

Testimony for the U.S. International Trade Commission
Apparel competitiveness investigation (332-602), 11 March 2024

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Our center is part of the Industrial and Labor Relations School at Cornell University. We focus on labor governance in global production and apparel production, in particular. We will share findings from recent research and our experience on three under-explored elements of apparel industry competitiveness: wage-setting, labor outcomes for workers, and climate vulnerability and adaptation.¹

1. Wage-setting

On core competitiveness issues—price and trade preferences, quality, delivery—we have little to add to what is available in the academic literature and from industry experts, except on wages and wage-setting, specifically.

There is a chronic lack of public data on actual earnings among apparel workers. We can compare minimum wage levels (and benefits costs for employers) easily across these countries for a rough sense of relative labor costs and, indirectly, prices. (Our 2023 *Higher Ground?* reports with Schrodgers puts labor as a share of cost of goods sold in apparel at approximately 20 percent) (Bauer et al, 2023). But missing generally are analyses of the purchasing power of average actual earnings by country. This data would allow a comparison of the relative comfort or immiseration of apparel workers.² Low purchasing power of monthly earnings for the regular work week (excluding overtime) points to long-term competitiveness problems connected with excessive hours, low productivity, poor worker health, pressures on women workers in particular, and their families.

Bangladesh comes last in a 2016 ranking of purchasing power of average earnings for workers in major apparel producing countries (FLA, 2016):

[T]he purchasing power of average monthly compensation fall below World Bank poverty lines in Bangladesh. Compensation in Bangladesh (PPP\$ 154) is less than half the compensation level in the next country on the chart--Jordan, at \$341--and significantly below all those that follow, such as Cambodia (\$360), Dominican Republic (\$455), India (\$461), Sri Lanka (\$491), the Philippines (\$512).

This analysis needs updating. A more recent analysis by Sarosh Kuruvilla at Cornell University using disaggregated factory-level wage data from a major American apparel retailer shows the gaps between average worker earnings and widely-accepted estimates of poverty levels and living wages (Kuruvilla, 2021).

A second measure of wage-price competitiveness is the efficiency of wage-setting processes and fairness of their outcomes. A competitor for several countries in the research request, Vietnam has an

¹ The four analyses we use for this testimony are *Private Regulation of Labor Standards in Global Supply Chains Problems, Progress, and Prospects* (Kuruvilla, 2021); 'Repeat, Regain or Renegotiate? The Post-COVID Future of the Apparel Industry' (Judd and Jackson, 2021); 'Security for Apparel Workers: Alternative Models' (Judd Kuruvilla, Jackson, 2022); 'Higher Ground? Fashion's Climate Breakdown and its Effect for Workers', and 'Higher Ground? Climate Resilience and Fashion's Costs of Adaptation' (Judd, Bauer, Kuruvilla and Williams, 2023).

² See 'Towards Fair Compensation in Global Supply Chains, 2016. Fair Labor Association. https://www.fairlabor.org/wp-content/uploads/2022/01/toward_fair_compensation_in_global_supply_chains_2016_report_only_0.pdf

annual minimum wage-setting process that has allowed wages for apparel and footwear workers to tick up in real terms over the last 20 years.³ This predictability reduces risk for employers and buyers, and some of the drama and dread for workers. In Cambodia, apparel worker wages were held down for a decade—the value of the minimum wage fell in real terms between 2002 and 2012. After cycles of strikes and wage protests and with the killing of several wage protesters by the government in 2014, the industry and government accepted an annual wage-setting process. The results include stronger wage growth since 2013 and a big fall-off in strikes. The current minimum for Cambodian apparel workers was set at USD 204.

Bangladesh has adjusted minimum wages for apparel workers every five years. Its high-stakes, highly politicized process has coincided with political violence and effective suppression of worker organizing to help maintain a big wage-price advantage over its major competitors. The 2024 national election and wage-adjustment is a case in point: the new minimum wage in its apparel sector is BDT 12,500 (USD 114), 56 percent of Cambodia's minimum.

