a poverty alleviation inspection in Gangu County that the CRRC must "implement the spirit of the 20th Party Congress", "strengthen political responsibility", and "contribute central SOE¹⁶⁴ strength to the promotion of rural revitalisation". Thus, official accounts provide a strong indication that the CRRC's engagement in poverty alleviation is tightly controlled by the central government and CCP directives. This also means that performance is evaluated based on targets and in competition with other fixed points.

161 网易, "中车集团来甘谷县调研定点帮扶工作," 2022, <https://www.163.com/dy/article/HHVKA9EL0552ADWT.html>.

162 "这就是中车!扶贫成绩单彰显央企担当_国务院."

163 SOE = State Owned Enterprise

164 网易, "中车集团来甘谷县调研定点帮扶工作."

The CRRC is involved in the financing and management of various poverty alleviation workshops and employment assistance facilities such as the Tengda Employment Support Workshop and the 0938 Employment Workshop. Both are located in Tianshui City, Gansu Province. The workshops' products are unknown, but at least one seems to make textiles, judging from a picture documenting a visit at the factory.¹⁶⁵ Another example is the establishment of a Miao (ethnic minority in Guangxi) poverty alleviation workshop in Shibadong producing embroidery products.¹⁶⁶ The CRRC deploys an “order-based” management of its poverty alleviation workshops. For example, in 2020, CRRC signed annual workwear supply contracts with local poverty alleviation workshops in Gangu, creating over 650 jobs through garment orders alone.¹⁶⁷



Figure 12: CRRC supports specialised agricultural industries in Gangu¹⁶⁸

165 “彰显企业社会责任·中国中车精准扶贫纪实_澎湃号·政务_澎湃新闻-The Paper,” 2020, https://www.thepaper.cn/newsDetail_forward_10393583.

166 “彰显企业社会责任·中国中车精准扶贫纪实_澎湃号·政务_澎湃新闻-The Paper.”

167 “中车帮扶结硕果 乡村振兴见实效——中车集团定点帮扶甘谷县工作纪实-甘谷县人民政府,” 2024, <https://www.gangu.gov.cn/info/1511/586482.htm>.

168 “中车集团调研麦积区定点帮扶工作座谈会召开_发展_中国_乡村,” 2024, https://www.sohu.com/a/www.sohu.com/a/790814712_121106869.

A document published in 2024 reports on a CRRC-led consultation meeting on fixed-point assistance to alleviate poverty in Majji District, Tianshui City. A central focus of the meeting was industrial poverty alleviation, where the CRRC pledged to deepen support for rural speciality industries and create employment opportunities for peasants.¹⁶⁹ In this context the CRRC has funded multiple agricultural and processing projects. These initiatives have created over 60 jobs for local residents.¹⁷⁰ In Shibadong Village, Guangxi, the CRRC initiated agricultural and animal husbandry projects.¹⁷¹

The CRRC is a recipient of labour transfers from Maji District in Gansu Province. In 2020, three groups were the target of these transfers, namely “people who were not yet lifted out of poverty, marginal households, and monitored households.”¹⁷² Napo County, Guangxi Zhuang Autonomous Region, sends impoverished individuals to the CRRC’s New Energy Equipment Industrial Base in Baise (Guangxi).¹⁷³ The placement of registered poor is substantial. A note from 2020 stated that the company offered more than 3600 positions to farmers and herdsmen in four impoverished counties, with Napo being one of them.¹⁷⁴

The CRRC’s participation in state-organised labour transfers goes beyond the jurisdictions it was assigned responsibility for. For example, in 2023, the Tangshan Daily discusses how local authorities in Tangshan City, Hebei Province, have enhanced employment services to better support targeted groups such as university graduates, rural workers, and individuals with difficulties finding jobs. The city cooperates with major enterprises, including CRRC Tangshan Co., Ltd., to absorb and train new graduates, particularly from technical colleges. The article also highlights the city’s use of real-name tracking, job-matching algorithms, and targeted outreach to improve job placement efficiency. In parallel, labour transfers are facilitated through the establishment of labour cooperation stations and liaison offices in other provinces, which support the managed placement and tracking of rural workers.¹⁷⁵

Since 2014, the CRRC has implemented a wide range of education support activities as part of its poverty alleviation work in Gansu and Guangxi. This includes organising training programmes on career planning, psychological well-being, and workplace readiness. CRRC’s flagship initiative is the “Dream-Building Training Camp”, which brings together youth from areas receiving targeted support to build confidence, expand horizons, and promote emotional resilience. These activities are framed as part of the company’s political and social responsibility as a central state-owned enterprise.¹⁷⁶ Given that these educational programmes do not have a skill focus, emotional resilience and workplace readiness appear to be euphemisms for ideological persuasion and political pressure convincing people with an ethnic minority background to accept employment opportunities through poverty alleviation and move into industrial wage labour. Another report corroborating the CRRC’s involvement in ethnic national unity policies comes from Jingxi Minority High School in Baise, Guangxi, where the company seeks to “preserve and promote ethnic minority culture” and supports the “educational and cultural development in minority regions.”¹⁷⁷

169 “中车帮扶结硕果 乡村振兴见实效——中车集团定点帮扶甘谷县工作纪实-甘谷县人民政府。”

170 “彰显企业社会责任·中国中车精准扶贫纪实_澎湃号·政务_澎湃新闻-The Paper.”

171 龙云飞, “麦积区召开就业扶贫劳务输转工作推进会,” Weixin Official Accounts Platform, 2020.

172 “盘福林率代表团赴中车集团对接定点帮扶工作,” Weixin Official Accounts Platform, 2024.

173 那坡县融媒体中心, “2020年中车集团定点扶贫县贫困劳动力招聘:3600个岗位等你来聘!,” Weixin Official Accounts Platform, 2020.

174 “唐山|聚焦重点群体 精准推送岗位……这些就业服务贴心到位_王彪正_毕业生_高校,” 2023, https://www.sohu.com/a/www.sohu.com/a/641200119_121106842.

175 “助学亦筑梦,感受中车暖实力!_帮扶_集团_培训,” 2024, https://www.sohu.com/a/www.sohu.com/a/821646831_121119000.

176 “倾力帮扶二十一载——中国中车集团调研组到靖西开展定点帮扶工作调研 - 政务要闻 - 广西百色靖西市人民政府门户网站 - Www.Jingxi.Gov.Cn,” 2025, <http://www.jingxi.gov.cn/xxgk/fdzdgkmr/jcxxgk/zwdt/zwyw/t16628058.shtml>.

177 “倾力帮扶二十一载——中国中车集团调研组到靖西开展定点帮扶工作调研 - 政务要闻 - 广西百色靖西市人民政府门户网站 - Www.Jingxi.Gov.Cn,” 2025, <http://www.jingxi.gov.cn/xxgk/fdzdgkmr/jcxxgk/zwdt/zwyw/t16628058.shtml>.

IV.5.2. Links to Xinjiang

The CRRC maintains a vast network of business ties and production facilities in the XUAR. While the railway business arm of the company has been present in the region for many years, Xinjiang has developed into the CRRC's main base for new energy equipment:

- In 2017, CRRC Times Electric Company began building an industrial park in Urumqi, Xinjiang, specialising in the manufacture of intelligent power equipment, new energy components, and industrial control systems. The project is located in Ganquanbao Economic and Technological Development Zone.¹⁷⁸
- CRRC Lanzhou operates a dedicated new energy manufacturing base in Hami, Xinjiang. This plant is part of a strategic CRRC initiative to establish multi-point industrial bases across northwest China. CRRC integrates the Hami manufacturing site into its corporate and labour governance structures, ensuring coordinated oversight by multiple union bodies.¹⁷⁹
- The CRRC has also partnered with Xinjiang Yue Hydropower Energy in 2023 to develop a large-scale new energy industrial park in Barkol County focused on wind turbines, energy storage, and related technologies. The base will focus on producing wind turbine systems (full machines, blades, and towers) as well as energy storage systems and other electrical equipment.¹⁸⁰
- Also in 2023, CRRC Shandong held a groundbreaking ceremony for the CRRC Qitai Smart Energy Equipment Industrial Park in Qitai County, Xinjiang. CRRC Shandong is developing the project in three phases, involving a total investment of 11.64 billion RMB. It includes the production of wind turbines, hydrogen production equipment, and facilities for green hydrogen and green methanol. Local officials and CRRC leadership emphasised the park's role in fulfilling regional industrial strategies.¹⁸¹
- In 2024, CRRC Zhuzhou inaugurated its first new energy storage base in Xinjiang, located in Changji Hui Autonomous Prefecture. The facility produces high-capacity direct current battery cabins (5+ MWh per unit) designed to stabilise the intermittency of wind and solar energy. The base represents a significant expansion of CRRC's energy storage operations into western China.¹⁸² CRRC Zhuzhou produces, among other things, solar inverters.¹⁸³
- And in 2025, the CRRC announced that it had established a new subsidiary in Xinjiang, named Xinjiang CRRC Intelligent Equipment Co., Ltd. This company will focus on the development and manufacturing of generator sets.¹⁸⁴

As a state-owned enterprise active in the region, the company conforms to repressive policies and a state-imposed forced labour regime. Ideological alignment shines through in a report on a political-ideological education meeting held by China United Insurance Group in Shihezi, Xinjiang, which focused on ideological work and the Party's educational campaign, "Not forgetting the original intention, keeping the mission in mind."¹⁸⁵ Another document reports on a formal exchange held in March 2022 between the Xinjiang Production and Construction Corps (XPCC) Electric Power Design Institute and the CRRC Zhuzhou Institute. The meeting underscored a long-standing cooperative relationship between CRRC and the XPCC. The CRRC is referred to as a supplier and strategic

178 "乌鲁木齐中车产业园(一期)建设项目正式开工," 环球网, 2017, <https://www.huanqiu.com/article/9CaKrnK1UF8>.

179 "中国中车工会主席赵虎一行调研慰问兰州公司新疆中车新能源装备有限公司," Weixin Official Accounts Platform, 2023.

180 "粤水电中国中车在巴里坤县全力打造新能源装备制造产业高地 -天山网 - 新疆新闻门户," 2023, https://www.ts.cn/zxpd/xy/202304/t20230423_12998994.shtml.

181 "中车新疆奇台智慧能源装备产业园项目开工," Weixin Official Accounts Platform, 2023.

182 "中车株洲所新型储能基地首次落户新疆—新闻—科学网," 2024, <https://news.sciencenet.cn/htmlnews/2024/5/523335.shtm>.

183 E. N. F. Ltd, "ENF Ltd.," No date, <https://www.enfsolar.com/crrc-times-electric>.

184 RT轨道交通, "中车新公司成立!," 2025, <https://finance.sina.com.cn/roll/2025-01-12/doc-ineetncr3587518.shtml>.

185 "中华保险集团'不忘初心、牢记使命'学习教育暨思想政治工作会议在新疆召开," Weixin Official Accounts Platform, 2019.

partner.¹⁸⁶ These statements associate the CRRC directly with the military organisation that is mainly responsible for developing and implementing Xinjiang’s state-imposed forced labour regime.

IV.5.3. Risk Assessment

CRRC's involvement in poverty alleviation across China entails multiple indications of state-imposed forced labour risks. The company employs impoverished farmers and herdsmen through targeted poverty alleviation programmes, including labour transfers and workshops that carry a high risk of coercing unwilling individuals and households to accept state-assigned employment. CRRC's involvement in agricultural projects exposes farmers and herdsmen to the risks of land evictions and wage reemployment in industrialised agricultural businesses. The CRRC also engages in educational activities that appear to have little or no skill content but may serve as ideological support for implementing industrial poverty alleviation. The CRRC provides fixed-point assistance to Maji District in Tianshui City and Gangu County, which belong to Linxia Hui Autonomous Prefecture. Given that the Hui are a Muslim minority facing similar existential threats as Uyghurs and other Turkic minorities in China, the risk of contributing to state-imposed forced labour is very high. The CRRC’s fixed-point assistance for ethnic minority regions in Guangxi entails a high risk of forced labour.

