CHANGE OF FABRIC
ADJUSTING BANGLADESH'S GROWTH MODEL TO SUSTAIN PROGRESS

BANGLADESH COUNTRY ECONOMIC MEMORANDUM

DHAKA, December 3, 2022

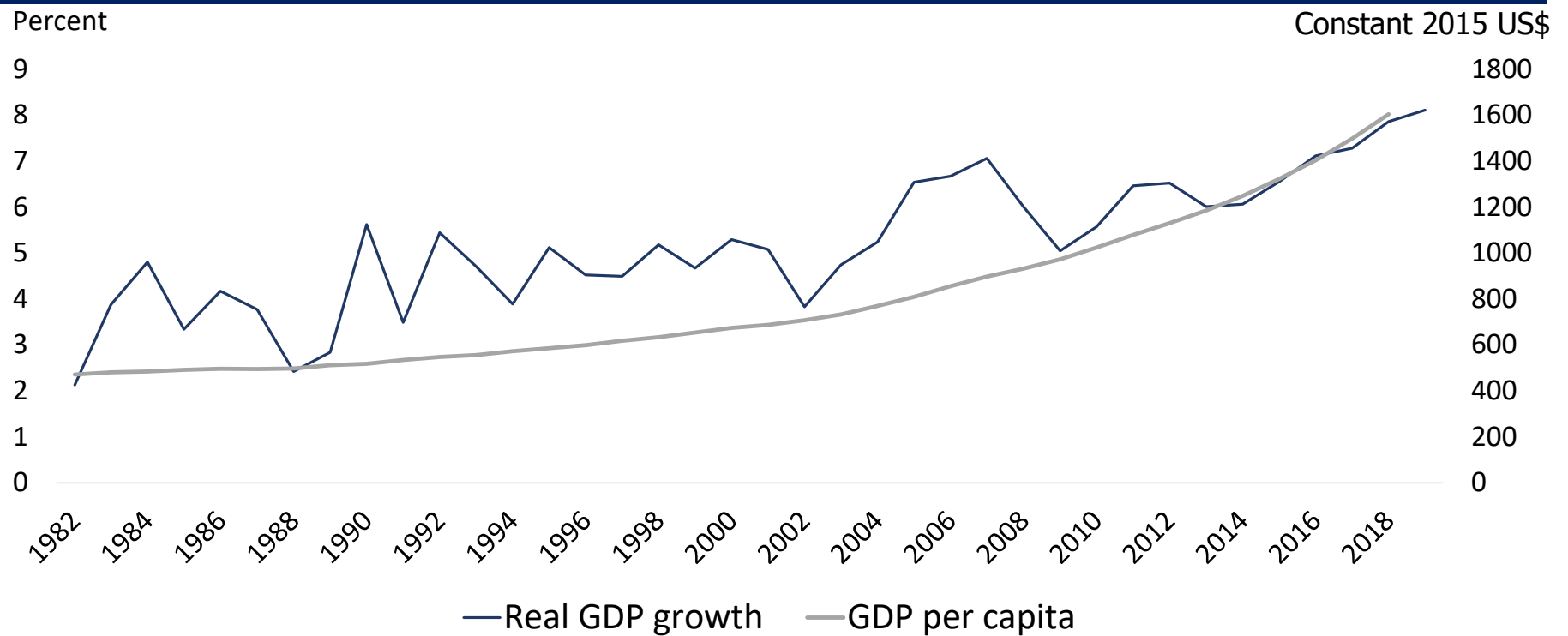**WORLD BANK GROUP**
Macroeconomics, Trade & Investment

What's in the report?

- An empirical account of Bangladesh's growth trajectory

- Assessment of where growth could be heading

- Deep dives into trade, finance and urban reforms

Growth acceleration—what is the story?

Real GDP growth and GDP per capita

What have (fast-) growing countries done?

- Standard panel "growth" regression

$$\ln(\text{GDP p.c})_{ct} = \theta \ln(\text{GDP p.c.})_{c,t-1} + \beta_1 x_{1,ct} + \ldots + \beta_k x_{k,ct} + a_c + b_t + u_{ct}$$

- t indexes (non-overlapping) 5-year averages
- $x_1, \ldots, x_k$ capture "(policy) innovations"
- Lagged dependent variable captures persistence ("echo from the previous periods")
- Estimation: FE OLS (with robustness checks via GMM): a_c, b_t are respectively country and time fixed effects.

