



# Methodology Annex

**Bank Action Guide: Towards a just transition  
for small–medium enterprises (SMEs)**

## Phase 1 Data Sheet

### Calculation notes:

As each indicator had a different numerical scale, a conversion formula was applied to ensure the consistent scoring of each indicator out of 10.

$$Y = \left( \frac{X - X_{min}}{X_{range}} \right) n$$

Where Y is the adjusted variable, X is the original variable, Xmin is the minimum observed value on the original variable, Xrange is the difference between the maximum potential score and minimum potential score on the original variable, and n is the upper limit of the rescaled variable.

For example:

Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
1. Ease of doing business index ranking	Country level	Doing Business Index, 2019	Ranking	Negative	8	16	114	63	105	84	73	2
Adjusted value (Y)					1	1	10	5	9	7	6	0

$$UK (Y) \text{ [Adjusted variable]} = (155 - 2 / 114) \times 10 = 1$$

Indicators have been defined as either positive or negative based on the nature of the impact. The positive indicator values are shown with a minus (-) sign to indicate how they have been included in the absolute scoring formula (the combination of positive and negative equals the absolute vulnerability score).

Once **Absolute Vulnerability Scores** are calculated, the following formula is applied to calculate a **Vulnerability Scale Level** on a scale of 0 to 10.

$$\text{ScaledValue} = 0 + (\text{CurrentMax} - \text{Current} / \text{MinX} - \text{CurrentMin}) \times 10$$

where CurrentMinCurrentMin and CurrentMaxCurrentMax are the minimum and maximum of the original scores, respectively.

$$\text{For example, UK [scaled value]} = 0 + (8-2) / (114-2) \times 10 = 1$$

A **Compounded Vulnerability Score** is then calculated as the average of both the country- and sector-level scores.

This method provides an indication of the extent of company vulnerability in country and sector contexts. However, whilst it provides an indication of vulnerability, the method has the following limitations:

- There are more negative indicators in the matrix developed with publicly available datasets, which has an impact on the final score for each country.
- The scale is only relative to the other countries in the sample, so absolute vulnerability levels may vary depending on the sampling approach.
- Most indicators are macro-level. Sub-national and sub-sectoral indicators have not been included in the matrix.
- The method does not account for the agency or coping capacity of SMEs in the calculation of the vulnerability score or, in other words, how any one individual business is strongly positioned to be resilient to climate-related transition risks despite the context implying high levels of vulnerability.

### Step 1: Country comparative analysis for selected countries

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
A. Geography-related/ acute physical climate risks	1. Geographical exposure to extreme weather events	Country level	Climate INFORM Risk Index, 2023	Ranking	Negative	155	172	47	33	17	34	52	191
						7	8	2	1	0	1	2	9
B. Chronic physical risks arising from long-term and gradual shifts in climate patterns	1. Country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience	Country level	ND-GAIN Country Index, 2021	Ranking	Negative	155	172	47	33	17	34	52	191
						0	2	6	7	10	6	6	0

### Step 1: Country comparative analysis for selected countries (continued)

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
C. Climate-related transition risks (applied in the context of geography)													
C1. Policy and legal	1. Ease of doing business index ranking	Country level	Doing Business Index, 2019	Ranking	Negative	8	16	114	63	105	84	73	2
						1	1	10	5	9	7	6	0
	2. Country level; tax the country's government leverages on negative impacts as a percentage of the country's GDP	Country level	IMF Climate Change Dashboard, 2023	Percentage	Positive	2.2	N/A	0.78	N/A	0.02	2.95	N/A	0.25
						-7		-3		0	-10		-1
	3. Fossil fuel subsidies (estimated value of explicit and implicit government subsidies related to fossil fuels (coal, natural gas, petroleum and electricity))	Country level	IMF Climate Change Dashboard, 2023	Percentage	Negative	0.93	6.64	30	10.69	2.5	16	12	25
					0	2	10	3	1	5	4	8	