2. Labor compliance and outcomes

A 2021 analysis of apparel factory labor compliance uses data from Better Work and Fair Wear Foundation to test the relationship between factory-level labor compliance and freedom of association and collective bargaining (Kuruvilla, 2021). Factories with both a union and a collective bargaining agreement showed labor compliance that was 10 – 30 percent higher than in factories with no unions and no bargaining.

For apparel brands and retailers, regulators and even consumers who value decent labor outcomes for workers, unions and bargaining should be treated as competitive advantages. However, our experience is that freedom of association is rarely defended at the factory level by brands or regulators and is not part of macro- or micro-level sourcing choices by brands.

Three countries that account for approximately 44 percent of global apparel exports (WTO in Judd and Jackson, 2020)—China, Vietnam and Bangladesh—restrict workers' freedom of association *de jure* or in practice, as noted by the ILO's Committee of Experts in recent years. Worse, Cambodia and Indonesia are scored lower by brands and retailers with whom we spoke because of strikes or challenges to employers where a few activist union federations have managed to hang on in very difficult environments.

The presence of labor governance programs like the Accord/RSC in Bangladesh and Better Work in several of the focus countries has provided an advantage or helped mitigate a disadvantage. Cambodia and Bangladesh, in particular, have won or held onto apparel buyers via these programs. Their value is lower where labor compliance is generally higher, as in Vietnam, and where the programs are not widespread, as with Better Work in Indonesia.

Governments and employers in Bangladesh and Cambodia have made concerted efforts to gain control of the programs to maintain the benefit but limit what they regard as downsides such as disclosure of findings, roles for activist unions, and multi-stakeholder oversight. Recently, employers in both countries have built programs to help move beyond checkered labor records. 'Green' factories for Bangladesh in its post-Rana Plaza phase and a recently proposed wages agreement in Cambodia after the 2020 loss of

³ See http://vepr.org.vn/upload/533/fck/files/1_%20Full%20ENG_20170912_0615pm.pdf.

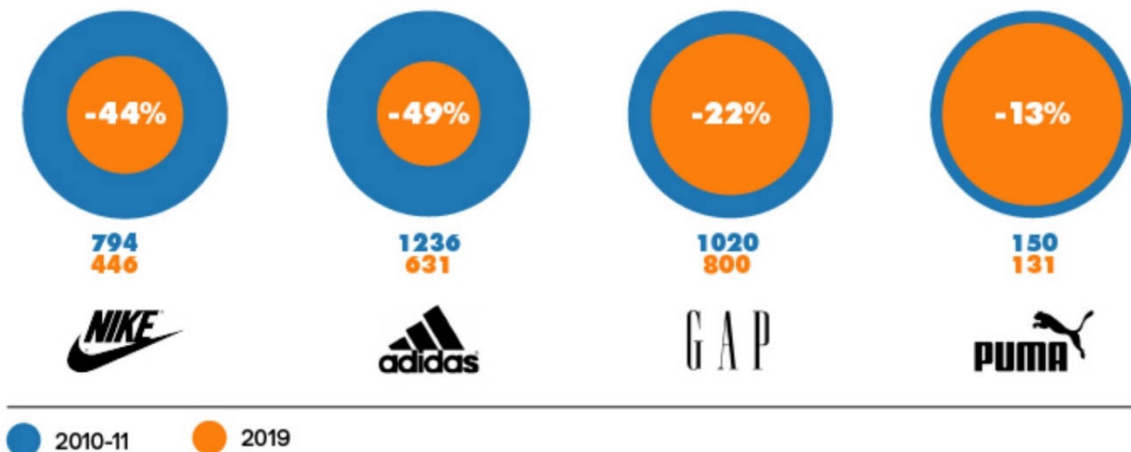
some E.U. trade preferences for labor and human rights abuses.

Pakistan's government and industry recently acceded to the International Accord industry to gain, or rather, stop losing competitiveness as it confronts numerous other challenges: energy generation and cost, water issues, extreme climate impacts, corruption costs and political tumult.