Deriving growth components

- First-differencing of the estimated equation derives growth components:

$$\Delta\ln(\text{GDP p.c})_{ct} = \hat{\theta}\,\Delta\ln(\text{GDP p.c.})_{c,t-1} + \hat{\beta}_1\Delta x_{1,ct} + \ldots + \hat{\beta}_k\,\Delta x_{k,ct} + \Delta\hat{b}_t + \Delta\,\hat{u}_{ct}$$

Actual growth =   persistence   +   policy innovation   +   residual
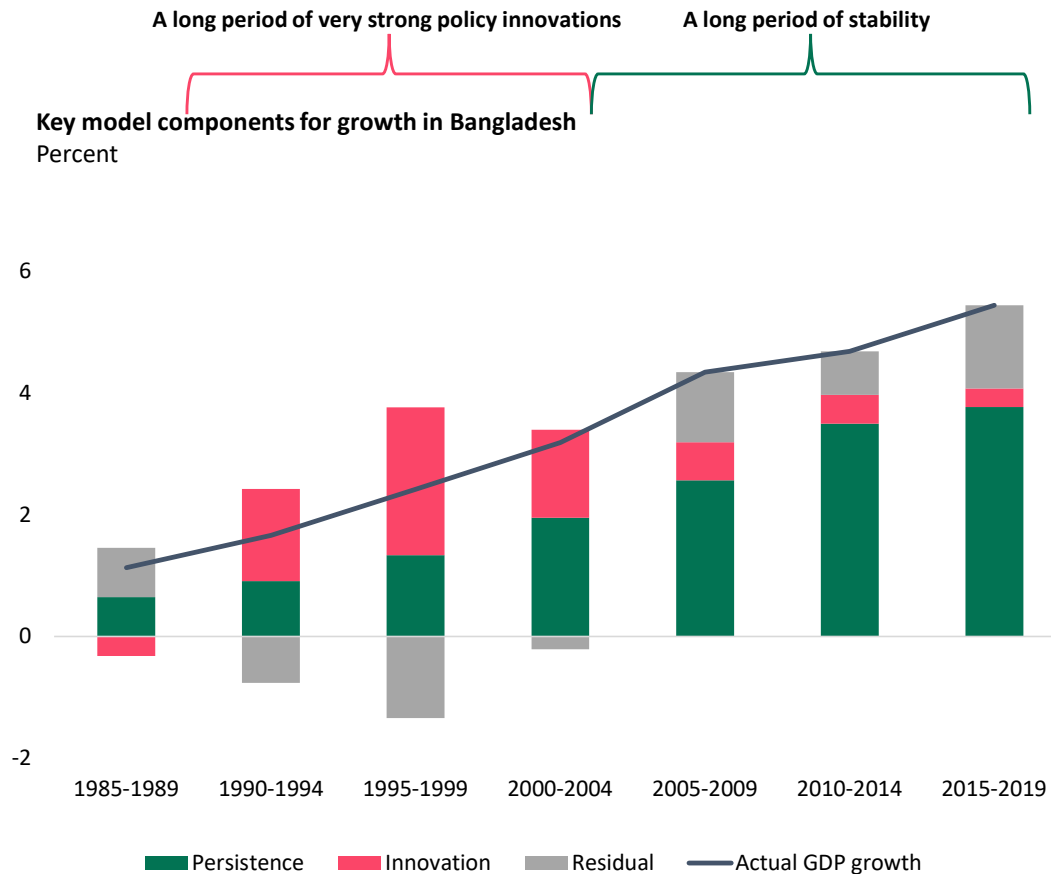
Log-changes approximate % changes

Data and robustness checks

- **The objective is to detect economic growth correlates based on data from a wide range of countries**

- **A new and up-to-date reference data set**

    - Unbalanced dataset covering the period from 1970 to 2019 for >135 countries.

    - Key data sources: Penn World Tables, World Development Indicators, International Monetary Fund, UNCTAD

- **Different regression specifications check robustness of the results**

    - Outliers, income levels, region, time periods

The significant growth correlates ($x_{1,ct}$ .... $x_{k,ct}$)

Group	Specific Variables
Trade Globalization	Trade Openness
	FDI
	Export Diversification
	Terms of Trade Change
Finance	Private Credit
	Financial Crisis: Dummy variables for individual years for banking, currency, or sovereign debt crises
Infrastructure	Phone lines, cell phones, internet connections, electricity access
Macro	Government consumption
	Inflation
	Real Effective Exchange Rate
Other	Political violence (the societal and interstate episodes of political violence)

Structural change followed by stability

A long period of very strong policy innovations

A long period of stability

Key model components for growth in Bangladesh
Percent

Legend: Persistence ■ Innovation ■ Residual ■ —— Actual GDP growth

X-axis: 1985-1989, 1990-1994, 1995-1999, 2000-2004, 2005-2009, 2010-2014, 2015-2019

Y-axis: -2, 0, 2, 4, 6

- Actual growth = persistence + policy innovation + residual

- Policy innovations laid the foundations of growth during 1990 to 2004.
    - Fast improvements in infrastructure, financial sector, trade orientation, and macroeconomic stability.