### Step 1: Country comparative analysis for selected countries (continued)

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
C. Climate-related transition risks (applied in the context of geography)													
C2. Technology	1. Access to the Internet (individuals using the Internet (% of population))	Country level	World Bank WDI, 2023	Percentage	Positive	95	100	72	43	36	70	62	92
						-6	-6	-4	-1	0	-3	-3	-6
	2. Comparative advantage in low-carbon technology products	Country level	IMF Climate Change Dashboard, 2023	Score	Positive	1.57	0.37	0.25	0.51	0	0.55	0.2	1.4
						-10	-2	-2	-3	0	-4	-1	-9
C3. Market	1. Net-zero readiness index	Country level	KPMG, 2021	Ranking	Negative (ascending order)	2	25	N/A	N/A	N/A	N/A	N/A	15
						0	9	-					5
	1a Electricity and heat-readiness	Sector level	KPMG, 2021	Ranking	Negative (ascending order)	2	32	N/A	N/A	N/A	N/A	N/A	15
						0	9						4
	1b Transport readiness	Sector level	KPMG, 2021	Ranking	Negative (ascending order)	9	28	N/A	N/A	N/A	N/A	N/A	8
						0	7						0
	1c Agriculture, land use and forestry readiness	Sector level	KPMG, 2021	Ranking	Negative (ascending order)	11	32	N/A	N/A	N/A	N/A	N/A	5
					2	8						0	

### Step 1: Country comparative analysis for selected countries (continued)

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
<b>D. Contextual risk factors</b>													
<b>Environmental</b>													
D1. Exposure to air pollution by particulate matter	1. PM2.5 ranking	Country level	IQAir ranking, 2022	Ranking	Negative	8.9	45.9	46.5	53.3	36.9	23.4	30.4	13.3
						0	7	7	8	5	3	4	1
<b>Social</b>													
D3. Human development	1. Sustainable development goals index	Country level	UN, 2022	Ranking	Negative (ascending order)	11	85	87	121	139	108	82	60
						0	5	5	8	9	7	5	4
	2. Planetary pressures-adjusted human development index	Country level	UNDP, 2023	Ranking	Negative (ascending order)	18	26	97	132	163	109	114	12
						0	1	5	7	9	6	6	0
D4. Poverty and social exclusion	1. Multidimensional poverty index	Country level	OPHI, 2023	Percentage	Negative	N/A	N/A	4.9	16.4	51.3	6.3	3.6	N/A
								0	2	9	0	0	
D5. Income distribution	1. Income share of the bottom 40% and top 10% of the population	Country level	UNDP, 2023	Ranking	Negative	N/A	N/A	65	32	83	N/A	49	N/A
								4	0	6		2	
	2. Gender pay gap	Country level	WEF, 2022	Ranking	Negative	22	68	129	135	123	20	92	49
						0	3	8	8	7	0	5	2

### Step 1: Country comparative analysis for selected countries (continued)

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
D. Contextual risk factors													
Social													
D6. Employment	1. Female labour force participation	Country level	World Bank, 2020	Percentage	Positive	58	61	14.30	26.20	52.14	44.08	53.18	61.17
						-7	-8	0	-2	-6	-5	-6	-8
	2. Informal employment (% of total employment)	Country level	ILO, 2023	Percentage	Negative	N/A	N/A	64.60	88.10	N/A	31.50	80.40	N/A
								4	6			6	
D7. Working conditions/health and safety	1. Global modern slavery index/estimated prevalence of modern slavery	Country level	Walk free, 2023	Ranking	Negative	132	148	63	53	32	110	74	97
						7	8	2	1	0	5	3	4

### Step 1: Country comparative analysis for selected countries (continued)

Vulnerability matrix						Country-level assessment							
Risk type	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
D. Contextual risk factors													
Economic													
D6. Employment	1. Financial institution account <sup>1</sup>	Country level	Global Findex Database, 2022	Percentage	Positive	100	85	26	77	45	84	51	97
						-7	-6	0	-5	-2	-6	-3	-7
	2. Use of a mobile phone or the Internet to make payments, buy things or send or receive money using a financial institution account <sup>1</sup>	Country level	Global Findex Database, 2022	Percentage	Positive	64	41	2	12	15	38	12	68
						-10	-6	0	-2	-2	-6	-2	-10
	3. Borrowed from a formal financial institution <sup>1</sup>	Country level	Global Findex Database, 2022	Percentage	Positive	55	22	4	8	6	18	13	43
						-9	-3	0	-1	0	-3	-2	-7
	4. Financial institution account, female <sup>1</sup>	Country level	Global Findex Database, 2022	Percentage	Positive	100	86	7	26	35	85	52	97
						-9	-8	0	-2	-3	-8	-5	-9
	<b>Positive total</b>					<b>-66</b>	<b>-40</b>	<b>-8</b>	<b>-15</b>	<b>-13</b>	<b>-43</b>	<b>-20</b>	<b>-56</b>
	<b>Negative total</b>					<b>17</b>	<b>72</b>	<b>63</b>	<b>59</b>	<b>66</b>	<b>40</b>	<b>49</b>	<b>37</b>
<b>Absolute Vulnerability Score (positive + negative)</b>					<b>-49</b>	<b>32</b>	<b>55</b>	<b>44</b>	<b>52</b>	<b>-3</b>	<b>28</b>	<b>-19</b>	
<b>Vulnerability Scale Level (Scaled score 0-10)</b>					<b>0</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>10</b>	<b>4</b>	<b>7</b>	<b>3</b>	