A final measure of labor compliance is supplier concentration and supplier-base consolidation by brands. In our experience, larger factories (or groups) with stable buyer relationships have better-built management systems, and this includes labor compliance systems.

The top ten apparel companies by global market share in 2020 increased its overall market share from 8.8 percent in 2011 to 11.4 percent in 2020. In footwear, the collective market share of the top ten brands rose from 17.9 percent in 2011 to 29.1 percent in 2020 (Judd et al, 2022).⁴ This market *concentration* has been complemented by *consolidation* of supplier bases by apparel buyers. This process picked up speed after the expiration of the global Multi-Fiber Arrangement (MFA) in 2005 and accelerated again in the aftermath of the 2008 financial crisis (Forstater, 2010 in Judd and Jackson, 2020).

Figure 1: Buyer consolidation of supplier bases (number of supplier factories), 2011 – 2020.



Sources: Buyer 10-K and Annual Reports

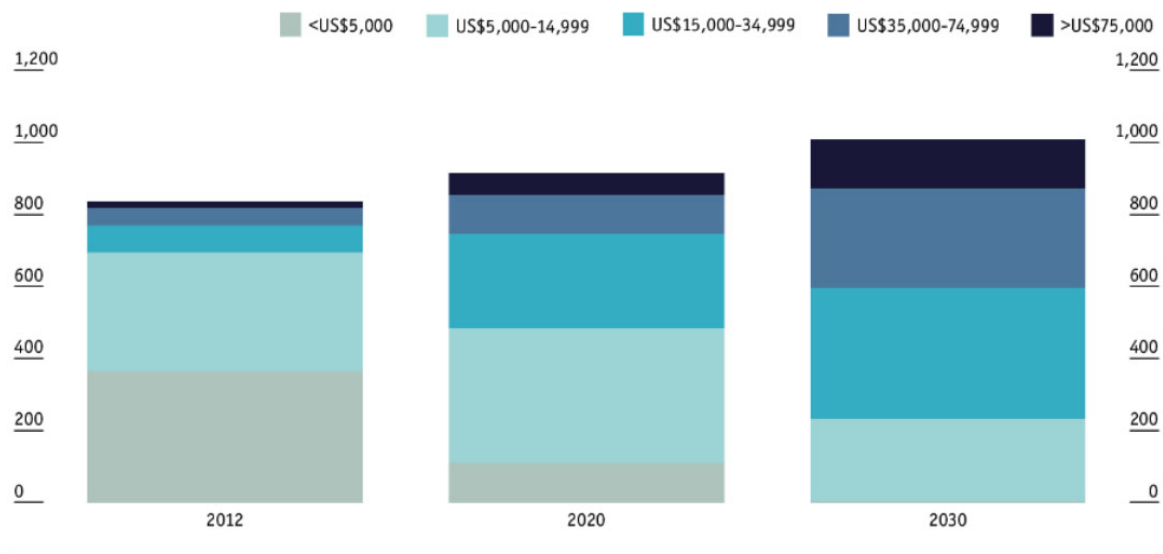
Nike's consolidation of sourcing from a sprawling network to a relative handful of strategic suppliers is one of several dramatic examples. In 2010, Nike sourced from 163 footwear factories and 631 apparel factories. In 2019, Nike sourced from 112 footwear and 334 apparel – a reduction of 31 and 47 percent in the number of factories respectively. On the apparel side, a single factory produced 14 percent of Nike's clothing, and five suppliers produced 49 percent of the total. Adidas reported similarly dramatic shifts in its footwear and apparel supplier bases. Raw factory counts at both Puma and Gap Inc showed supply base consolidation over the last decade.

⁴ For comparison, these rates of change in footwear's market concentration resemble those in luggage and bags in which LVMH (11.6 percent) and Kering (7.5 percent) dominate—travel goods analogs for Nike and Adidas. The global shares of top ten firms' global market share doubled from 19.1 percent in 2011 to more 38.1 percent in 2020 (Passport Euromonitor International, 2021).