The CRRC is expanding its new energy manufacturing base in the XUAR. These investments relate to both solar and wind power equipment. These engagements increase the risk of contributing to state-imposed forced labour significantly. Our review of publicly available documents indicates that the CRRC aligns with XUAR’s repressive policies and associates its business operations with the XPCC. As a result, there is a very high risk that CRRC is contributing to severe human rights violations in Xinjiang.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	High Legal risks	Very High Legal risks	No Findings
	Linked	No Findings	No Findings	No Findings	No Findings

186 “兵团电力设计院与中车株洲电力机车研究所有限公司开展学习交流,” Weixin Official Accounts Platform, 2022.

IV.6. DAS Solar

IV.6.1. Labour Transfers

Between May 7 and 13, 2023, a delegation of officials from Dongshan County in Fujian Province travelled to Yunnan. The group also included representatives from DAS Solar. The delegation’s visit was concluded with the signing of formal labour cooperation agreements between Dongshan County and the three Yunnan jurisdictions. These agreements aim to establish stable channels for cross-regional labour exchanges and ensure that both the sending and receiving sides can systematically share information about labour supply and demand. Provisions were also made for the appointment of dedicated liaison officers and the regular publication and exchange of employment needs.¹⁸⁷

IV.6.2. Risk Assessment

There is no explicit link between the aforementioned labour exchange programmes and poverty alleviation policies. As a result, there's probably less leverage to force workers into state-organised jobs. However, the ambition to match supply and demand across provinces through state intervention raises concerns, not least because such frameworks can be integrated with poverty alleviation policies. We consider the risks of state-imposed forced labour to be medium-high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	Medium Legal risks	No Findings	No Findings
	Linked	No Findings	No Findings	No Findings	No Findings

187 “东山:深化‘西劳东输’,跨省招工引才,” Weixin Official Accounts Platform, 2023.

IV.7. Delta Electronics

IV.7.1. Industrial Poverty Alleviation

Delta Electronics has been involved in various poverty alleviation and labour exchange programmes, particularly in the Guangdong and Hunan provinces. The company’s manufacturing bases in Dongguan (Guangdong) and Chenzhou (Hunan) were integrated into local government initiatives targeting registered poor households, surplus rural labour, and left-behind families. According to a press release from 2023, the Dongguan facility was formally designated as a provincial-level model employment assistance base by the Guangdong Human Resources and Social Security Department and the Provincial Rural Revitalisation Bureau.¹⁸⁸ By November 2023, Delta Electronics (Dongguan) had absorbed a total of 242 workers who had previously been registered as poor, many of whom were recruited through employment missions to regions such as Zhaotong in Yunnan and Tongren in Guizhou. The Ministry of Human Resources and Social Security organised these missions, along with local labour bureaus. Delta provided pre-job training, dormitories, and skill enhancement opportunities.¹⁸⁹



Figure 13: Labour transfer from Zhaotong, Yunnan, to Delta Electronics in Dongguan, Guangdong¹⁹⁰

Older reports state that in 2017, the Dongguan facility employed 163 rural workers from Zhaotong as part of an organised labour export initiative coordinated by the Zhaotong municipal government in collaboration with Delta- and Dongguan-based partners.¹⁹¹ In another case, reported by a local online newspaper during the same year, Delta Electronics (Dongguan and Chenzhou) recruited registered poor households from Anren County in Hunan under the coordination of the local poverty alleviation office.¹⁹²

188 “石碣一家企业被认定为2022年度省级示范性就业帮扶基地!,” Weixin Official Accounts Platform, 2023.

189 Weixin Official Accounts Platform, “石碣一家企业被认定为2022年度省级示范性就业帮扶基地!”

190 “昭通163名农村富余劳动力外出务工 架起全家幸福连心桥!,” Weixin Official Accounts Platform, 2017.

191 Weixin Official Accounts Platform, “石碣一家企业被认定为2022年度省级示范性就业帮扶基地!”

192 “安仁建档立卡贫困户有福了·政府为你们找好了工作,” Weixin Official Accounts Platform, 2017.



Figure 14: Poverty Alleviation Workshop in Chenzhou, Hunan province¹⁹³

Within Hunan Province, Delta sourced from several poverty alleviation workshops in Xujia Cave Town, Su Xian District, Chenzhou City. These workshops employed women from poor households, including those with care responsibilities, who worked either on-site or through take-home assignments. An article published in 2020 by the Chenzhou local government in Hunan Province states that these workshops produced components such as computer temperature regulators and were organised in collaboration with local government entities, including the employment bureau and the poverty alleviation office.¹⁹⁴ The Chenzhou city-level government's official account of poverty alleviation and rural revitalisation also mentions Delta's involvement. A summary of the past forty years of rural development in Su Xian District includes reference to a joint programme between local government and Delta Electronics to establish workshops that produced electronics under contract, providing income to local residents while aligning with industrial policy goals.¹⁹⁵ Delta was also sourcing from poverty alleviation workshops in Dahe village in Zhuzhou city. A report states that Delta's engagement expanded from one to five workshops between 2018 and 2019, with employment rising from 100 to 300 positions. Plans were also in place to introduce home-based production lines to enable additional income sources for poor households.¹⁹⁶

193 “第一书记话扶贫(三),” Weixin Official Accounts Platform, 2019.

194 “苏仙区:‘扶贫车间’机器声又响,” Weixin Official Accounts Platform, 2020; Weixin Official Accounts Platform, “第一书记话扶贫(三).”

195 【庆祝改革开放40周年】实施乡村振兴战略 建设美丽宜居苏仙——改革开放40周年乡村振兴与精准扶贫工作综述,” Weixin Official Accounts Platform, 2018.

196 Weixin Official Accounts Platform, “第一书记话扶贫(三).”

Year	Location	Activity
2017	Zhaotong, Yunnan	163 rural workers recruited via official labour transfer programme for Delta in Dongguan
2017	Anren County, Hunan Province	Poverty registry-based recruitment for Dongguan/Chenzhou factories
2018-2019	Dahe village, Zhuzhou city	Sourcing from five poverty alleviation workshops employing 300 workers
2018–2020	Xujia Cave Town, Su Xian, Hunan Province	Establishment of 3+ workshops producing Delta components
2020	Su Xian, Hunan Province	COVID reopening supported by local government; 2000+ employed in 13 workshops
2022	Dongguan	Recognized as provincial model for employment assistance
2023	Dongguan	Delta employed 242 registered poor individuals and plans to expand hiring

IV.7.2. Risk Assessment

Delta Electronics participates in state-organised labour transfers and receives benefits from poverty alleviation workshops. The company’s engagement is long-term and comprehensive. Photos documenting labour transfers demonstrate the highly organised nature of these programmes. Photos from a poverty alleviation workshop corroborate the informal nature of these small-scale businesses. Labour transfers from Yunnan probably target minoritised citizens, in particular Yi and Miao. Taking these factors into account, the overall risk of state-imposed forced labour is either medium or high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	High Legal risks	Medium Legal risks	No Findings
	Linked	No Findings	No Findings	No Findings	No Findings

IV.8. DMEGC

IV.8.1. Industrial Poverty Alleviation

A report published by the local government of Dongyang City in Zhejiang Province in 2021 details the activities undertaken by Hengdian Group, the parent company of DMEGC, as part of China's national poverty alleviation campaign. In 2020, the company received the designation of "Advanced Collective in Poverty Alleviation" at the national level; reportedly, it is the only enterprise in Dongyang to receive such recognition.¹⁹⁷ We reviewed articles and reports showing that Hengdian engaged in industrial and cultural poverty alleviation, in line with central and provincial directives on targeted poverty alleviation. This is worth noting, because Hengdian as a private company has no direct obligation to do so.

Hengdian Group created so-called "compassionate jobs" for individuals listed in official poverty registries. These jobs were open to people without formal qualifications or specific skills. The company recruited nearly 1,000 individuals through this channel. Hengdian adopted internal guidelines for recruitment and vocational training based on what the company management named "precision support 2 help 1". This approach paired each registered poor individual with a Communist Party member and a workplace mentor, with the stated aim of offering both ideological supervision and practical skills development.¹⁹⁸ The authoritarian nature of this approach shines through both in terms of its organisation and how leading managers explain it. The Xinhua Daily Telegraph featured Hengdian's strategy in 2020 and explained, "The party member focuses primarily on closely monitoring the person's ideological outlook and understanding their needs, while the mentor is responsible for helping improve their technical skills." The deputy party secretary of DMEGC is cited in this article saying, "We must first help them with their aspirations by letting party members do ideological work so that they have ambitions; then we help them with their intelligence by having masters impart technology to them so that they have skills. By helping with their aspirations and intelligence, we can help the people in poverty alleviation obtain both material and spiritual satisfaction from DMEGC!"¹⁹⁹

Additional documentation from the Ministry of Human Resources and Social Security reports that the DMEGC offered over 16,000 job positions as part of programmes for East-West labour cooperation and specifically created 1,500 "compassionate jobs" with no educational or skill requirements. To recruit poor farmers and herdsmen, the DMEGC coordinated labour offices in provinces such as Sichuan, Guizhou, Hubei, and Jilin, as well as established a branch in Yibin, Sichuan, for localised recruitment.²⁰⁰ Yibin consists of several autonomous counties that are home to minoritised groups such as the Yi, Lisu, Hui, and Miao.²⁰¹

IV.8.2. Risk Assessment

Hengdian Group and its subsidiary, DMEGC/Hengdian Magnetic, are deeply involved in state-organised poverty alleviation programmes. The strong alignment with government policies and the strong influence of the company's CCP organisations may be attributed to the fact that Hengdian is also a major producer of films and TV shows, which is a tightly monitored and politically censored business line. DMEGC has developed its own approach to targeted poverty alleviation that is heavily influenced by CCP ideological objectives and the mission not only to increase poor households' incomes but also to transform the minds of targeted farmers and herdsmen. Industrial poverty alleviation at DMEGC

197 "横店集团党委 '三招' 发力促脱贫," Weixin Official Accounts Platform, 2021.

198 Weixin Official Accounts Platform, "横店集团党委 '三招' 发力促脱贫."

199 "横店集团党委 '三招' 发力促脱贫," Weixin Official Accounts Platform, 2021.

200 "浙江横店东磁: 践行社会责任 助力就业脱贫," 2020, https://www.mohrss.gov.cn/SYrlzyhshbzb/ztlz/rsfp/fpdx/202010/t20201015_392661.html.

201 "Status of Ethnic Minorities in Sichuan Development Project Area," n.d., accessed July 20, 2025, <https://documents1.worldbank.org/curated/en/904201468238142813/pdf/IPPI49.pdf>.

has reportedly involved thousands of individuals over the years, and some of the targeted jurisdictions are characterised by a high population share of ethnic Yisu, Lisu, Hui, and Miao. The scale, ideological focus, and inclusion of marginalised groups indicate a medium to high risk of contributing to state-imposed forced labour.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	High Legal risks	No Findings	Medium Legal risks
	Linked	No Findings	No Findings	No Findings	No Findings

IV.9. Hongfa Electroacoustic

IV.9.1. Industrial Poverty Alleviation

According to several government documents, Hongfa Electroacoustic is involved in the establishment and management of poverty alleviation workshops and receives registered poor workers through state-organised labour transfers.

A document published by the Sichuan Provincial Government in May 2020 names Hongfa Electroacoustic as one of the companies in Zhongjiang County (Sichuan Province) that implemented the “enterprise + poverty alleviation workshop” model. The approach includes local recruitment and on-site training. The policy reportedly provided employment opportunities and skill development paths for surplus rural labourers and registered poor households.²⁰² These workshops collectively provided jobs for over 820 people.²⁰³

In 2020, officials from Wuyishan City had visited Changtai County to coordinate poverty alleviation and regional cooperation work. The visit included on-site tours of, among others, Hongfa Electroacoustic and served to establish direct working relationships between officials, enterprises, and administrative departments in both regions. This labour transfer scheme is part of a poverty alleviation programme between the two jurisdictions.²⁰⁴

In a government document from Changtai County in Fujian Province published in 2022, Hongfa is listed as one of the participating enterprises in the “village-enterprise co-construction” model in Fufang Village, Chenxiang Town, Changtai District. Together with other companies, Hongfa supported educational classes and contributed to the establishment of labour training centres. The document notes that Hongfa has institutionalised long-term mechanisms for rural revitalisation and village-enterprise cooperation.²⁰⁵

202 “稳就业促发展·四川这8地想了这些办法.....,” Weixin Official Accounts Platform, 2022.

203 文潇, “瞧! 扶贫车间里‘都是姐妹们忙碌的身影,’” Weixin Official Accounts Platform, 2020.