1 (% aged 15+)



## Step 2: Sector-level vulnerability assessment for selected countries

**Note:** All data indicators are sourced from publicly available sources.

### Agriculture

Sector-wise vulnerability matrix - Agriculture							Country-level assessment								
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore	
A. Geography-related/ acute physical climate risks	Rising temperatures, increased frequency and intensity of extreme weather events, sea level rise	Agricultural irrigated land (% of total agricultural land)	Country level	World Bank, 2023	Percentage	Negative	0.4	23	N/A	40	0.3	1.7	N/A	N/A	
								0	6		10	0	0		
		Rural land area where elevation is below 5 metres (% of total land area)	Country level	World Bank, 2023	Percentage	Negative	4	3	1	1	2	0	7	7	
								6	4	1	1	3	0	10	10
		Forest area (% of land area)	Country level	World Bank, 2023	Percentage	Positive	13.2	4.5	0	24.3	23.7	14.1	49.1	21.7	
						-3	-1	0	-5	-5	-3	-10	-4		

## Step 2: Sector-level vulnerability assessment for selected countries (continued)

**Note:** All data indicators are sourced from publicly available sources.

### Agriculture

Sector-wise vulnerability matrix - Agriculture							Country-level assessment							
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
<b>B. Climate-related transition risks (applied in sectoral context)</b>														
B3. Market	Shift in consumer preferences, commodity price volatility	Gross Agriculture Production Index (2014–2016 = 100)	Country level	FAO, 2023	Number	Negative	N/A	N/A	102.7	121.93	N/A	N/A	N/A	N/A
									0	2				
		Food production index (2014–2016 = 100)	Country level	World Bank, 2023	Weighted average	Negative	99	124.7	102.8	123.8	108	114.3	114.1	112.3
							0	2	0	2	1	1	1	1
		Livestock production index (2014–2016 = 100)	Country level	World Bank, 2023	Weighted average	Negative	104.5	139.6	107.5	125.2	101.4	104.2	173.7	114.8
							0	2	0	1	0	0	4	1
		Agriculture, forestry and fishing, value added (% of GDP)	Country level	World Bank, 2023	Percentage	Negative	0.7	0.9	11.8	16.8	23.4	2.5	13.3	0
					0	0	5	7	10	1	5	0		

## Step 2: Sector-level vulnerability assessment for selected countries (continued)

**Note:** All data indicators are sourced from publicly available sources.

### Agriculture

Sector-wise vulnerability matrix - Agriculture							Country-level assessment									
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore		
<b>B. Climate-related transition risks (applied in sectoral context)</b>																
B3. Market	Shift in consumer preferences, commodity price volatility	Crop production index (2014–2016 = 100)	Country level	World Bank, 2023	Number	Negative	89.6	106.7	101	120.6	109	125.5	110.8	99.5		
									0	1	1	2	2	3	2	1
		Fertiliser consumption (kilograms per hectare of arable land)	Country level	World Bank, 2023	Number	Negative	233.2	643.4	473.4	209.4	19.6	63.5	248.2	0		
									3	10	7	3	0	1	4	0
<b>C. Contextual risk factors</b>																
C1. Environmental	Loss of biodiversity, soil degradation, water scarcity	Annual freshwater withdrawals, total (% of internal resources)	Country level	World Bank, 2023	Percentage	Negative	16	13	57	65	47	32	43	0		
									2	2	9	10	7	5	7	0

## Step 2: Sector-level vulnerability assessment for selected countries (continued)

**Note:** All data indicators are sourced from publicly available sources.

### Agriculture

Sector-wise vulnerability matrix - Agriculture							Country-level assessment							
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
C. Contextual risk factors														
C2. Social														
Human development	Access to quality education, healthcare access	Persons with universal health coverage	Country level	WHO, 2023	Ranking	Positive	2	38	80	117	162	98	125	8
							0	-2	-5	-7	-10	-6	-8	0
Positive total							-3	-3	-5	-12	-15	-9	-18	-5
Negative total							12	27	24	39	22	11	33	12
Absolute Vulnerability Score (positive + negative)							9	24	19	27	7	2	15	7
Vulnerability Scale Level (Scaled score 0-10)							1	9	6	10	0	0	4	0