The data also indicate a similar direction of travel for Asia’s leading suppliers. The individual 2019 revenues of the largest supplier groups—footwear manufacturers Pou Chen at USD 10.5 b. and Yue Yuen at USD 10.2 b.—were approximately one quarter of Nike’s 2019 revenue (USD 39.1 b.), they were more than one-third of Adidas (USD 26.8 b.), two-thirds of Gap Inc (USD 16.6 b.) and one-third *larger* than Puma (USD 6.4 billion) (Judd et al, 2020, Orbis company information 2019).

A long-time U.S. brand sourcing director said that the industry and policymakers now talk a lot about near-shoring for the U.S. and E.U. markets “but near-shoring is nothing new. The industry has been near-shoring for 20 years and getting closer to the markets that will matter the most [i.e. the largest and fastest-growing] in the future: China and other Asian economies.”

Figure 2: Annual Household income and projections (USD m.), Asia, 2012 – 2030.



Source: Economist Intelligence Unit and Judd et al (2020)

3. Climate change and apparel production competition

Fashion focuses its climate change efforts on goals such as increasing use of recycled fabrics, reducing water usage, and cutting down its very high greenhouse gas emissions—fashion ranks third on greenhouse gases behind global food production and construction.

But fashion’s mitigation efforts largely ignore the effects of climate breakdown on the workers, communities and industries who produce the world’s garments. This is the problem of adaptation and it is not part of fashion’s plan.

Our 2023 analysis with Schrodgers, a global fund management firm, finds that climate-vulnerability from extreme heat and flooding of 32 apparel production hubs is widespread.

Table 1: Heat and flood projections by apparel and footwear production center, 2030 – 2050.

Major production centers		Annual exceedance days at 30.5 C WBGT		Annual exceedance days at 35 C (dry bulb) daily maximum		Riverine flood population % inundated (0 – 1 m+)		Coastal flood population % inundated	
City	Country	2030*	2050	2030	2050	2030	2050	2030	2050
Karachi	Pakistan	189.95	202.71	17.76	19.59	13.02	13.02	0.29	0.29
Colombo	Sri Lanka	144.52	157.76	1.12	1.65	24.07	24.29	0.15	0.15
Managua	Nicaragua	133.29	151.9	3.41	6.82	0.01	0.02	-	-
Port Louis	Mauritius	104.29	104.43	0	0	-	-	0.64	0.64
Dhaka	Bangladesh	64.81	104.48	69.94	82.88	36.86	37.09	17.86	17.86
Yangon	Myanmar	58.9	91.62	37.12	48.76	11.32	11.53	3.27	3.27
Delhi	India	55.14	75	164.35	176.41	28.55	28.95	-	-
Ho Chi Minh	Vietnam	55.14	97.76	22.82	29.59	25.78	25.73	6.23	6.23
Chattogram	Bangladesh	50.1	84.86	6.53	9.65	40.08	41.21	18.07	18.07
San Salvador	El Salvador	42.33	57.29	0.76	1.12	0.1	0.1	-	-
Bangkok	Thailand	42.19	74.48	37.59	46.35	41.53	42.44	3.66	3.66
Phnom Penh	Cambodia	41.38	75.05	19.94	24.65	41.7	42.28	-	-
Hanoi	Vietnam	37.29	55.86	36.53	43.94	40.49	40.69	0.82	0.82
Guangdong	China	33.29	48.81	1	1.82	42.00	42.13	11.44	11.44
Dongguan	China	33.29	48.81	1	1.82	41.22	41.91	20.06	20.06
Shenzhen	China	33.29	48.81	1	1.82	3.96	4.12	12.98	12.98
Kuala Lumpur	Malaysia	22.86	57.1	13	15.41	7.82	7.72	-	-
Izmir	Turkey	17.9	18.71	6.41	9.41	18.77	18.77	1.82	1.82
Tiruppur	India	15.38	29.14	50.88	59.59	0.94	0.94	-	-
Manila	Philippines	10.43	27.24	9.76	12.35	10.55	10.75	2.59	2.59

Jakarta	Indonesia	9.81	38.29	2.35	2.18	29.12	29.05	3.71	3.71
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* Annual exceedance days are based on 10-year projection cycles.