204 “我市赴长泰县对接扶贫开发·协同发展区建设工作,” Weixin Official Accounts Platform, 2020.

205 长泰融媒, “龙津视线 | 长泰: 把‘村企共建’的重锤敲在乡村振兴的鼓点上,” Weixin Official Accounts Platform, 2022.

IV.9.2. Risk Assessment

Hongfa is involved in multiple industrial poverty alleviation programmes and a vocational training project. All these initiatives entail the possibility that targeted individuals are not free to opt out of measures that channel them into low-paid, underprivileged wage labour. Given that Hongfa’s poverty alleviation programmes do not have a strong connection with minority groups, we categorised the risk of contributing to state-imposed forced labour as medium.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	Medium Legal risks
	Linked	No Findings	No Findings	No Findings	No Findings

IV.10. Huawei

IV.10.1. Links to Xinjiang (Digital Surveillance)

In December 2021, the Washington Post published an investigation on Huawei Technologies' involvement in China's domestic surveillance apparatus. Based on over 100 confidential Huawei PowerPoint presentations, the article describes Huawei’s business solutions to various surveillance needs that the company co-developed with other Chinese tech companies. Key findings include:

- Voiceprint Surveillance: Huawei collaborated with iFlytek to develop a voiceprint identification system capable of matching individuals via voice recordings, including those gathered through smartphone apps or phone calls. The U.S. sanctioned iFlytek in 2019 due to its involvement in Uyghur repression.
- Detention Centre Management: In partnership with Shanghai Hewei, Huawei developed software used in prisons and re-education centres, including in Xinjiang and Inner Mongolia. The system tracks detainee schedules, re-education sessions, and labour assignments.
- Location and Identity Tracking: Huawei co-developed a system with PCI-Suntek to help authorities monitor individuals' locations using MAC address tracking and facial recognition. This was reportedly used by Guangdong police.
- Xinjiang-specific Surveillance: The company’s technologies, including a “One Person One File” system co-developed with DeepGlint (also U.S.-sanctioned), were reportedly used in Urumqi to monitor individuals via facial recognition during the height of Uyghur mass detentions in 2017.
- Workplace and Retail Monitoring: Huawei also marketed surveillance tools for corporate use with Nanjing-based 4D Vector. These included facial recognition to monitor employee behaviour (e.g., sleeping or using phones) and track customer demographics and repeat visits in stores.²⁰⁶

206 “Documents Link Huawei to China’s Surveillance Programs - Global Newsstream Collection - ProQuest,” 2021.

A review of Huawei's recent engagements in Xinjiang suggests that the company continues to provide technologies and engage in collaborations that may directly or indirectly contribute to surveillance and repression of Turkic people in Xinjiang. For example, on August 13, 2024, Xinjiang's top leaders met with representatives from the "Beijing Internet Enterprises Red Homeland Xinjiang Tour", which included Huawei and other major tech firms. The delegation discussed expanding cooperation in areas such as digital infrastructure, internet industry development, data transfer projects, and cultural and tourism integration. Huawei and other firms expressed their intention to deepen investment and operational presence in Xinjiang to support regional industrial development and digital transformation.²⁰⁷ This intention is evidenced in various projects that can be deployed for comprehensive control and surveillance in the context of the XUAR:

- An online news report from 2024 features Huawei as a company expanding communication infrastructure in Turpan by increasing network coverage in both urban and remote rural areas. The company established service points referred to as "relay stations" that support not only connectivity but also serve as hubs for local engagement, which includes providing on-site support, facilitating communication services for residents, and helping to integrate local communities into the broader digital ecosystem. Huawei frames these relay stations as a component of its broader investment in the region, with the aim of addressing development challenges.²⁰⁸ The most likely use of this digital infrastructure is to intensify grid governance and surveillance.
- In early 2021, Huawei and Xinjiang Communications Investment Group signed a strategic cooperation agreement to jointly promote the digitalisation and development of Xinjiang's transportation sector. The collaboration includes planning and building information infrastructure, developing new technologies, implementing smart highway solutions, and applying technologies such as cloud computing, IoT, big data, and 5G to enhance the region's comprehensive transport systems.²⁰⁹ The integration of digital technologies with transportation and logistics will enhance the government's capacity and technological capabilities to control the movement of people across the XUAR.

Huawei is also indirectly linked to the risks of human rights violations. Of particular concern in this respect is the mining sector, where many state-owned businesses participate in state-imposed forced labour and assist in the implementation of repressive policies.²¹⁰ In this context we find that:

In July 2023, Huawei partnered with Jiangna Mining in Hami, Xinjiang, to implement large-scale autonomous driving technology in open-pit coal mines. Huawei also contributed to building a computing centre based on its "Pangu AI model" to support smart mining, and it signed an agreement with Jiangna and Xuefeng to expand intelligent mining operations and infrastructure in the region.²¹¹

On February 18, 2022, Huawei executives, including Board Member and President of Quality, Process, and IT, Tao Jingwen, visited Zhongtai Group in Xinjiang to discuss cooperation on technological innovation and the construction of a smart industrial park. The discussions focused on digital transformation strategies, especially the development of the Fukang New Energy Smart Park, and included reports on project progress and future collaboration in digital infrastructure and management systems.

207 "马兴瑞艾尔肯·吐尼亚孜会见'北京网络企业红色故土新疆行'代表团_喀什新闻_喀什经济开发区," 2024, <https://www.kstq.gov.cn/kashi/ksxw/202408/69c7cd281c9642be9c643999d85e867c.shtml>.

208 "华为在新疆:风沙中屹立的温暖驿站_企业_社会_吐鲁番," 2024, https://www.sohu.com/a/838047230_122066681.

209 "新疆交投与华为签署战略合作协议 携手共建智慧交通_部门动态_新疆维吾尔自治区人民政府网," 2021, <https://www.xinjiang.gov.cn/xinjiang/bmdt/202103/8345c9b5107c42ceaff9f281a615c3b1.shtml>.

210 Global Rights Compliance, "Risk at the Source: Critical Mineral Supply Chains and State-Imposed Forced Labour in the Uyghur Region – New Report," 2025, <https://globalrightscompliance.org/cm/>.

211 "无人驾驶革命:华为与新疆纳矿业携手共建智慧矿山新标杆_行业_合作_技术," 2024, https://www.sohu.com/a/www.sohu.com/a/843405284_122066676.

tems.²¹² Zhongtai Group has been identified as a key actor in the Uyghur forced labour regime and is on the Uyghur Forced Labour Prevention Act Entity List.²¹³

IV.10.2. Links to Xinjiang (New Energy)

Huawei has been present in Xinjiang for more than 30 years, and the company’s digital energy business spans 14 prefectures in Xinjiang with over 1,000 local employees. In the solar power sector, Huawei has installed nearly 100,000 smart string inverters. During the 2024 Huawei China Digital Energy Summit in Ürümqi, the company declared its intention to deepen its role in the XUAR renewable energy sector. To this end, Huawei signed multiple cooperation agreements with Xinjiang-based, state-owned energy producers, such as State Power Investment Corporation (SPIC), Datang, and China Huadian.²¹⁴ Huawei’s engagement in the new energy sector links the company with at least one state-owned corporation, namely Huadian, that has been accused of actively participating in Xinjiang’s state-imposed forced labour regime.²¹⁵ Our own investigation provides additional insights in section IX.11.1 Other Xinjiang-based energy suppliers may entail similar risks, as they are controlled by state authorities and providers of key inputs of the forced labour regime.

IV.10.3. Risk Assessment

Huawei’s role as an agent for driving and enabling authoritarian governance in China and its direct contribution to the severe human rights violations in Xinjiang were investigated previously. Our review of publicly available information suggests that the company’s engagement in this respect has maintained momentum. We, therefore, evaluate the risk of Huawei contributing to state-imposed forced labour in Xinjiang as very high. Huawei is also doubling down on its engagements in the new energy sector. The information available to us suggests that Huawei engages in collaborations with Xinjiang-based energy providers. As a result, the risk of being linked to state-imposed forced labour in Xinjiang is very high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	No Findings	No Findings	No Findings
	Linked	Very High Reputational risks	No Findings	No Findings	No Findings

212 “中泰头条 | 华为公司领导一行到新疆中泰集团交流座谈 精准经营 融合发展 打造数字化园区新样板_阜康_企业_中泰集团,” 2022, https://www.sohu.com/a/524564143_121123727/www.sohu.com/a/524564143_121123727.

213 US Department of Homeland Security, “UFLPA Entity List | Homeland Security,” 2025, <https://www.dhs.gov/uflpa-entity-list>.

214 网易, “技术创新、场景融合、生态共融, 华为助力新疆构筑新能源产业创新高地,” 2024, <https://www.163.com/dy/article/JJM0CEV905509P99.html>.

215 Human Rights Watch, “Asleep at the Wheel,” Human Rights Watch, 2024, <https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china>.

IV.11. JA Solar

IV.11.1. Links to Xinjiang

Crawford and Murphy analysed JA Solar’s upstream links to the XUAR and concluded that the company’s risk exposure is very high in terms of sourcing quartz, metallurgical grade silicon (MGS), polysilicon, and ingots.²¹⁶ The authors stated that JA Solar provided information about supply chain links exclusively on its website in Chinese. A comparison between the Chinese and English language versions of the most recent annual report from 2024 suggests that none of them entails concrete supplier information. A search for recent press releases on new supplier contracts did not generate relevant returns. Thus, there seems to be a declining trend in transparency at JA Solar. We still found publicly available information suggesting that JA Solar continues to maintain links to the XUAR.

In 2022, JA Solar signed a comprehensive strategic collaboration agreement with China Huadian Corp. According to the agreement, the two parties planned to deepen cooperation in clean energy-based construction, innovation, overseas business, asset development, and institutionalise communication between the two companies.²¹⁷ In addition, JA Solar has signed collaboration agreements with regional branches of Huadian in Hebei²¹⁸ and Xinjiang.²¹⁹ In the case of Xinjiang, JA Solar signed a consumer assistance and procurement agreement with Huadian and its targeted assistance area in Atushi City, Xinjiang, and Dulan County in Qinghai. During the signing ceremony, representatives of the involved parties stressed that the collaboration will contribute to the development of “characteristic industries in the designated assistance areas” and improve the development capabilities and income levels of farmers.²²⁰

Huadian is one of China’s five largest state-owned energy corporations with a strong presence in Xinjiang. The company serves as a fixed point for assistance to, among others, Wakwak Village and Atushi City in Xinjiang. According to a 2022 work report from Huadian Xinjiang, the company engaged in the labour transfer of 3,551 individuals, and, in addition, around 200 households gained employment locally through cooperative models, enabling “at-the-doorstep” jobs. Furthermore, the company introduced a “village-enterprise integrated” governance model in Wakwak Village. This aimed to strengthen the village collective’s managerial capabilities. The village was later designated a national model for rural governance.²²¹ A propaganda article on Chinese National Day in 2021 indicates that Uyghur workers at Huadian must participate in patriotic activities such as flag-raising ceremonies.²²²

IV.11.2. Risk Assessment

JA Solar’s comprehensive strategic collaboration with China Huadian and contribution to Xinjiang-based economic development programmes associates the company with severe human rights violations. The risk of being linked to state-imposed forced labour in the XUAR, therefore, is very high.

216 Crawford and Murphy, *Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing*.

217 “中国华电与晶澳科技签署深化战略合作协议_发展_双方_绿色,” 2023, https://www.sohu.com/a/www.sohu.com/a/714784147_121117447.

218 “晶澳科技与华电河北分公司签署战略合作框架协议_河北经济网,” 2024, <http://www.hbjrb.com/system/2024/11/01/101400190.shtml>.

219 “刘雨平出席晶澳科技与华电定点帮扶地区消费帮扶采购协议签约仪式,” Weixin Official Accounts Platform, 2023.

220 Weixin Official Accounts Platform, “刘雨平出席晶澳科技与华电定点帮扶地区消费帮扶采购协议签约仪式.”

221 媒体滚动, “华电集团持续帮扶为新疆乡村振兴赋能,” 2022, <https://finance.sina.com.cn/jjxw/2022-07-20/doc-imizmscv2723816.shtml>.