## Step 2: Sector-level vulnerability assessment for selected countries (continued)

**Note:** All data indicators are sourced from publicly available sources.

### Power generation

Sector-wise vulnerability matrix- Power generation							Country-level assessment								
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore	
<b>B. Climate-related transition risks (applied in sectoral context)</b>															
B1. Policy and legal	Changes in environmental regulation, carbon pricing, renewable energy policies	Time required to get electricity (days)	Country level	World Bank, 2023	Number	Negative	46	7	53	52.9	109.8	109	32.2	26	
								4	0	4	4	9	9	2	2
B2. Technology	Rate of adoption of clean energy technologies, dependence on fossil fuels	Combustible renewables and waste (% of total energy)	Country level	World Bank, 2023	Percentage	Negative	2.8	0.1	2.3	21.4	74.3	7.7	24.8	0	
								0	0	0	3	10	1	3	0
		Alternative and nuclear energy (% of total energy use)	Country level	World Bank, 2023	Percentage	Positive	13.1	0.1	1.5	2.7	0.3	2.7	0.8	0.2	
								-10	0	-1	-2	0	-2	-1	0

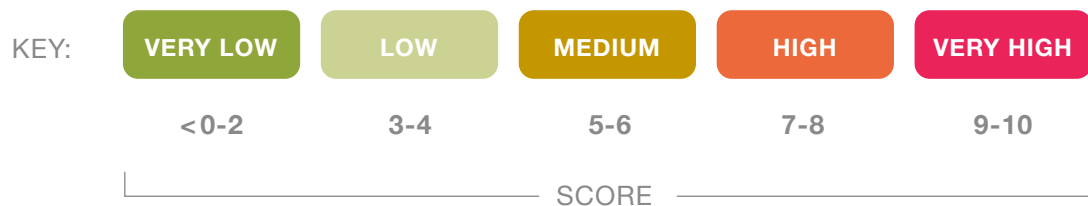
## Step 2: Sector-level vulnerability assessment for selected countries (continued)

**Note:** All data indicators are sourced from publicly available sources.

### Power generation

Sector-wise vulnerability matrix- Power generation							Country-level assessment							
Risk type	Specific risks	Indicators	Data level	Data source	Data type	Vulnerability subscore type	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
<b>B. Climate-related transition risks (applied in sectoral context)</b>														
B3. Market	Shift in energy consumption patterns, volatility in energy prices	Renewable electricity output (% of total electricity output)	Country level	World Bank, 2023	Percentage	Positive	24.84	0.23	8.26	15.34	18.2	2.26	16.25	1.82
							-10	0	-3	-6	-7	-1	-6	-1
		Fossil fuel energy consumption (% of total)	Country level	World Bank, 2023	Percentage	Negative	80.4	86.1	97.9	73.6	18.9	86.8	66.1	90.6
							6	7	8	6	0	7	5	7
		Fuel exports (% of merchandise exports)	Country level	World Bank, 2023	Percentage	Negative	12	70	37	14	89	14	19	10
							0	7	3	0	9	0	1	0
<b>Positive total</b>							<b>-20</b>	<b>0</b>	<b>-4</b>	<b>-8</b>	<b>-7</b>	<b>-3</b>	<b>-7</b>	<b>-1</b>
<b>Negative total</b>							<b>10</b>	<b>14</b>	<b>16</b>	<b>13</b>	<b>28</b>	<b>18</b>	<b>11</b>	<b>9</b>
<b>Absolute Vulnerability Score (positive + negative)</b>							<b>-9</b>	<b>14</b>	<b>11</b>	<b>5</b>	<b>21</b>	<b>15</b>	<b>4</b>	<b>8</b>
<b>Vulnerability Scale Level (Scaled score 0-10)</b>							<b>0</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>10</b>	<b>8</b>	<b>4</b>	<b>6</b>

### Calculation of Compounded Vulnerability Score(s):



### Agriculture

Vulnerability	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
Country level (score)	0	8	10	9	10	4	7	3
Agriculture sector level (score)	1	9	6	10	0	0	4	0
Compounded Vulnerability Score (average of both scores)	1	8	8	9	5	2	6	1

### Power generation

Vulnerability	UK	UAE	Egypt	India	Nigeria	South Africa	Indonesia	Singapore
Country level (score)	0	8	10	9	10	4	7	3
Power generation sector level (score)	0	8	7	5	10	8	4	6
Compounded Vulnerability Score (average of both scores)	0	8	8	7	10	6	6	4