Sources: Judd et al (2023), Schroders, WorldPop, World Resources Institute, Copernicus EU. Flooding based on RP-10 Event, RCP4.5. Heat levels are based on Wet Bulb Globe Temperature, SSP 2-4.5. Analysis undertaken July 2023.

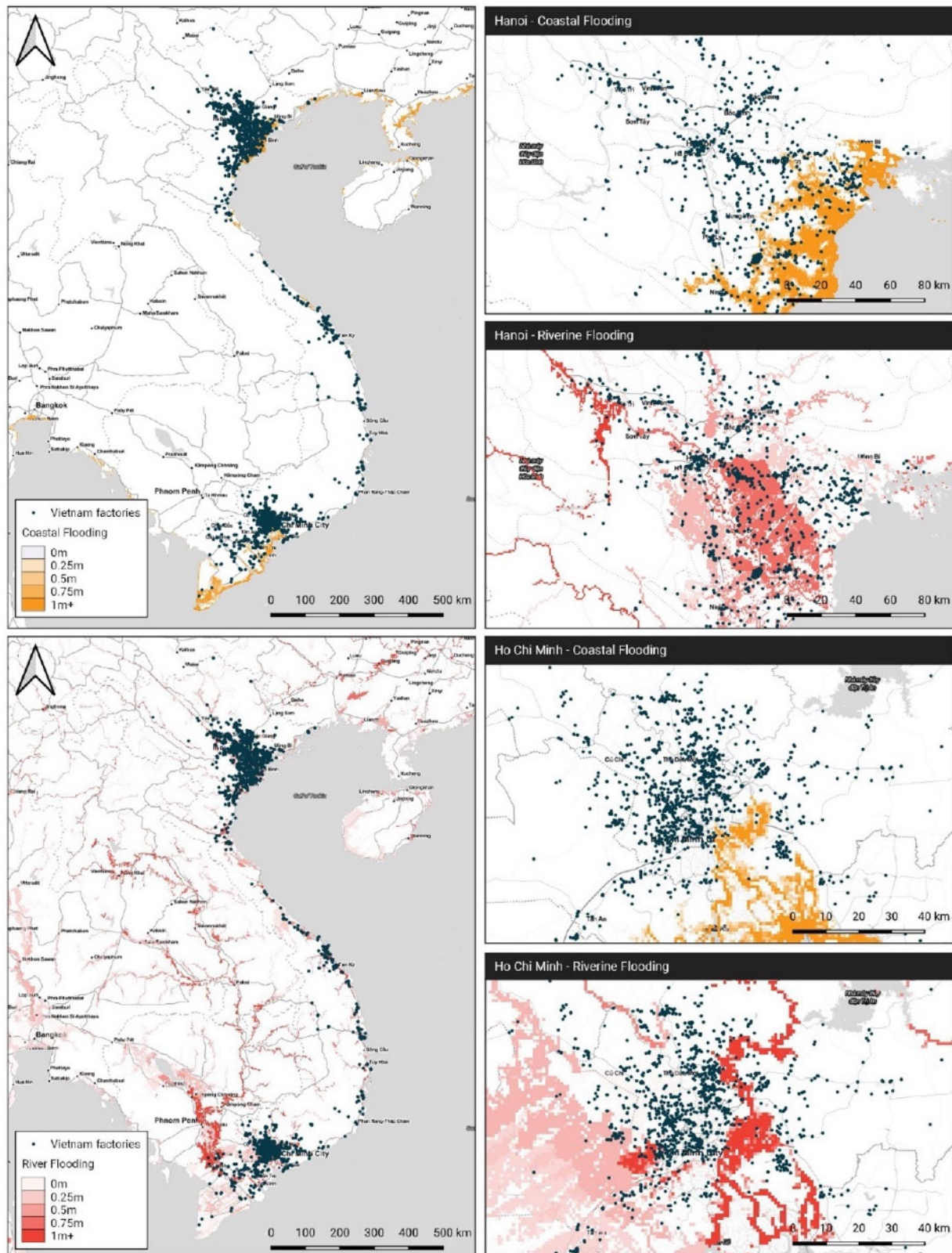
Several production centers in the study countries stand out in 2030 and beyond for their vulnerability to high heat and humidity and flooding: Dhaka, Chattogram (Chittagong), Delhi, Phnom Penh, Ho Chi Minh City and Hanoi.