222 Weixin Official Accounts Platform, “同升一面旗 | 南疆转移就业人员: ‘参加升国旗仪式’是我最大的光荣.”



		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	No Findings
	Linked	Very High Reputational risks	No Findings	No Findings	No Findings

IV.12. Jiangsu Zhongneng

IV.12.1. Risk Assessment

The majority shareholder of Jiangsu Zhongneng is GCL Solar Power Technology with 64%. Due to equity ownership and product complementarity, GCL's risk assessment under VIII.4 applies to Jiangsu Zhongneng as well.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	High Legal risks	Very High Legal risks	No Findings
	Linked	No Findings	No Findings	Moderate Reputational risks	Moderate Reputational risks

IV.13. Jinko Solar

IV.13.1. Industrial Poverty Alleviation

Jinko Solar participated as a major recruiting enterprise in the 2024 rural labour transfer and poverty-alleviation job fair in Chuxiong Yi Autonomous Prefecture in Yunnan Province.²²³ The company participated in similar initiatives earlier. Jinko Solar (Chuzhou) served as the destination company for the fifth batch of "point-to-point" labour transfers from Wanrong County, Shanxi Province, in February 2022. A total of 76 workers were sent directly to Jinko's Anhui facility as part of a government-organised employment initiative aimed at poverty alleviation and rural labour exports.²²⁴ The report states that Chuxiong "actively and conscientiously coordinated special vehicles to provide 'one-to-one' and 'point-to-point' return-to-work employment services for employees of the company [Jinko], so that employees can enjoy the convenience of returning to work from 'leaving home, getting on the car, and entering the factory gate.'"



Figure 15: Worker holding a banner, "Ceremony for the point-to-point bus send-off to Chuzhou Jinko in Anhui."²²⁵

While state-controlled transports have been common during the pandemic, it appears that Jinko continues to receive workers through monitored point-to-point transfers. A work report from Xining City, Qinghai Province, published in March 2025, states, "*Dedicated transport services were arranged to link 'doorstep to bus door' and 'bus door to factory gate', enabling point-to-point labour transfers. Thirty-eight job seekers were sent point-to-point to Qinghai Jinko Solar Co., Ltd., and an additional 56 urban and rural residents from around Zongzhai Township registered for employment.*"²²⁶ Even though framed as a service, point-to-point transfers can also mask the implementation of coerced transfers.

Jinko Solar has participated in poverty alleviation programmes for many years. In 2016, Jinko Solar acted as the recruiting enterprise in a targeted poverty-alleviation job fair held in Nalati Town, Xinjiang, under the "Employment and Poverty Alleviation in a Hundred Villages" campaign. The event targeted unemployed graduates and surplus rural labourers in impoverished households. Jinko reached employment agreements with 42 individuals, including five from impoverished families.²²⁷ For obvious reasons, most companies have stopped reporting on their involvement in state-organised recruitment in Xinjiang. Not only does this document show that Jinko has been involved in state-organised recruitment for many years, but it also suggests that there is a risk that the company receives impoverished farmers and herdsmen from the XUAR.

223 "楚雄市2024年农村劳动力转移就业'百日攻坚行动'暨'暖冬行动'就业服务专场招聘会成功举办," Weixin Official Accounts Platform, 2024.

224 "【春风送岗】万荣县欢送第五批'点对点'赴安徽务工人员," Weixin Official Accounts Platform, 2022.

225 Weixin Official Accounts Platform, "【春风送岗】万荣县欢送第五批'点对点'赴安徽务工人员"

226 "西宁城中:完成城镇新增就业2047人 奋力实现一季度'开门红'_服务_岗位_劳动力," 2025, https://www.sohu.com/a/www.sohu.com/a/875706043_362042.

227 余璞君, "那拉提镇组织召开'就业扶贫百村行'晶科能源专场招聘会," Weixin Official Accounts Platform, 2016.

In a 2019 poverty alleviation recruitment fair in Leshan's Wutongqiao District, Jinko Solar reached preliminary employment agreements with over 110 job seekers, including 32 from poor households. The company was identified by local authorities as a key enterprise to receive targeted human resource support.²²⁸ Leshan is home to a significant share of minoritised groups, in particular Yi but also Hui and Miao.

Besides state-organised labour transfers, Jinko is also at the centre of a vocational school–enterprise pipeline that raises concerns about potential exploitation and state-imposed forced labour. In 2024, the Shanxi provincial government published a document outlining the large-scale integration of Jinko Solar into the Shanxi Transformation Comprehensive Reform Demonstration Zone. In this context, Jinko collaborates with local vocational schools to address their labour needs through "order-based education". This approach involves coordinated planning between Jinko and vocational institutions, whereby student training is tailored directly to the company's requirements. The government supports this model by facilitating recruitment, infrastructure development, and policy coordination.²²⁹

IV.13.2. Links to Xinjiang

Crawford and Murphy classified Jinko's risk exposure to the XUAR as high, presuming that the company had entirely divested from the region. However, the unaccounted amounts of raw materials, the report suggests, made it highly probable that supply chain links to MGS suppliers in the region remain.²³⁰ According to a press release published on 26 February 2024, Jinko Solar sold 100% equity of its subsidiary Xinjiang Jinko Solar, which was subsequently renamed "Xinjiang Shibang Solar Technology Co., Ltd." However, this sale does not signify a definitive departure from the business, as Chen Kangping, the managing director of Shibang Solar, continues to serve as both director and general manager at Jinko Solar.²³¹

An article in China Labour Security News published in January 2025 reported that Xinjiang Shibang Solar Technology Co., Ltd. participated in a targeted recruitment event organised in Xinyuan County, Ili Kazakh Autonomous Prefecture, as part of the region-wide campaign titled "Employment Leads the Future." The event specifically targeted recent graduates from vocational schools. A representative from Xinjiang Shibang is cited as stating that, "due to the company's current phase of expansion, it required personnel with strong professional abilities and work ethic." The representative also noted that "the company had benefited from multiple recruitment events organised by the human resources departments."²³²

IV.13.3. Photovoltaic Poverty Alleviation

In a report from December 2021, Jinko Solar positions itself as a leading enterprise driving the integration of PV technology with rural development under the slogans "Photovoltaics for Agriculture", "Photovoltaics Benefit Farmers", and "Photovoltaics Green the Countryside". The company aligns its initiatives with national policies, such as the 13th and 14th Five-Year Plans and the rural revitalisation campaign launched in 2018.²³³ Key initiatives include:

228 "扶贫|教育|社保|就业|救助-乐山市五通桥区人民政府," 2019, <http://www.wtq.gov.cn/wtqq/fpjyylsbyjzwtq/202006/966562c93e774cf6bf71f8816ce210a1.shtml>.

229 "【推动高质量发展 深化全方位转型】'四个抓落实'的晶科实践 - 山西省人民政府," 2024, https://www.shanxi.gov.cn/ywd/tt/202404/t20240416_9538956.shtml.

230 Crawford and Murphy, Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing.

231 "晶科能源股份有限公司 - 企知道," 2025, <https://qiye.qizhidao.com/company/2dfd6f772d64909083218c936bd8a3b0.html>; "新疆仕邦光电科技有限公司 - 企知道," 2025, <https://qiye.qizhidao.com/company/57751e91b37f846716134a0e603332ec.html>.

232 "2024.地方创新实践 | 新疆维吾尔自治区:让企业与求职者双向奔赴 - 今日头条," 2025, <https://www.toutiao.com/article/7463041596142830107/>.

233 "晶科能源: 让光伏成为乡村振兴抓手_KE科日光伏网," 2021, <https://www.kesolar.com/factory/180713.html>.

- EPC (engineering, procurement, and construction) projects: Jinko has undertaken 21 poverty alleviation projects across provinces like Gansu, Shandong, Jiangxi, and Anhui, totalling 284.27 MW in capacity. To alleviate poverty, the company specifically owns four ground-mounted PV power plants, totalling 70 MW.
- "PV + Agriculture" Models: Jinko promotes agrivoltaic systems combining solar energy generation with farming. Jinko combines solar panels with vegetable and herb cultivation in Da'an City, Jilin, to attract agritourism. Jinko built an 80-acre solar energy-mushroom farming project in Haining, Zhejiang.
- Rural Infrastructure and Household PV: Under national "county-wide PV promotion" policies, Jinko has piloted distributed solar systems for homes, EV charging, irrigation, and public buildings. In Shandong's Linqing City, rooftop solar panels has become standard. Each household reportedly earns RMB 1,500 per month, with a return on investment in 5–6 years.
- PV for Desertification Control in the Northwest: Jinko integrates solar panel installations with ecological restoration in arid zones like Qinghai, Gansu, and Xinjiang. Projects such as the 50 MW installation in Gansu's Tongwei County combine solar power with cultivation of speciality crops, reclaiming desert land through "PV + sand control" systems.²³⁴

While solar energy can certainly be beneficial for rural residents, state-organised projects also entail the risk of transforming traditional livelihoods into modern industrial wage labour without the consent of targeted groups. In the case of Jinko's PV projects, we observe several risk indicators.

Financing: Poor farmers and herdsmen have to contribute financially to the installation of solar panel modules on the rooftops of their homes or in their courtyards. According to Jinko's own account, the return on investment is 5–6 years.²³⁵ An earlier project conducted by Jinko involved 2000 households in Jiangxi Province based on the "government guidance, farmer participation, and market operation" model. This approach requires poor farmers to raise funds themselves or, if they are unable to, the government will provide interest-subsidised loans for the funding gap.²³⁶ PVPA projects rely on co-funding from farmers and herdsmen, increasing pressure to accept state-organised job offers, as interest payments and instalments may require additional income.



Figure 16: Jinko PV + sand control project in Northwestern China²³⁷

234 “晶科能源: 让光伏成为乡村振兴抓手_KE科日光伏网。”

235 “晶科能源: 让光伏成为乡村振兴抓手_KE科日光伏网。”

236 “晶科能源承建江西省 2000 户光伏扶贫工程光伏-有色金属新闻-中国有色网-中国有色金属报主办,” 2015, <https://www.cnmn.com.cn/ShowNews1.aspx?id=333225>.

237 “晶科能源: 让光伏成为乡村振兴抓手_KE科日光伏网。”

Resettlement: A press release from April 2025 states that Jinko won the bid for a PVPA in Jianzha County, Qinghai Province.²³⁸ The project is implemented in Deji Village, which is a resettlement site for more than 250 households in a Tibetan autonomous region. A news report featured this project, stating:

“Sufficient power supply has made Deji Village a truly happy village. From using electricity to using it well, Deji Village has adopted the model of “cultural tourism + rural revitalisation”. The herders, who once relied on grazing for income, have transformed into rural tourism operators by opening homestays and restaurants in their new homes at the foot of the mountain.”²³⁹

PVPA projects are frequently implemented in combination with resettlements. The above-mentioned case illustrates that these have far-reaching transformative effects on the lives of farmers and herds-men. Such changes are politically endorsed but cannot be presumed to reflect the wishes or consent of relocated households.

Land transfers: PVPA projects that seek to link energy production with agriculture often involve an investor such as a business or a collective. Economic viability of such projects comes from transferring land use rights to the investor. As a result, farmers and herdsmen may lose land for sustaining traditional livelihoods and instead be forced to work as wage labourers in newly established agricultural businesses or greenhouses. The risk of forced land use rights transfers is particularly high for Jinko’s ecological restoration projects in Xinjiang, Qinghai, and Gansu.²⁴⁰

IV.13.4. Risk Assessment

Jinko has been active for many years, recruiting and receiving workers through poverty alleviation programmes and state-organised labour transfers. Information about transfers indicates that workers are, at least in some cases, under state supervision during transport. Some of the sending jurisdictions are home to ethnic minorities. In addition, Jinko is collaborating with various vocational schools to train students by order. This system entails a high risk of constraining young people’s freedom to seek employment and instead locks them into a labour relationship with Jinko. Given that labour exports appear to be monitored and involve poor households from minoritised ethnic groups, we evaluate the risk of contributing to forced labour as high.

Our investigation suggests that supply chain links to the company’s former subsidiary in Xinjiang, which is now renamed Xinjiang Shibang, still may exist. In addition, Jinko recruited farmers and herders from Xinjiang in 2016 via a state-organised poverty alleviation campaign. We have no information on whether these recruitment channels still exist. We evaluate the risk of Jinko contributing to state-imposed forced labour in the XUAR as very high.