- Unusual features: Increased persistence (2000-19) with sudden acceleration (2015-19)— needs deeper scrutiny
    - Human capital, the employment rate, and inequality reduce unexplained growth in the early 2010s, not 2015-19.

How challenging are the UMIC and HIC targets?

## Growth rates needed to reach upper-middle and high-income status

	Required Growth To Achieve Upper-Middle Income Status		
Year to reach threshold	**2031**	**2033**	**2035**
Required per capita GNI growth rate (%)	6.7	5.6	4.9
Required per capita GDP growth rate (%)	6.9	5.8	5.0
Required GDP growth rate	**7.8**	**6.7**	**5.8**
Baseline GDP growth rate	**6.5**		

	Required Growth To Achieve High Income Status		
Year to reach threshold	**2041**	**2051**	**2061**
Required per capita GNI growth rate (%)	9.2	6.1	4.6
Required per capita GDP growth rate (%)	9.4	6.3	4.7
Required GDP growth rate	**10.2**	**6.9**	**5.2**
Baseline GDP growth rate			

Required growth to achieve Upper Middle Income Status
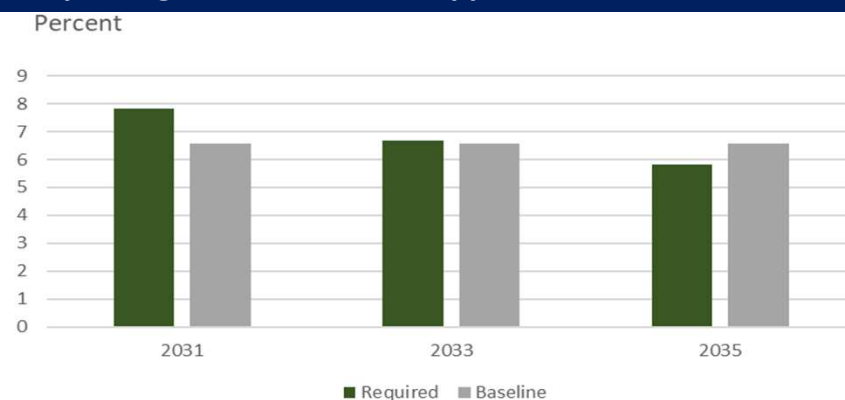
Required growth to achieve High Income Status
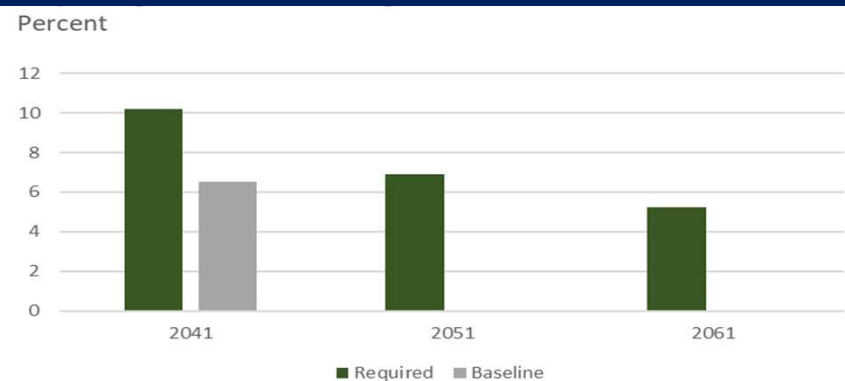
What are the likely scenarios based on growth fundamentals?

- Forward look based on WB Long-Term Growth Model—an extension of the Solow-Swan model

- The LTGM incorporates several growth drivers: productivity, public and private capital accumulation, human capital, remittances, demographics and climate change.

- The model is calibrated to construct a baseline projection for Bangladesh exploiting historical data, peer and global benchmarks, and recent findings from the literature

- The impact of adjusting different growth drivers is analyzed by (i) changing assumption where in the global distribution Bangladesh could fall on significant fundamentals such as the savings rate, TFP growth and demographics and (ii) by replacing the baseline with those of peers.