Heat. Many of these centers are tropical and sub-tropical hotspots and heat stress can cause large declines in productivity, output and earnings. High heat stress can cause illness, heat stroke, and even death. Are these projected exposures to extreme heat and humidity much higher than recent levels? We compared 2004 – 2014 WBGT using the same climate models to our 2030 exceedance days estimates. Among cities in our focus countries—Karachi, Dhaka, Ho Chi Minh City and Phnom Penh—the average number of 30.5°C wet-bulb (WBGT) exceedance days climbs 51 percent from 39 days in 2014 to 59 by 2030.

Flooding. Using flooding models based on our middle-of-the-road climate scenario (RCP 4.5), we mapped inundation levels for more than eight thousand apparel and footwear factories in Bangladesh, Cambodia, Pakistan and Vietnam. We estimate annual ‘disruption days’ — the production days lost to flooding and recovery—in a non-adaptive scenario for each factory in 2030 and 2050 using the maximum ‘inundation depths’ from coastal and riverine flooding for two-, ten- and one hundred-year events, or ‘return periods’ (RP2, RP10, and RP100). As with heat-productivity impacts, we convert these disruptions into aggregate annual impacts on export earnings and jobs.

Taking one example, Figure 2 illustrates effects of a 10-year flooding event in Vietnam in 2030, with coastal flooding represented in gold and riverine flooding in red. Deeper shades signal higher inundation levels at 0.25 meter intervals, up to 1 meter and higher. Apparel and footwear factories are shown in blue.

Figure 3. Coastal and riverine/rainfall inundation levels for 2030 (RP 10), Hanoi and HCMC, Vietnam.



Sources: Judd, Bauer et al (2023), Schrodgers, WRI, brand disclosures, OSH.

Our ‘worst-case’ flooding in 2050—RP 100 events—shows 22 percent of Vietnam’s apparel industry inundated at 0.5 meters or higher and 27 percent in Bangladesh.

Economic ‘losses’. We project earnings and employment impacts in 2030 and 2050 under two growth scenarios: our ‘climate-adaptive’ scenario presents the growth trajectory of apparel industries that move quickly to reduce heat stress and flooding impacts on workers and output. Our non-adaptive scenario calculates the damage of high heat stress and flooding in terms of export earnings and jobs foregone in a non-adaptive apparel industry.

All four industries continue to grow in nominal terms between 2025 and 2050 but the effects of slower year-on-year growth are dramatic when compounded over just five years. The widening of the gaps between the growth scenarios is more extreme by 2050. These four countries risk foregoing \$65 billion in export earnings in 2030—equivalent to a 22% decline—and nearly 1 million new jobs due to slower growth. And 2050 figures are much higher: 68.8 percent lower for earnings in a non-climate-adaptive scenario and 34.5 percent for employment, or 8.64 million fewer jobs.

Table 2. Combined heat- and flood-related impacts for apparel export earnings under climate-adaptive and high-heat and flooding scenarios, 2030 and 2050.