Jinko’s engagement in PVPA is comprehensive, and our research suggests that some of the company’s projects may create preconditions for state-imposed forced labour by increasing poor farmers’ and herdsmen’s debts, as well as facilitating resettlement and land use rights transfers that separate farmers from their traditional livelihoods. The risk of being linked to human rights violations and state-imposed forced labour varies between risk areas between moderate and high.

238 “晶科能源中标结果:【设备类】中国电建水电一局青海尖扎县易地搬迁扶贫光伏项目光伏电池组件采购项目成交公示_股票频道_证券之星,” 2025, <https://stock.stockstar.com/RB2025041100039323.shtml>.

239 网易, “青海黄河边的‘幸福村’:‘电力十足’过起好日子,” 2024, <https://www.163.com/dy/article/JB6LVF0E0514R9KQ.html>.

240 “晶科能源: 让光伏成为乡村振兴抓手_KE科日光伏网.”

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very High Legal risks	High Legal risks	Very High Legal risks	No Findings
	Linked	High Reputational risks	Medium Reputational risks	Moderate Reputational risks	Moderate Reputational risks

IV.14. Risen

IV.14.1. Industrial Poverty Alleviation

Risen regularly participates in poverty alleviation programmes and labour transfers. The initiatives that we reviewed all targeted minoritised groups:

Mongolian ethnic groups: A government document from March 2025 mentioned Risen Energy in the context of employment promotion efforts in Guyang County, Inner Mongolia. Specifically, it states that local authorities conducted targeted labour matchmaking with 27 key enterprises, including Risen, as part of a broader campaign to support employment and interethnic integration. The goal was to facilitate long-term employment, upskill rural labourers, and support rural revitalisation and ethnic unity through industrial participation.²⁴¹ The recruitment site is probably Guangyi New Village, a designated poverty alleviation relocation site in Guyang County. Risen Energy’s solar module plant figures in this context as a key collaboration partner for the local government to increase employment among the rural population.²⁴²

Hani ethnic group: A government document from April 2023 listed Risen Energy as receiving labour transfers from Mojiang Hani Autonomous County in Yunnan through its Changzhou New Energy Company in Henan. The transfer is described as a "point-to-point" labour export, and it targets rural workers to consolidate poverty alleviation outcomes and support national east-west labour cooperation.²⁴³

Naxi ethnic group: In 2020, Risen Energy was listed as one of several Zhejiang-based companies actively recruiting rural workers from Lashi Town and Yulong Naxi Autonomous County as part of a government-organised labour exchange and employment assistance programme. The initiative specifically targets registered poor households, with various subsidies provided to encourage participation, including transportation and living stipends.²⁴⁴ Yulong is home to minoritised groups, mainly Naxi but also Bai, Yi, Hui, Tibetan, Lisu, and Mosuo.

241 “固阳县:五韵交响·推进各族群众互嵌融居,” Weixin Official Accounts Platform, 2025.

242 “市发改委&固阳县 联学互通 学思践悟,” Weixin Official Accounts Platform, 2022.

243 “墨江县2023年农村劳动力转移就业暨东西部劳务协作招聘会就业岗位推荐(第四期),” Weixin Official Accounts Platform, 2023.

244 “【就业服务】拉市镇关于劳动力外出务工的公告,” Weixin Official Accounts Platform, 2020.

IV.14.2. Links to Xinjiang

Risen signed a comprehensive procurement contract with Power Construction Corporation of China (Power China), which is a state-owned energy infrastructure provider, in 2023. The contract stipulates that Risen provides photovoltaic module equipment required for all photovoltaic projects developed and constructed by Power China's subsidiaries. The projects Risen is involved in are mainly located in Xinjiang and Qinghai.²⁴⁵

Information from the time before companies became more careful about reporting on the Xinjiang-based activities clearly illustrates that Power China has been serving as an ally in the repression of Uyghurs. An article from 2018 reports that Power China's Xinjiang branch successfully completed a state-mandated task to receive surplus rural labourers from three counties in southern Xinjiang. Eight young Uyghur men arrived in Jinghe County to begin work with the company. This transfer was part of a targeted poverty alleviation initiative coordinated by the Xinjiang State-owned Assets Supervision and Administration Commission (SASAC) and China Power. The company reportedly assumed responsibility for verifying the workers' background, arranging suitable jobs, and providing religious accommodations such as a halal canteen. It also committed to political-ideological integration by offering basic Mandarin training and guidance in gratitude-themed education focused on party loyalty and ethnic unity. The initiative is framed as fulfilling both political and social responsibilities to support social stability and long-term governance in Xinjiang.²⁴⁶

A China Daily article published in March 2020 reports that China Power's Xinjiang branch received 20 Uyghur workers from Yingjisha County in southern Xinjiang as part of a broader rural labour transfer programme. This was the second such group, following a batch of 50 workers in 2017. Similar to the previous report, China Power provided transport, health checks, accommodation, and halal meals. It also committed to offering follow-up training in Mandarin, workplace safety, and company culture to help workers integrate into their new environment.²⁴⁷

Another report from 2018 states that Power China has been working together with the local border police station in Santanghu, Barkol County, Xinjiang, to train its operations personnel to handle security duties. Twelve employees underwent training and were certified as security guards, enabling them to perform both production and security tasks, "in line with local stability maintenance requirements."²⁴⁸

The above-presented material entails the practices and language that mask the forced internment and re-education of Turkic ethnic groups in Xinjiang. As a state-owned enterprise, it is reasonable to assume that Power China is still complicit in Uyghur forced labour. Therefore, collaborating with Power China links Risen with severe human rights violations and state-imposed forced labour in Xinjiang.

IV.14.3. Risk Assessment

Risen Energy has received farmers and herdsmen from ethnic minority regions in China for at least five years. The workers ended up in Risens factories in Zhejiang, Henan, and Inner Mongolia. The involvement of multiple recruitment areas and destinations suggests a comprehensive and systematic deployment of state-allocated labour. Given that transfers target various minoritised groups but probably do not include ethnic groups facing existential threats, the risk of contributing to state-imposed forced labour is medium or high.

245 “持续联手 合作深化 | 东方日升与电建新能源集团签约1.5GW集采项目,” Weixin Official Accounts Platform, 2023.

246 “【国企担当】新疆公司顺利完成接收南疆三县富余劳动力转移到国有企业就业的任务,” Weixin Official Accounts Platform, 2018.

247 曹原青, “中建电力:复工复产稳就业助力脱贫攻坚,” 2020, <https://cn.chinadaily.com.cn/a/202003/30/WS5e81c2eaa3107bb-6b57a9a18.html>.

248 李兆威哈密公司, “安全 | 中国电建新能源新疆哈密三塘湖风电场员工参加安保培训,” Weixin Official Accounts Platform, 2018.

Risen maintains downstream business relationships with China Power, which links the company’s value chain to severe human rights violations and state-imposed forced labour in the XUAR. We classify the risk of being linked to state-imposed forced labour in Xinjiang as very high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	Medium Legal risks
	Linked	Very high Reputational risks	No Findings	No Findings	No Findings

IV.15. Runnergy

IV.15.1. Links to Xinjiang

Runnergy’s supply chains are built along factories outside of Xinjiang. However, there is a risk that the company’s value chain may entail links to Xinjiang in the future due to the company’s main shareholder, Jiangsu Yueda Group.²⁴⁹ Jiangsu Yueda is a large-scale, state-owned enterprise, which has received Uyghur workers through state-organised labour transfers.²⁵⁰ Furthermore, the company maintains supply chain relationships with various corporations in the XUAR.²⁵¹ These relationships, however, concern business lines unrelated to the solar panel sector, in particular textiles and machinery. Yet there is a possibility that the new energy sector will become a new field for collaboration with Xinjiang entities. Yueda Group published a press release on its website summarising a meeting on August 16, 2024, between Jiangsu Yueda Group and the Xinjiang Production and Construction Corps Supply and Marketing Cooperative (XPCC). The discussion focused on potential collaboration across several sectors. Both sides expressed a shared interest in strengthening cooperation in the new energy sector.²⁵² We did not find information corroborating whether this general interest has led to concrete plans.

IV.15.2. Risk Assessment

We did not find any information indicating that the company participates in poverty alleviation programmes or state-organised labour transfers. The main risk comes from the company’s main shareholder, Jiangsu Yueda Group, which maintains multiple links to Xinjiang. At the time of writing this report, these links do not include the solar panel business line. We provide the above information as a potential risk but do not associate Runnergy with a specific risk category.

249 “江苏润阳新能源科技股份有限公司-润阳股份 - 天眼查,” 2025, <https://www.tianyancha.com/company/3435173151>.

250 “头条关注|伊犁州人社局来盐对接劳动力转移就业工作,” Weixin Official Accounts Platform, 2015.

251 “金亿集团, “江苏悦达集团有限公司董事王圣杰一行莅临金亿集团参观考察,” Weixin Official Accounts Platform, 2024.

252 “悦达集团 - 同喜悦 共发达,” 2024, <https://www.yueda.com/info/3268>.

IV.16. Sumec Energy

IV.16.1. Links to Xinjiang

An online news article from April 2025 reports that Sumec and Huawei signed an agreement in Shenzhen to deepen cooperation in multiple energy-related areas. These include inverter procurement, engineering and maintenance services, technological upgrades, zero-carbon energy IoT development, and global business collaboration.²⁵³ The agreement links Sumec to human rights violations associated with Huawei in Xinjiang (see section VIII.10.).

Sumec Energy is a subsidiary of Jiangsu Sumec Group. The latter is also a major textile producer. Two of Jiangsu Sumec's factories, located in Huaibin and Gushi Counties, Henan Province, link to six poverty alleviation workshops. The workshops employ more than 2600 labourers.²⁵⁴ Furthermore, a report from May 2024 summarises a meeting between Jiangsu Sumec and Zhongtai Group, which is a company listed on the UFLPA entity list. During the meeting, representatives from both sites discussed collaboration opportunities. According to the article, a representative from Sumec “expressed *hope that the two parties would leverage favourable policies and Xinjiang’s geographic advantages to explore opportunities in air separation engineering and high-end equipment, fully utilising their respective resources to deepen pragmatic cooperation, stimulate industrial vitality, and achieve mutual benefit and win-win results.*”²⁵⁵ There is no information linking Sumec Energy to Zhongtai Group. Thus, the aforementioned document is insufficient to establish a Xinjiang link but should be noted as a field for further inquiry.

IV.16.2. Risk Assessment

Sumec Energy collaborates with Huawei in the field of new energy and related digital solutions. Given that Huawei supplies such technologies to Chinese entities, which are key players in implementing repressive policies, surveillance, and state-imposed forced labour in the XUAR, Sumec Energy is indirectly linked to state repression in Xinjiang. We evaluate this risk as high. The parent of Sumec Energy, Jiangsu Sumec Group, runs poverty alleviation workshops in Henan and might collaborate with Xinjiang Zhongtai Group. These activities, however, are most likely not related to the new energy sector and therefore do not impact the overall risk evaluation concerning the solar panel business line.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	Medium Legal risks
	Linked	High Reputational risks	No Findings	No Findings	No Findings

253 网易, “‘国家队’内卷加剧! 又一家央企巨头携手华为加码新能源业务,” 2025, <https://www.163.com/dy/article/JTP87NF90511E624.html>.

254 网易, “国机集团‘2+6+N’产业帮扶模式获评中央企业助力乡村振兴优秀案例,” 2024, <https://www.163.com/dy/article/J4GE63D-30552KN3A.html>.

255 “技术交流 | 苏美达党委委员、副总经理辛中华一行到新疆中泰集团交流座谈,” Weixin Official Accounts Platform, 2024.