WB Long-Term Growth Model: Baseline

Summary of baseline projections and selected model components

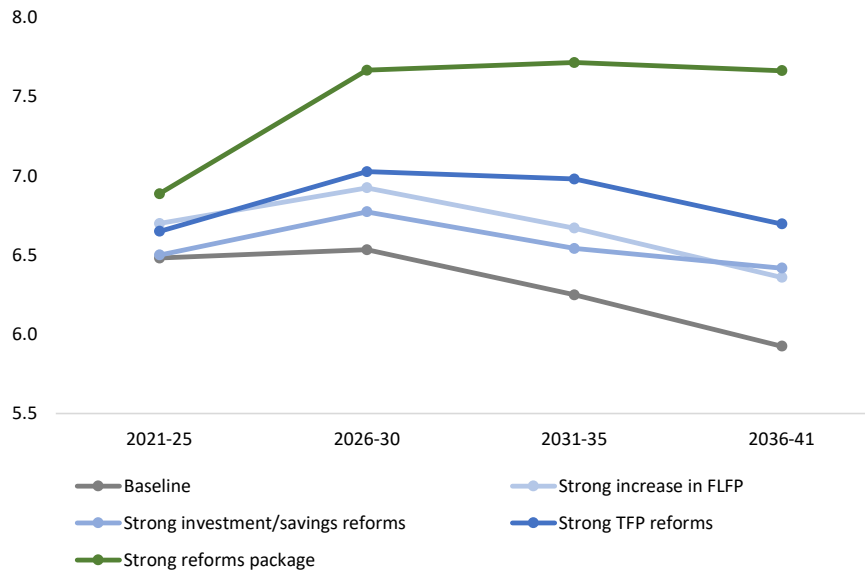|	2021–2025	2026–2030	2031–2035	2036–2041
Average real GDP growth (%)	6.5	6.5	6.2	5.9
Average GNI per capita (2020 US$)	2728	3623	4771	6424
GNI per capita, last year of period (2020 US$)	3053	4035	5304	7306
Model components				
Investment rate (%)	33.5	35.5	36.9	38.0
TFP growth (%)	0.8	1.0	1.0	1.0
Population growth (%)	0.9	0.8	0.6	0.4

Note: GDP = gross domestic product; GNI = gross national income; TFP = total factor productivity.

➢ Growth is expected to decline after the 2030 mainly due to capital deepening and slower population growth.
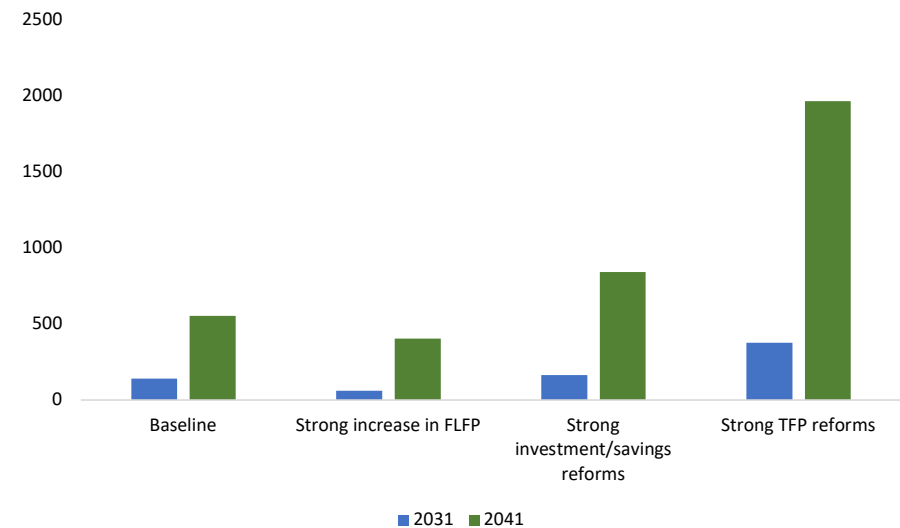
With strong reforms, Bangladesh can accelerate and avoid premature mean reversion