Country	Year	Climate-adaptive export earnings (USD)	High heat + flood earnings (USD)	Change (USD)	Change (percent)
Bangladesh	2021	46.55 b.			
	2030	122.01 b.	95.22 b.	(26.78) b.	-21.95%
	2050	1,038.22 b.	326.90 b.	(711.32) b.	-68.51%
Cambodia	2021	15.24 b.			
	2030	35.64 b.	28.89 b.	(6.75) b.	-18.94%
	2050	235.41 b.	79.09 b.	(156.32) b.	-66.40%
Pakistan	2021	9.07 b.			
	2030	24.54 b.	16,95 b.	(7.59) b.	-30.94%
	2050	224.35 b.	43,70 b.	(180.65) b.	-80.52%
Vietnam	2021	56.99 b.			
	2030	116.80 b.	92,04 b.	(24.77) b.	-21.20%
	2050	575.46 b.	197.12 b.	(378.34) b.	-65.74%

Source: Judd et al (2023)

We mapped the supply chain footprint of six global apparel brands across the four production centers. Findings show workers and manufacturers for all six brands face productivity impacts from extreme heat and flooding, that are conservatively estimated at 5 percent or more of brand’s net operating profits after tax.

Governance and preparedness. How do labor-climate governance systems compare? Are national laws and regulation keeping pace with climate change and its likely effects on apparel production?

National law. Among the four countries studied, Cambodian labor law is silent or designedly vague on climate-adaptive labor issues—heat standards and protocols, paid breaks, paid sick leave, pay during

work stoppages, or rights during work stoppages. And Vietnamese standards are clearest.

Table 3. National legal standards for indoor workplace temperatures.

	Bangladesh	Cambodia	Pakistan (Sindh)	Vietnam
Indoor heat	Temperature 'limited to a tolerable limit', with requirement for one thermometer per workroom.	'Work [must be] undertaken in a thermal environment that does not affect worker's health... Employer must take appropriate heat reduction measures.' Requirement for 'thermometers in the workplace.'	Maintain indoor temperatures for 'reasonable conditions of comfort and [prevention of] injury to health' with wall and roofs 'of such material and so designed that such temperature shall not be exceeded. 'Correct wet and dry bulb temperatures' recorded three times/day.	Indoor workplace temperatures should not exceed 34°C, 32°C and 30°C for light, medium and heavy work, respectively. Relative humidity should not exceed 80%. Employer contracts for assessment of temperature, humidity, etc.'

Source: Judd et al (2023).

Voluntary, private regulation standards are typically aligned to national legal standards. In the context of extreme heat and intense flooding already prevalent in production hubs in Bangladesh, Pakistan, India and elsewhere, existing global public, mandatory and private voluntary standards are inadequate.

Social adaptation. The ultimate lesson of the pandemic for economies of the Global South with weak social protection systems is that the most adaptive, point-of-impact response to a complex crisis is what Amartya Sen—in the context not of climate breakdown but famine—called 'entitlement' for the poor (Sen, 1981). Entitlement in our context means stable, living wages (discussed above re wage-setting systems) and basic social protections that allow workers to 'command' access to furlough pay, cooler homes, adequate drinking water, medical care and transport to safer areas.

The COVID-19 pandemic provided a stress test for these types of policies and practices, and the availability of credit for employers. These policies were largely improvised in the emergency and the ILO reports that government, employer and worker interest in social protection systems has boomed since the pandemic.

In our 2022 COVID impacts analysis, we found all of the top garment and footwear exporters have severance provisions enshrined in legislation, unemployment protections are less prevalent. But five major garment-producing countries—Bangladesh, Cambodia, Indonesia, Sri Lanka, and Pakistan—do not provide statutory unemployment benefits.

Table 4: Unemployment and severance provisions by country, 2020.