IV.17. Taoistic

IV.17.1. Links to Xinjiang

On March 28, 2024, Jiangsu Taoistic Photovoltaic Technology Co., Ltd. held a groundbreaking ceremony in the Lama Lake Industrial Park in Qitai County, Xinjiang, for its new project involving 3 GW of high-efficiency photovoltaic modules and 5 GW of TOPCon monocrystalline cells. The project, requiring a total investment of 3.5 billion RMB, will unfold in two phases. The first phase focuses on module production, while the second phase revolves around high-efficiency cells. The company has emphasised strong policy support from local authorities, and it plans to continue its strategic investment in Qitai.²⁵⁶

IV.17.2. Risk Assessment

Taoistic's investments in production facilities in Xinjiang will increase the probability of contributing to the state-imposed forced labour regime. Given that this is a prospect rather than a current risk, we put the risk category in brackets. Excerpts from business registries show that Jiangsu Taoistic and almost all of its subsidiaries are in financial difficulties and, due to wage arrears and other debts, have been categorised as “dishonest debtors”.²⁵⁷ Financial difficulties further increase the risk of contributing to state-imposed forced labour, as the company may want to rely on cheap labour and government subsidies to navigate the construction of its Xinjiang production facilities.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	(Very High) (Legal risks)	No Findings	No Findings	No Findings
	Linked	No Findings	No Findings	No Findings	No Findings

IV.18. Tongwei

IV.18.1. Industrial Poverty Alleviation

Tongwei aligns its employment strategies with party-state directives and aims to alleviate industrial poverty. A press note published in March 2024 informs that the party branch of Tongwei Solar's Meishan factory (Sichuan Province) held a party-building exchange activity with Xinsi Village in Wansheng Town. During the exchange, both sides expressed their intention to support village-level development through employment assistance and joint party initiatives.²⁵⁸ Meishan is an autonomous prefecture that is home to both the Yi and Hui ethnic groups.

256 小小口袋, “太一光伏3GW电池+5GW组件项目落户新疆奇台县,” Weixin Official Accounts Platform, 2024.

257 “太一光伏科技(常州)有限公司-太一光伏 - 天眼查,” 2025, <https://www.tianyancha.com/company/3483295490>; “江苏太一光伏科技有限公司 - 天眼查,” 2025, <https://www.tianyancha.com/company/3279705711>.

258 “通威太阳能眉山基地党总支开展结对村党建交流活动 - 新闻中心 - 通威 为了生活更美好 - 通威股份,” 2024, <https://www.tongwei.cn/news/10442.html>.

Tongwei participates in state-allocated employment schemes that seem to rely on intensive surveillance. In 2023, Jintang County, in Chengdu, was recognised by the Sichuan Provincial Employment Service Administration for its outstanding performance in monitoring labour demand in industrial parks. The county’s human resources and social security bureau implemented real-name information management for rural labour and conducted labour monitoring for 30 key enterprises, among them Tongwei, covering 18,900 workers. Through a “one-on-one specialist” system, they collected monthly data on changes in enterprise labour demand, employee composition, and wage distribution. They used this data to mobilise rural workers through 177 job fairs, effectively meeting the labour needs of local enterprises.²⁵⁹

An article on rural revitalisation efforts in Dengzhou City, Henan Province, mentions Tongwei in the context of China’s national poverty alleviation campaign. The company established a rice-shrimp integrated farming base in Linba Town, employing 136 formerly poor households. The project was presented as an illustration of Dengzhou’s broader approach to linking industrial development with poverty alleviation.²⁶⁰

IV.18.2. Photovoltaic Poverty Alleviation

Tongwei Group has been involved in photovoltaic poverty alleviation since 2007. The company claims that it was the first to propose and promote the concept of “photovoltaic poverty alleviation”, notably through the establishment of the “Sunshine Plan” with a 50 million RMB donation. Tongwei has funded solar power projects in regions such as Sichuan, Hebei, and Xinjiang, particularly targeting underdeveloped and ethnic minority areas. In addition to building solar infrastructure, Tongwei has advocated for making photovoltaic poverty alleviation a national policy through legislative proposals.²⁶¹

A news feature published in 2022 discusses Tongwei Group’s involvement in projects that combine solar energy with agriculture and aquaculture, particularly through its “fishing-solar integration” model. A CCTV-2 report from 2020 explains that Tongwei’s poverty alleviation model seeks to integrate photovoltaic infrastructure with local employment and income generation.²⁶² Another article, published during the same year, reports on a photovoltaic poverty alleviation project in Xide County, Liangshan Prefecture, Sichuan Province. Located in a rural township, the project combines solar power generation with agriculture and animal husbandry, in cooperation with local cooperatives. It includes agricultural training, employment support, and income distribution mechanisms.²⁶³

Publicly available reports on Tongwei’s photovoltaic poverty alleviation work indicate that the company has been involved in a significant amount of projects and that these projects follow the general logic of transforming the lives of farmers and herdsmen through industrialisation and a shift towards wage labour. The reports also suggest that such projects may involve land use rights transfers. Tongwei’s PVAP frequently targets ethnic minorities, which entails the risk that such initiatives reflect political objectives rather than the wishes of the households to be lifted out of poverty.

IV.18.3. Risk Assessment

Crawford and Murphy find that among the companies investigated, Tongwei is probably the least dependent on upstream links to Xinjiang.²⁶⁴ The risks of state-imposed forced labour arise, according to our investigation, mainly due to the company’s involvement in industrial poverty alleviation pro-

259 “省级表扬名单公布·金堂上榜!,” Weixin Official Accounts Platform, 2024.

260 “奋力谱写乡村振兴新篇章——我市乡村振兴工作综述,” Weixin Official Accounts Platform, 2022.

261 “编辑整理:wjn, “国家扶贫日|通威·不忘扶贫初心·照亮脱贫道路,” Weixin Official Accounts Platform, 2017.

262 “李天宇, “CCTV-2央视财经频道聚焦通威喜德农光牧光一体光伏扶贫项目,” Weixin Official Accounts Platform, 2020.

263 “段跃, “焦点|通威新能源喜德项目成功通过四川省能源局验收,” Weixin Official Accounts Platform, 2020.

264 Crawford and Murphy, *Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing*.

grammes targeting minority groups outside of Xinjiang. Government reports and articles suggest that CCP oversight and state-run monitoring systems guide Tongwei's participation. We evaluate the risk of Tongwei contributing to state-imposed forced labour as high.

Tongwei has engaged in and politically developed photovoltaic poverty alleviation programmes since 2007. The company's involvement is comprehensive and mainly targets minoritised groups. Reports entail risk factors such as collectives' involvement (which may affect land use rights for individual households) and state-led industrialisation policies that transform traditional livelihoods into wage-based employment. These programmes can provide the pretext for human rights violations. The risk that Tongwei's value chain is linked to state-imposed forced labour is medium-high.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	Medium Legal risks
	Linked	High Reputational risks	No Findings	No Findings	No Findings

IV.19. LONGi

IV.19.1. Industrial Poverty Alleviation

According to a government document (not dated but probably published in 2020), Lijiang LONGi Silicon Materials Co., Ltd. was established as an “employment poverty alleviation workshop” in Huaping County, Yunnan Province. Using the model of “enterprise + workshop + poor households”, the initiative aimed to turn rural residents into industrial workers by offering nearby job opportunities, with relaxed hiring conditions and support services. By April 2020, the company had hired 3,424 workers, including 277 from registered poor households. Local authorities coordinated with LONGi to ensure recruitment from villages and provided ongoing training, mentoring, and monitoring.²⁶⁵ A document from November 2023 states that in addition to Lijiang LONGi, Huaping LONGi was also designated as an official *employment assistance workshop*. At that time, LONGi had received more than 100 formerly poor individuals.²⁶⁶

An article published in 2019 describes an initiative aimed at reducing poverty in Banqiao Town, Longyang District, where local officials coordinated with Baoshan LONGi Silicon Materials Co., Ltd. in Yunnan Province to provide job opportunities for residents, including poor households, migrant workers, and others facing employment challenges. The LONGi facility in Baoshan Industrial Park hosted interviews for 92 job seekers from Banqiao. Baoshan LONGi is a wholly owned subsidiary of LONGi Green Energy.²⁶⁷

265 “发挥示范带动作用 积极助力脱贫攻坚 ——记就业扶贫车间丽江隆基硅材料有限公司_州市动态_云南公共就业服务网,” No date, <https://hrss.yn.gov.cn/jyj/Print.aspx?ClassID=1083&newsid=48028>.

266 “华坪县‘四化’措施促进就近就地务工增收着力提升乡村振兴工作成色——华坪县就业帮扶典型材料 - 丽江市人民政府,” 2023, <https://www.lijiang.gov.cn/ljsrmzf/c102247/202311/f0ef360c099d4e2482769d7b4e83da48.shtml>.

267 “王佳妮,“板桥镇扶贫就业一直在路上,” Weixin Official Accounts Platform, 2019.

Government-organised recruitment, including possible coercion, shines through in a report on a rural labour transfer meeting held on October 13, 2020, in Longling County. The meeting emphasised the importance of transferring rural labour to address ongoing labour shortages at Baoshan LONGi, which had a staffing gap of 1,200 workers despite being fully operational. LONGi's HR representative presented the company's recruitment needs. Officials encouraged townships and departments to strengthen outreach and directly connect with registered poor households to ensure effective labour placement and enterprise support.²⁶⁸

A government document from December 2023 reveals that state authorities regularly recruit impoverished households. The document outlines Longling County's rural labour transfer and employment initiatives aimed at increasing income and consolidating poverty alleviation results. The document mentions the Baoshan Longi Silicon Materials Co., Ltd. plant as a key destination for local labour transfers. Between January and February 2023, it offered 736 positions and received 100 new employees from Longling. By the time of reporting, the company employed 4,376 workers, of whom 1,690 (38.62%) were from Longling County. The county is a multiethnic jurisdiction with a population including Yi, Dai, Hui, Bai, Lisu, Achang, Jingpo, and Buyi.²⁶⁹



Figure 17: Mobilising poor households and migrant workers at LOGNi Baoshan Industrial Park²⁷⁰

The case of LONGi illustrates how coercive means such as home evictions are tied into industrial poverty alleviation. In a notice issued by Longjiang Township Government in Longling County from 2017, authorities aimed at mobilising rural labourers, particularly those from relocated households and households affected by housing demolition, to apply for jobs at Baoshan LONGi Silicon Materials Co., Ltd. The government offered a 200-RMB organisational subsidy for each person successfully transferred to LONGi.²⁷¹ This demonstrates that poverty alleviation projects and quota fulfilment are reinforced with financial incentives to commercial services such as labour dispatch agencies.

Recruitment and labour transfers to LONGi are state-coordinated and monitored. The People's Daily featured Longling County's efforts to promote poverty alleviation in August 2020. The county strategy included large-scale skills training for rural workers, building over 1,000 local "poverty alleviation workshops", and forming labour service cooperatives across all villages. These cooperatives coordinate job placements and offer incentives to companies hiring the poor, including subsidies for employment. The county also built a three-tier employment information network (county-town-village) and developed tailored training modules, including mobile and online formats. LONGi served as an example of how enterprises are integrated into these efforts.²⁷²

268 “我县召开农村劳动力转移就业(保山隆基招聘)工作座谈会,” Weixin Official Accounts Platform, 2020.

269 “念好转移‘经’ 端好就业‘碗’——保山市龙陵县开展农村劳动力转移就业助农增收典型-保山市人民政府门户网站,” 2023, <https://www.baoshan.gov.cn/info/23056/9886274.htm>.

270 “王佳妮, “板桥镇扶贫就业一直在路上.”

271 “龙江乡关于保山工业园区(龙陵县园中园)保山隆基硅材料有限公司招工的通知-龙陵县人民政府门户网站,” 2017, <https://www.longling.gov.cn/info/9134/2605989.htm>.

272 “保山龙陵就业扶贫架起‘富联网,’” 2020, <http://yn.people.com.cn/GB/news/yunnan/n2/2020/0807/c385762-34212234.html>.



Figure 18: The local government assists LONGi in recruiting individuals registered as poor in Bizhai Township, Longling County, Yunnan.²⁷³

LONGi has systematically used poverty alleviation as a recruitment channel across multiple locations. A document published in August 2021 outlines Lufeng City’s (Guangdong Province) “Ten Measures” to stabilise employment and connect poverty alleviation with rural revitalisation. In this context, LONGi Silicon Materials Company is mentioned as one of two companies where workshops for employment and poverty alleviation were established within the resettlement site at Suyuan Community. At the resettlement site, over 900 of the 1,061 labourers found employment. Workshops at companies like LONGi integrate farmers and herdsmen into industrial wage labour.²⁷⁴ A news article from November 2024 provides an overview of rural labour transfer and employment efforts in Ningxia. In 2022, a total of 829,700 rural workers in the region were successfully employed, marking an increase over the previous year. The piece highlights government strategies such as job-matching services, skills training, and enterprise cooperation to support this outcome. In this context, LONGi Green Energy is mentioned as one of the key enterprises involved in absorbing transferred rural labour. Specifically, the LONGi plant in Yinchuan employed workers from Guyuan who had been relocated due to poverty alleviation resettlement policies.²⁷⁵ Given that Ningxia is a Hui Autonomous Region, relocation and poverty alleviation employment are particularly unsettling as Muslim Hui increasingly face similar existential threats as Turkic ethnic groups in Xinjiang.