Strong reforms to strengthen TFP growth, female labor force participation, and investment can accelerate growth, especially when done together.
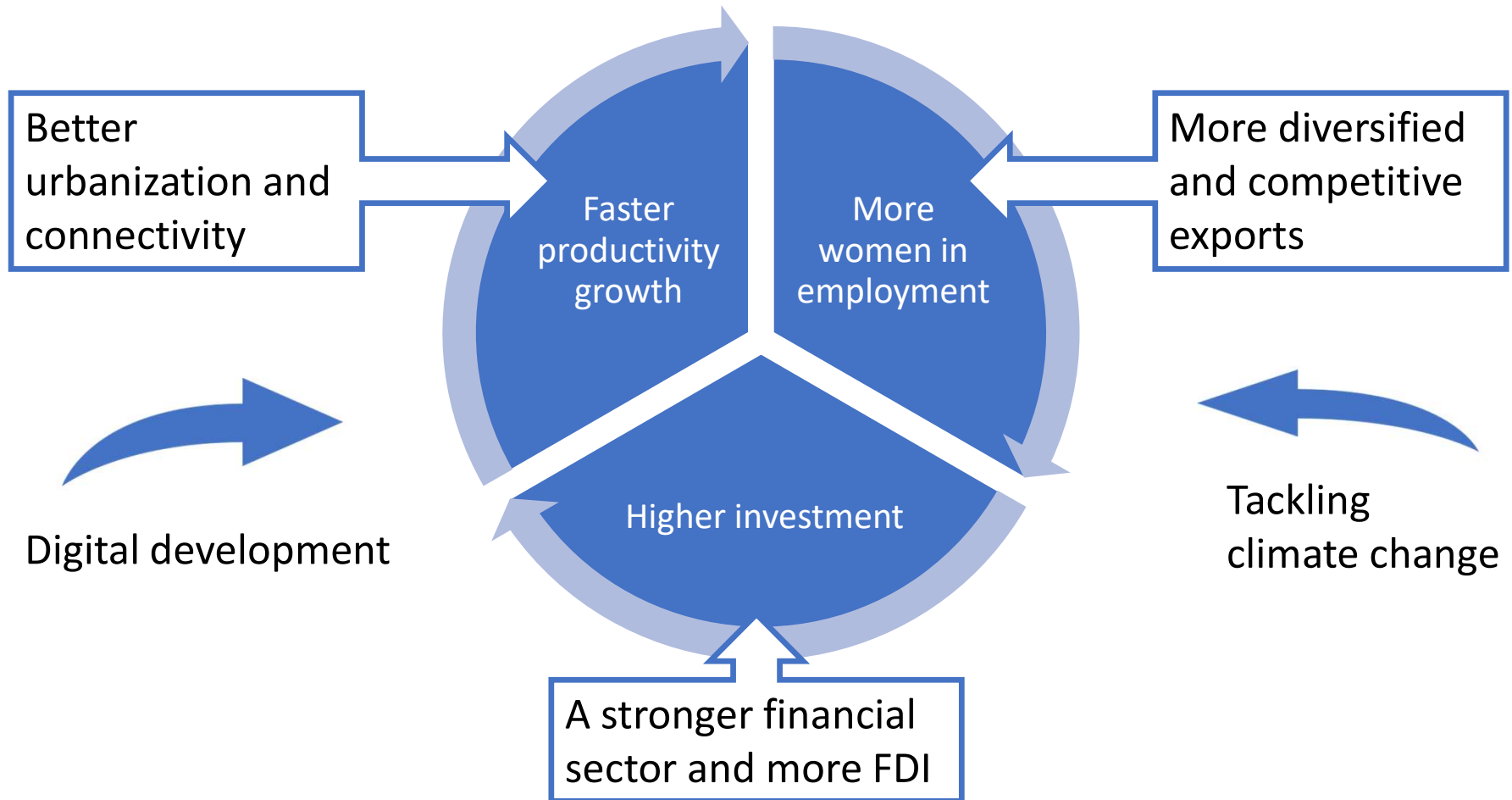
Real GDP growth: different reform scenarios
Percent

- Baseline
- Strong increase in FLFP
- Strong investment/savings reforms
- Strong TFP reforms
- Strong reforms package