Country	Unemployment	Level	Duration	Severance	Severance Amount
China	Yes	70 - 80% min. wage	1 - 2 years	Yes	1 mo. full wages per year of service
Bangladesh	No	NA	NA	Yes	30 - 45 days per year of service
Vietnam	Yes	60% mo. wage	3 - 12 months	Yes	15 days wages plus one mo./yr of service
Turkey	Yes	50 - 80% mo. wage	180 - 300 days	Yes	1 mo. full wages per year of service
India	Yes	50% mo. wage	1 year	Yes	15 days full wages per year of service
Cambodia	No	NA	NA	Yes	15 days full wages per year of service
Indonesia	No*	NA	NA	Yes	1 mo. full wages per year of service
Sri Lanka	No	NA	NA	Yes	0.5 mo. wages per year of service
Poland	Yes	80 - 120% 'base' rate	6 - 18 months	Yes	1 - 3 mos. full wages
Pakistan	No	NA	NA	Yes	1 mo. full wages per year of service
Jordan	Yes	45 - 75% mo. wage	6 months	Yes	12 days plus seniority allowance per year
Mexico	No**	NA	NA	Yes	3 mos. wages plus 20 days per year
Myanmar	Yes	50% mo. wage	2 months	Yes	15 days - 13 mos. depending on seniority

Source: *Security for Apparel Workers: Alternative Models* (Judd, Kuruvilla and Jackson, 2022).

Physical adaptation. What will national governments contribute to apparel industry adaptation? Adaptation at the national level is largely about government spending (and finance) for heat and flood measures: cooler streets, climate-proof planning (and enforcement), flood defenses, and reliable and low-carbon energy sources among others. Our focus countries have outlined their annual adaptation and mitigation costs in Nationally Determined Contributions (NDCs) based on national climate pledges under the Paris Climate Agreements:

Bangladesh USD 8.5 billion
Cambodia USD 7.8 billion
Pakistan USD 26.5 billion
Vietnam USD 13.4 billion

On an (unadjusted) per capita basis, proposed NDC spending will be lowest in Bangladesh (Judd et al, 2023). Of the four, only Cambodia makes specific mention of the apparel industry in its 2020 climate transition plan, emphasizing the need for “heat stress adaption for industrial production” with a separate section on worker health impacts and apparel workers in particular, “to reduc[e] their exposure to health risks and increase[e] their productivity” (Judd et al, 2023). In the others, aims are broad and strategies are largely sketches but Karachi’s planning include emergency measures for

extreme heat and guidance for workers and employers, and Vietnam's 'Green Growth Strategy' warns of flooding risk for manufacturing.

In general, climate vulnerability and preparedness analyses for governments, brands and employers do not account for operational risks including likely impacts on production processes and workers. They, therefore, tend to understate the risks and the competitiveness issues connected with them.

References

Bauer A., Williams, S., Judd, J., & Kuruvilla, S. (2023). Higher Ground? Report 2: Climate Resilience and Fashion's Costs of Adaptation. Cornell ILR School Global Labor Institute and Schrodgers.

<https://www.ilr.cornell.edu/global-labor-institute/higher-ground-fashions-climate-breakdown>

Judd, J. et al. Fair Labor Association. (2016). Toward Fair Compensation in Global Supply Chains.

https://www.fairlabor.org/wp-content/uploads/2022/01/toward_fair_compensation_in_global_supply_chains_2016_report_only_0.pdf

Judd, J., & Jackson, J. L. (2021). Repeat, regain or renegotiate?: The post-COVID future of the apparel industry. <https://cornell.app.box.com/s/5x56ntii3rmmmbe9olam3f5pk5ic1czi>

Judd, J., Kuruvilla, S., & Jackson, J. L. (2022). Security for Apparel Workers: Alternative Models. NCP Working Paper 3. Ithaca: Cornell ILR School New Conversations Project

<https://www.ilr.cornell.edu/sites/default/files-d8/2022-05/NCP%20Industry-ALL%20Severance%20042222.pdf>

Judd, J., Bauer A., Kuruvilla, S. & Williams, S. (2023). Higher Ground? Report 1: Fashion's Climate Breakdown and its Effect for Workers. Cornell ILR School Global Labor Institute and Schrodgers.

<https://www.ilr.cornell.edu/global-labor-institute/higher-ground-fashions-climate-breakdown>

Sen, A. (1982). Poverty and famines: An essay on entitlement and deprivation. Oxford University Press.