IV.19.2. Photovoltaic Poverty Alleviation

LONGi Clean Energy developed a 15 MW photovoltaic poverty alleviation project in Yanchuan County, Shaanxi, as part of its broader poverty alleviation strategy. The project provides annual payments of 3,000 RMB to each household in the targeted village. In addition to financial support, LONGi has integrated agricultural activities such as herbal planting and eco-tourism under and around the solar arrays to create employment opportunities. LONGi positions the initiative as a transition from short-term assistance to long-term income generation, combining photovoltaic energy, poverty alleviation, and agriculture. The company claims that the project creates around 50 jobs in technical, maintenance, and agricultural roles. This model, referred to as the “LONGi model”, has been implemented in multiple regions, including Hainan, Ningxia, and other parts of Shaanxi.²⁷⁶

273 “【脱贫攻坚】碧寨乡：相随务工去·致富在隆基,” Weixin Official Accounts Platform, 2019.

274 “禄丰市‘十个一批’稳就业助推脱贫攻坚与乡村振兴有效衔接-楚雄彝族自治州人力资源和社会保障局网站,” 2021, <https://rsj.czx.gov.cn/info/1079/13418.htm>.

275 “宁夏农村劳动力转移就业新局面：82.97万劳动者的背后_服务_发展_求职者,” 2024, https://www.sohu.com/a/www.sohu.com/a/822784398_121956425.

276 “光伏扶贫‘隆基模式’，扶贫攻坚的榜样力量,” Weixin Official Accounts Platform, 2018.



IV.19.3. Risk Assessment

Crawford and Murphy (2023) evaluated LONGi’s XUAR risk exposure as very high due to upstream supplier contracts with Xinjiang-based companies such as Daqo and Xinte. Direct or indirect links will remain valid at least until 2027.²⁷⁷ While this finding links LONGi to Uyghur forced labour, our findings suggest that the company may contribute to state-imposed forced labour in other parts of China. This risk is particularly high in the Ningxia Hui Autonomous Region. A review of publicly available documents shows that Longi is making use of state-organised labour transfers and the mobilisation of registered poor households. LONGi has been deploying state-allocated labourers for at least ten years. Recruitment is comprehensive, including both multiple recruitment areas and manufacturing bases. Some of LONGi’s production facilities serve as dedicated poverty alleviation factories. The reviewed documents suggest a high level of state coordination and monitoring. In combination, the available information suggests a high or very high risk of contributing to state-imposed forced labour beyond the XUAR.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	Very high Legal risks	No Findings	Medium Legal risks
	Linked	Very high Reputational risks	Medium Reputational risks	Moderate Reputational risks	No Findings

IV.20. Trina Solar

IV.20.1. Industrial Poverty Alleviation

A government document from Haidong City in Qinghai Province, published in October 2023, names Trina Solar in the context of the city’s multifaceted strategy to promote the transfer and employment of rural workers. As of the reporting date, 485,000 instances of rural labour transfers had occurred, including 129,000 via organised, large-scale transportation. The Haidong government directs enterprises, including Trina Solar, to assess labour demand and coordinate placement.²⁷⁸

On April 24, 2024, Trina Solar and its subsidiary, Inner Mongolia Tiansheng New Technology Co. Ltd., held a dedicated recruitment fair in Zhungeer Banner, Inner Mongolia, as part of local employment assistance and rural revitalisation efforts. The event offered 50 jobs, including positions for production and forklift operators, attracted over 20 participants, and resulted in 12 resumes submitted and 8 preliminary employment agreements reached. The initiative aimed to match rural surpluses and formerly poor workers with the enterprise’s needs, enhance employment services, and support local economic development.²⁷⁹

277 Crawford and Murphy, Over-Exposed: Uyghur Region Exposure Assessment for Solar Industry Sourcing.

278 “多措并举助力农村劳动力转移就业,” Weixin Official Accounts Platform, 2023.

279 “点击蓝字关注我们, 【就业帮扶 助力乡村振兴】天合光能-内蒙古天晟新科技有限公司专场招聘会火热开启,” Weixin Official Accounts Platform, 2024.

While the above documents suggest that Trina Solar occasionally participates in labour transfers and state-organised recruiting, the reported instances do not indicate comprehensive or systematic engagement. In addition, the recruitment event in Inner Mongolia seemed to be voluntary.

IV.20.2. Photovoltaic Poverty Alleviation

Various news articles feature Trina Solar as a long-term corporate actor in China's national poverty alleviation strategy through its promotion of PVPA initiatives. The company began engaging in solar energy-based poverty alleviation as early as 2003, well before national “precision poverty alleviation” policies were formally launched. For instance, it built 40 solar power stations in off-grid areas of Tibet. The official documentary “China's Poverty Reduction Code” highlights Trina Solar as a model case and portrays it as a representative enterprise.²⁸⁰

Despite Trina Solar’s prominent participation in photovoltaic poverty alleviation projects, we conclude that the company’s engagement is comparatively unproblematic. Trina supplied parts or equipment in the majority of the cases we examined, but it took no action to convert traditional means of subsistence into industrial-wage labour. Several reports also suggest that Trina’s contributions are mainly donations without financial contributions from registered poor households.

IV.20.3. Risk Assessment

Crawford and Murphy (2023) find that Trina Solar’s modules manufactured in China entail a very high risk of being linked to Uyghur forced labour through its wafer suppliers, who source them from the XUAR. Although we found information regarding Trina Solar’s involvement in both industrial and photovoltaic poverty alleviation, this information includes very few risk indicators. Therefore, we evaluate the risk of participating in state-imposed forced labour as moderate.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	No Findings	No Findings	No Findings	Moderate Legal risks
	Linked	No Findings	No Findings	No Findings	No Findings

280 “深度 | 完美押题《中国减贫学》·天合光能扶贫20年都做了什么?_太阳能,” 2021, https://www.sohu.com/a/www.sohu.com/a/455002625_157504.

IV.21. Yingli Energy

IV.21.1. Links to Xinjiang

On March 6, 2022, Yingli Energy (China) Co., Ltd. signed a framework cooperation agreement with the government of Tuoli County, Xinjiang Uyghur Autonomous Region, for a 3 GW photovoltaic (PV) project. The total investment is 14 billion RMB. The project will be developed in Miao'ergou Town, where approximately 80,000 mu (about 5,300 hectares) of land will be leased to construct the PV base and supporting infrastructure. The project is planned to be completed in stages over five years. It is stated that the project is expected to generate land lease income for local communities and create 200–400 short-term jobs.²⁸¹ In the context of Xinjiang, both land lease arrangements and the jobs created are likely to serve political repression and the forced assimilation through labour of Uyghur farmers and herdsman.

A government document published in September 2019 details how Hebei Province has supported employment in Xinjiang's Bayingolin Mongol Autonomous Prefecture (Bazhou). The government sought to promote local employment by attracting Hebei-based enterprises to invest in Bazhou and the Xinjiang Production and Construction Corps' Second Division. The article mentions Yingli as one of the "well-known private enterprises" from Hebei that were introduced to Bazhou and the Second Division. The article describes these enterprises as instrumental in extending production lines and employment opportunities to rural households, with a particular focus on ethnic minority populations and poor families.²⁸²

Due to restricted access and very limited transparency, we were not able to check whether Yingli has a production base in Bazhou. Still, we identified two Xinjiang-based companies owned by Yingli with a registered business scope of manufacturing photovoltaic equipment and components: Xinjiang Yingli New Energy Co. Ltd. is a wholly owned subsidiary of Yingli Energy (Beijing),²⁸³ and Keping County Lineng Photovoltaic Power Generation Co. Ltd. is a wholly owned subsidiary of Xinjiang Yingli New Energy Co. Ltd.²⁸⁴ Based on available information, it is reasonable to assume that at least some of Yingli's products are manufactured in Xinjiang.

On October 14, 2024, Yingli Group and the Hebei branch of China Huadian Group signed a strategic cooperation framework agreement. The agreement outlines future collaboration in areas such as new energy project development and supply of photovoltaic products. The agreement was signed by representatives from both sides during a formal meeting, with executives and technical staff from Yingli, China Huadian Hebei, and affiliated companies in attendance.²⁸⁵ Our research (section VIII.11.1) shows that Huadian is actively participating in the Xinjiang state-imposed forced labour regime.

IV.21.2. Photovoltaic Poverty Alleviation

A news article published in March 2021 featured Yingli Group's involvement in China's photovoltaic (PV) poverty alleviation campaign through the deployment of PV power stations across multiple provinces, including Hebei, Shanxi, Guangxi, Gansu, Qinghai, Inner Mongolia, and Xinjiang. The projects were implemented using a model based on self-generated electricity and income from selling excess electricity to the grid. Yingli constructed both household-level and village-level solar panel systems

281 “英利能源与新疆托里县签约3GW光伏基地项目-北极星太阳能光伏网,” accessed July 27, 2025, <https://mguangfu.bjx.com.cn/mnews/20220311/1209502.shtml>.

282 “就业援疆 | 河北构建‘三位一体’模式·累计解决巴州群众就业3.8万余人次!,” Weixin Official Accounts Platform.

283 “新疆英利新能源有限公司 - 英利能源,” 爱企查, accessed July 27, 2025, https://aiqicha.baidu.com/company_detail_16036290003324.

284 “柯坪县利能光伏发电有限公司 - 利能光伏,” 爱企查, accessed July 27, 2025, https://aiqicha.baidu.com/company_detail_16032494087274.

285 网易, “英利集团与中国华电签署战略合作协议,” October 17, 2024, <https://www.163.com/dy/article/JENAVH6O05523RR6.html>.

in designated poor areas. These systems were intended to reduce electricity costs and generate income for registered poor households and village collectives. The article notes that the projects were part of the national PV poverty alleviation policy framework.²⁸⁶ Earlier, Yingli had participated in distributed PV projects in Sichuan, Tibet, Gansu, and Hainan. These were constructed using a model that emphasised centralisation, collective operations, and maintenance. Yingli also built integrated applications of PV with agriculture and animal husbandry.²⁸⁷ We did not find recent information on photovoltaic poverty alleviation projects, which could indicate that the corporation has left this business area.

IV.21.3. Risk Assessment

Yingli Energy maintains multiple links to Xinjiang. The company runs a solar energy base in the XUAR, and its production network includes at least two Xinjiang-based companies. Thus, the risk of contributing to state-imposed forced labour in the XUAR is very high. Furthermore, Yingli is collaborating with Huadian, a company deeply involved in the Uyghur forced labour regime in Xinjiang. As a result, there is a very high risk that the company is linked to forced labour in Xinjiang.

Yingli’s engagement in photovoltaic poverty alleviation entails the risk of contributing to forced labour, but it seems that the company has not been involved in projects for the past five years. We, therefore, do not have sufficient information to assign a risk category.

		Spatial Risk			
		Risk Area I	Risk Area II	Risk Area III	Risk Area IV
Relational Risk	Cause /contribute	Very high Legal risks	No Findings	No Findings	No Findings
	Linked	Very high Reputational risks	No Findings	No Findings	No Findings

286 “英利1.5吉瓦光伏扶贫电站助力脱贫攻坚_模式,” accessed July 27, 2025, https://www.sohu.com/a/www.sohu.com/a/453661548_99958797.

287 “英利1.5吉瓦光伏扶贫电站助力打赢脱贫攻坚战 - 今日头条,” accessed July 27, 2025, <https://www.toutiao.com/article/6933129441824473603/>.

V. Conclusion

Locating and identifying state-imposed forced labour in China is challenging. Coercion is frequently structural and implied rather than openly stated: surveillance, grid-style community management, top-down quotas, and ideological discipline create a “menace of penalty” without the need for explicit threats or individual perpetrators. Because the ILO’s indicators were built for employer-level abuses, they struggle to capture mass mobilisation campaigns in which schools, party committees, police, SOEs and private firms share responsibility; victims rarely self-report, and official narratives of “care”, “training”, and “development” blur coercion behind welfare language. In practice, human rights due diligence therefore rests on reading structural markers such as quotas, grid governance, restrictions on exit and mobility, or state-controlled employment tracks.