Gains from different reforms
Current USD

■ 2031 ■ 2041

Pathways to sustained high growth

Better urbanization and connectivity

More diversified and competitive exports

Faster productivity growth

More women in employment

Higher investment

Digital development

Tackling climate change

A stronger financial sector and more FDI
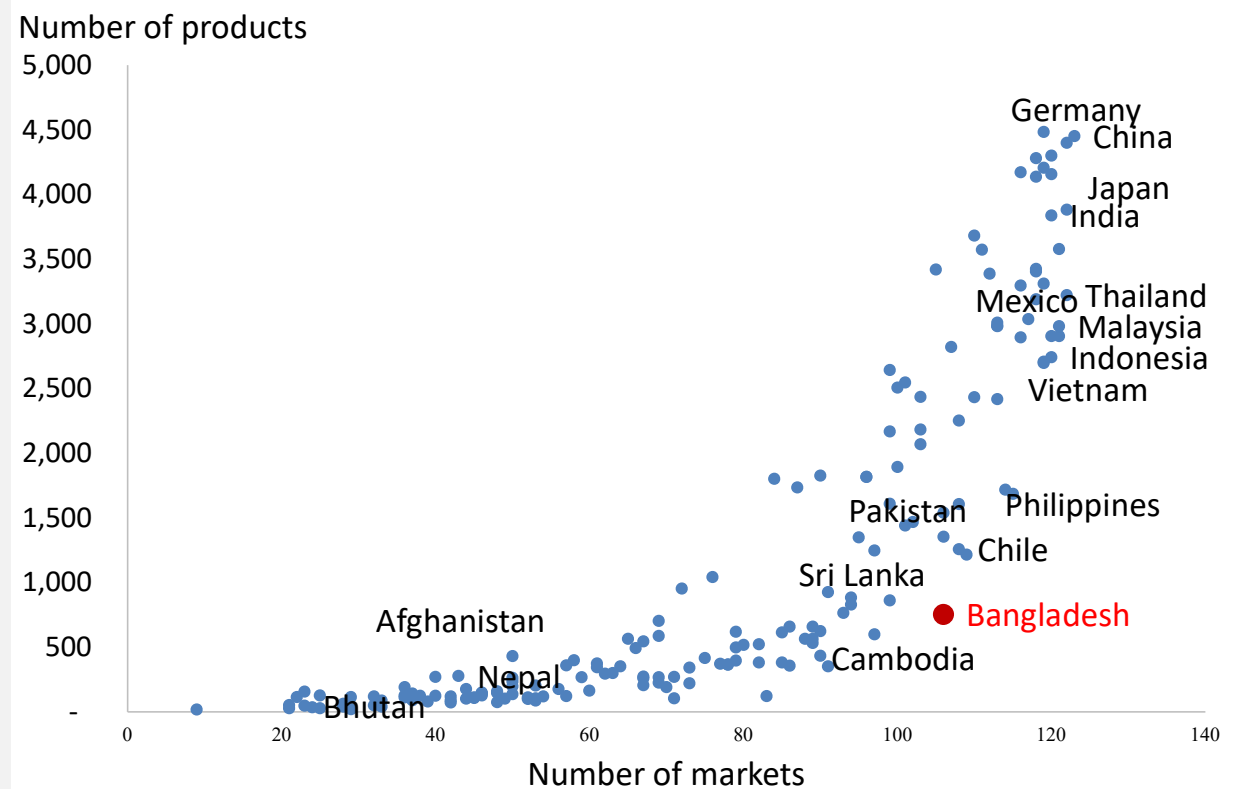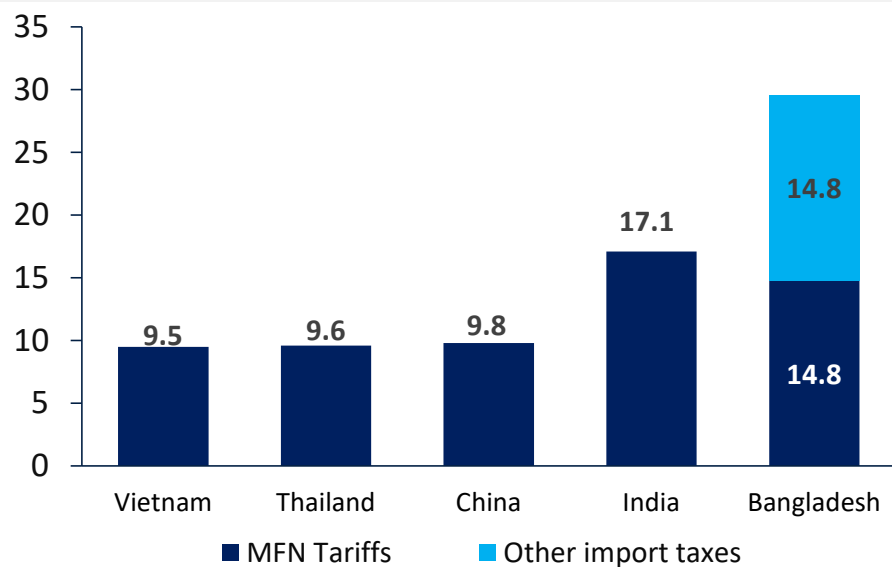
Low diversification and limited competitiveness curb export-led growth

- Bangladesh is trading less than other countries at comparable development level and exports are concentrated