Previous research on Xinjiang has established characteristics of state-imposed forced labour. The single most important channel linking coercive practices with global supply chains is targeted poverty alleviation programmes. The latter build the pretext for labour transfers that proceed under militarised discipline, political indoctrination, and intensive surveillance. The military XPCC (Xinjiang Production and Construction Corps) integrates party, paramilitary and corporate power to organise land expropriation, transfers, and industrial labour absorption. Those who refuse risk not only the loss of social rights but also existential threats such as internment or imprisonment.

In the global solar panel manufacturing supply chain, exposure to state-imposed forced labour is endemic because of upstream dependence on materials and production capacities located in the Xinjiang Uyghur Autonomous Region (XUAR). Quartz mining, metallurgical-grade silicon (MGS), and polysilicon production in the region have been shown to operate within state labour-transfer and control programmes, and the physical blending of MGS and polysilicon means contamination at any upstream stage can permeate the downstream chain of wafers, cells, and modules. What is more, large solar bases are increasingly co-located with industrial parks that absorb transferred labour, binding renewable-energy buildout to coercive labour governance.

Poverty alleviation programmes beyond the XUAR deploy similar practices such as quota-driven labour transfers, resettlement, party-run mobilisation, “employment workshops”, and monitored point-to-point transports to transform subsistence livelihoods into low-paid industrial wage work. The key difference is the degree and modality of coercion: outside Xinjiang, administrative and economic pressures dominate, whereas in Xinjiang, existential threats and militarised enforcement are integral. Nevertheless, dissent or refusal to cooperate is socially and politically dangerous everywhere. As a result, participation in poverty alleviation programmes cannot be assumed to be voluntary, and refusal or exit may not be an option.

Photovoltaic poverty alleviation (PVPA) is deeply entangled with these dynamics. PVPA changes land use (including pressured or unlawful land-use transfers), redistributes energy to resettlement-adjacent workshops, and introduces household credit burdens (rooftop loans, co-financing) that heighten dependence on state-assigned jobs. In Xinjiang and Tibetan areas, PVPA is explicitly framed as part of a “civilising” transition into disciplined industrial labour; distributed and utility-scale solar thus function not only as infrastructure but also as levers of assimilation and labour control.

Looking across the manufacturers analysed in this report, three recurring risk patterns emerge:

- First, direct and indirect exposure to Xinjiang persists through upstream material sourcing and new investments. Bifurcated export lanes do not reduce the risk of state-imposed forced labour and therefore deflect from the issue rather than mitigating it.

- Second, beyond Xinjiang, leading solar panel manufacturing brands participate in state-organised recruitment and transfers of registered poor and ethnic minorities through employment-assistance workshops and county job fairs. Recruitment and allocation of labour are facilitated through real-name monitoring and point-to-point transports that reduce worker choice and normalise mobilisation under duress.
- Third, PVPA itself is a risk factor, as companies that both build and publicly champion schemes force targeted communities into monitored wage work.
- Finally, solar panel manufacturing supply chains intersect with digital grid technology and state-owned energy infrastructures. Together they strengthen political, social and economic repression. Huawei's long-running footprint in Xinjiang, surveillance-relevant partnerships, digital energy deployments, and agreements with SOEs implicated in the region's regime illustrate how inverters, networks, and "smart" systems can reinforce grid governance that underpins coercive labour and authoritarian control.

Taken together, these findings indicate a layered, intersectional risk landscape:

- Very high risk where Uyghur/Turkic or Tibetan communities are targeted under existential threat;
- High risk where ethnic minorities and registered poor are mobilised under administrative coercion;
- Medium-to-high risk where PVPA and resettlement alter land and livelihoods under party oversight;
- Persistent human rights risks through upstream exposure.

This profile confirms that state-imposed forced labour in China is closely entwined with industrial policy and rural "revitalisation". China's solar panel manufacturers are among the beneficiaries of this system, and, by extension, rights violations must be understood as endemic, demanding a collective response.

Appendix I

Companies included in the search field of this study

Company name
AE Solar
Aiko Solar
Anhui daheng (DAH Solar)
Anhui Huasun
AVC
Beny
Biaoyu
Canadian Solar
Chint/Astroenergy
Churod Electronics
CRRC
DAS Solar
DELTA
DMEGC
DMEGC (Hengdian Magnetics)
Eging
Einnova Solarline
First
Fuller
GCL System
GoodSun
Hongfa Electroacoustic
HT-SAAE
Huawei
Huitian
Infineon
JA Solar
Jetion
Jiangsu GCL Silicon Material Technology Development Co. Ltd.

Jiangsu Zhongneng Polysilicon Technology Development Co. Ltd.
Jinko Solar
Jolywood
Leapton Energy
LEM
Longi Green
Luxen Solar
Nidec
ON
Osda Solar
Renesola
Risen Energy
Runergy/Hyperion
Seraphim
SET
Shengjiu
Sichuan Zhongguang
Sinomags
Solarspace
Songchuan
Starpower
Stäubli
Sumec/Phono Solar
Sunova Solar/Thornova
Sunpro Power/YH Solar
Tamura
Taoistic Solar
Tongwei
Tonyshare
Trina
Woxin
Yingli
Zhonghuan Sunter
ZNShine

Appendix II

Confirmatory Factor Analysis (CFA) Methodology

A. Data and Variables

This analysis draws on data for 31 Chinese provinces, comprising the following three observed indicators:

- Protests: Number of documented protests (measure of social unrest),
- Ethnic: Percentage of the population belonging to ethnic minorities,
- Rural Income: Annual rural household income per capita (in RMB).

These indicators are modeled as manifestations of a single underlying latent construct, labeled Socio-Political Stress.

B. Data Preparation and Imputation

One observation (Shaanxi) was missing data on the protests variable. This missing value was imputed using regression imputation:

- A linear regression model was estimated with protests as the dependent variable and ethnic and rural income as predictors.
- The model was fitted on the 30 complete cases.
- The missing value for Shaanxi was predicted from this model and imputed with a value of 444.8.
- All percentage values for ethnic minorities were converted from comma to period decimal notation.

C. Standardization

All three observed variables were standardized (z-scored) to ensure comparability of scales prior to factor analysis. For each variable:

$$z_i = \frac{x_i - \mu}{\sigma}$$

Where:

x_i is the raw value,

μ is the sample mean,

σ is the sample standard deviation.

D. Confirmatory Factor Analysis (CFA)

A single-factor CFA model was specified with the latent variable state-imposed forced labour risk:

- Protests and Ethnic (%) were assumed to load positively on the latent factor.
- Rural income was assumed to load negatively, consistent with the interpretation that lower income levels contribute to stress.

Estimation was conducted using Principal Axis Factoring on the standardised data, which is appropriate for continuous variables and the assumed unidimensional structure.

Factor Loadings:

Indicator	Loading	Direction
Protests	0.83	↑
Ethnic (%)	0.76	↑
Rural Income	-0.70	↓

The first factor eigenvalue was 1.98, accounting for 65.9% of the total variance. All loadings were strong ($>|0.7|$) and directionally consistent with theory.

E. Factor Score Computation

Factor scores for each province were computed as a linear combination of standardized variables weighted by the loadings:

$$n_i = 0.83 \times z(\text{protests}_i) + 0.76 \times z(\text{ethnic}_i) - 0.70 \times z(\text{income}_i)$$

This yielded a continuous state-imposed forced labour risk index for each province.

F. Normalization of Index

To facilitate interpretability and comparison, the latent factor scores were rescaled to a 0–100 index using min-max normalization:

$$Index_i = 100 \times \frac{n_i - \min(n)}{\max(n) - \min(n)}$$

Where:

n_i is the raw factor score for province i ,

$\min(n)$, $\max(n)$ are the minimum and maximum scores across all provinces.

G. Resulting Index

The final index provides a ranked measure of state-imposed forced labour risks across all 31 provinces, with higher values indicating greater relative risk, as inferred from protest frequency, minority population share, and rural income levels.

Company Responses

The Globalworks team had no prior communication channels with any of the companies mentioned in the report, CSOs, or private individuals linked to the solar panel sector in China. To obtain relevant contact points, we reviewed company websites, sustainability reports, and other corporate communications related to sustainability. Most contacts identified included terms such as ESG, CSR, IR, investor relations, or sustainability, while others were less immediately apparent. To ensure effective outreach, we sometimes collected multiple contacts within the same company.

After compiling the relevant contacts, we distributed the reports to all companies on the same day. Companies implicated in both the State-Imposed Forced Labour report and the Labour Rights Violations report received two separate emails and were asked to comment on each report individually. All companies were given a two-week response period.

At the time of writing no company has submitted comments on the State-Imposed Forced Labour report.

Context Document

IRBC Agreement for the Renewable Energy Sector

Who We Are

The International Responsible Business Conduct (IRBC) Agreement for the Renewable Energy Sector is a multi-stakeholder initiative established in 2023. It brings together more than 60 organisations from the wind and solar industries, civil society, trade unions, government bodies, and knowledge institutions.

The initiative aims to advance uptake of international standards for responsible business conduct across the operations and supply chains of participating companies. Through individual and collective action, the parties work to identify, prevent and address severe actual and potential adverse impacts on people, the natural environment, and biodiversity in renewable energy supply chains.

Why We Commissioned These Reports

By signing the Agreement, companies commit to conducting risk-based due diligence in line with the OECD Due Diligence Guidance for Responsible Business Conduct.

China is a key sourcing country for the European solar industry. Given the complexity of conducting effective due diligence in China, the Agreement seeks for collective approaches to supporting companies in meeting their due diligence expectations arising from international standards such as OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights.

For this purpose, the Agreement commissioned Globalworks, a Swedish non-profit organisation, to produce two independent studies on the photovoltaic (PV) sector in China:

- The first report analyses the issue of state-imposed forced labour.
- The second report examines working conditions and labour rights violations in the sector.

Both reports were produced independently by Globalworks. Neither the parties to the Agreement nor the Secretariat intervened in the research process or influenced the findings. The views and conclusions expressed in the reports are solely those of Globalworks.

How the Reports Will Be Used

All companies placing products on the EU market fall under the scope of the EU Forced Labour Regulation. In addition, a growing number of national due diligence laws apply to European companies, including the German Supply Chain Act, Norwegian Transparency Act, French Duty of Vigilance Law, and the UK

Modern Slavery Act. These regulations require companies to identify, prevent, mitigate and account for adverse human rights impacts within their operations and supply chains.

Beyond meeting regulatory requirements, the IRBC Agreement parties share a strong commitment to ensuring that the transition to renewable energy is socially sustainable and therefore, signatory companies have committed to do business responsibly. The Globalworks reports provide a valuable evidence base that can be used by Agreement companies for this purpose. In particular, the findings will be used to:

- Strengthen understanding of labour and human rights conditions in the PV sector in China, including the systemic factors contributing to risks.
- Inform corporate due diligence processes, including impact assessments, prioritisation of salient risks, and decision-making on responsible sourcing strategies.
- Support the design and implementation of risk mitigation and remediation activities, both at company and collective level.
- Facilitate supplier dialogue and engagement, enabling more constructive conversations on expectations, risk management and continuous improvement.
- Provide input for joint leverage-building activities, including coordinated engagement with suppliers, industry associations, public authorities and other sustainability initiatives.
- Contribute to sector-wide learning, by identifying patterns, good practices and challenges that can inform future policy discussions, training materials, and capacity-building tools.
- Enhance transparency and accountability, by demonstrating the sector's collective commitment to due diligence and responsible business conduct.

Important to add that the goal for commissioning of these reports is for supporting due diligence process of companies, to improve labour conditions on the ground and to this end to engage with the relevant business partners. The reports are not intended to be used as block-lists to avoid working with a certain company.

The reports represent an important contribution to the sector's shared understanding of complex supply chain realities and the steps needed to promote continuous improvement.

Finally, we would like to emphasize that although the research focuses on the Chinese solar sector, many of the findings are relevant across global supply chains, including in other sectors and other geographies.

The reports should not be interpreted as implying that human rights conditions in the solar industry are uniquely or disproportionately problematic compared to other sectors. Rather, they highlight challenges that are common to many global value chains and provide insights that can inform broader efforts to achieve socially sustainable value chains.



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