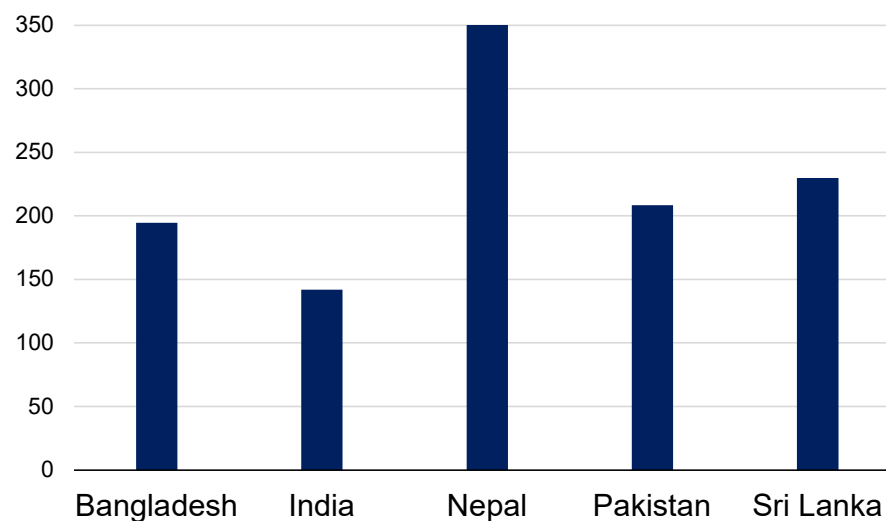- The upcoming LDC graduation poses further challenges

Number of products

Germany
China
Japan
India
Mexico Thailand
Malaysia
Indonesia
Vietnam
Pakistan
Philippines
Chile
Sri Lanka
Afghanistan
Bangladesh
Cambodia
Nepal
Bhutan

Number of markets

Lack of export diversification can be partially attributed to the protective trade regime

Nominal protection rate, FY 20, percent

Legend:
- MFN Tariffs
- Other import taxes

Data:
- Vietnam: 9.5
- Thailand: 9.6
- China: 9.8
- India: 17.1
- Bangladesh: 14.8 (MFN Tariffs), 14.8 (Other import taxes)

Overall trade costs, percent

Data (approximate):
- Bangladesh: ~195
- India: ~140
- Nepal: ~350
- Pakistan: ~205
- Sri Lanka: ~228

Source: World Bank staff calculations using data from Bangladesh Customs and WTO.

Source: World Bank-UNESCAP trade costs database.

Significant barriers hamper trade in services

Ad Valorem Tariff Equivalents of the Services Trade Policies Index, percent

■ Distribution ■ Finance ■ Telecom ■ Transport
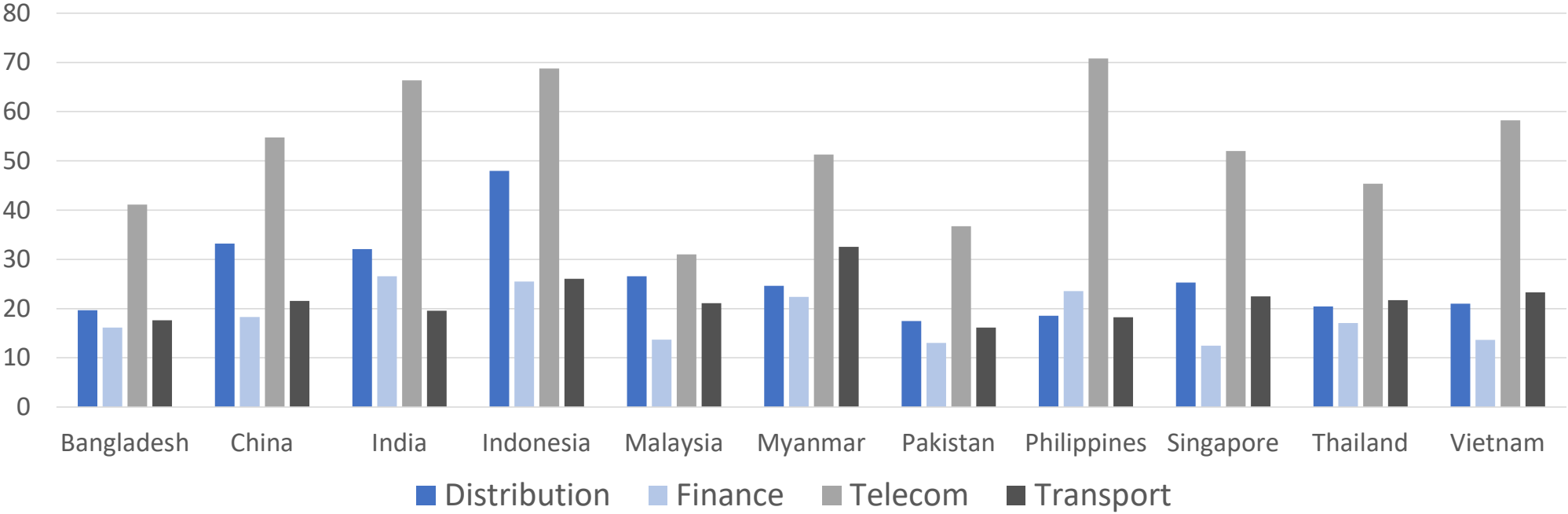
An empirical analysis of export survival determinants

- Multivariate models of survival probabilities can provide useful insights into Bangladesh's firm-level export dynamics and the determinants of export survival.

- Building on Besedes and Prusa (2006) and Brenton et al. (2012), the export survival analysis is based on Kaplan-Meier survival functions and Cox regressions to understand not only the factors driving entry into exporting, but also the processes that sustain new exports and expand export volume (see details in Appendix).

- The analysis uses a data set from the National Board of Revenue that contains transaction-level customs export and import data for 2005–16. Access to data for 2016–20 would provide more refined insights into potential policy interventions that can affect the survival of exporters or export flows.

The determinants of exports survival: key results from the Cox proportional hazards model

Group	Specific Variables	+ Increase Exports Survival - Reduce Exports Survival
Spell characteristics	Exports at the beginning of spell	+***
	Number of destinations at the beginning of spell	+***
Product characteristics	R&D intensity	+***
Tariffs	Weighted average imports tariff (at firm level)	-***
Firm characteristics	Firm exports to and imports from the same region	+***
	Firm exports to the same region	+
	R&D intensity of exports	+
	R&D intensity of imports	+***
Firm type	GVC (exporter-importer)	+***
	Backward GVC	+***
	Forward GVC	+***
	GVC x weighted average import tariff	-***

Note: See detailed results in Appendix

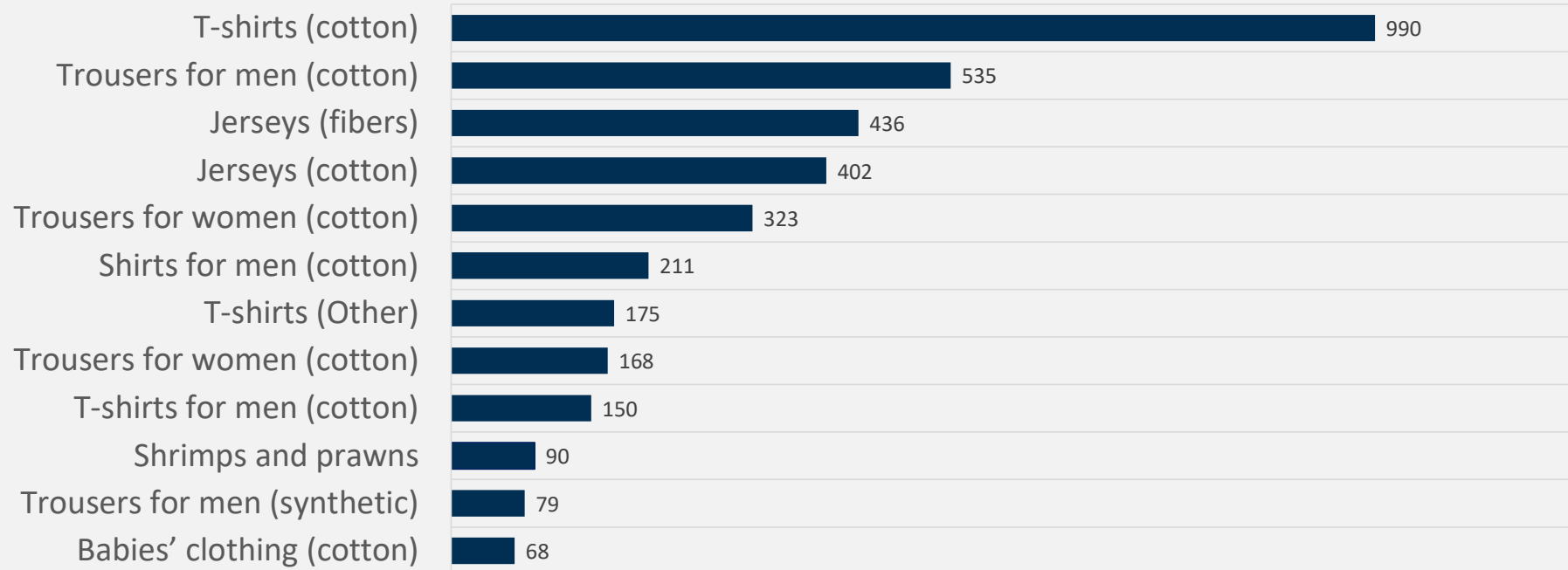# Diversifying exports to sustain and accelerate growth

- GVC participation increases export survival

- R&D intensity matters for export survival

- Regional linkages increase export survival

- Low export survival can be partially attributed to the protective trade regime

- Lowering trade barriers (tariffs, non-tariff barriers, transport costs) and better infrastructure and institutions may further promote GVC participation and increase export survival

LDC graduation will further erode Bangladesh's competitiveness

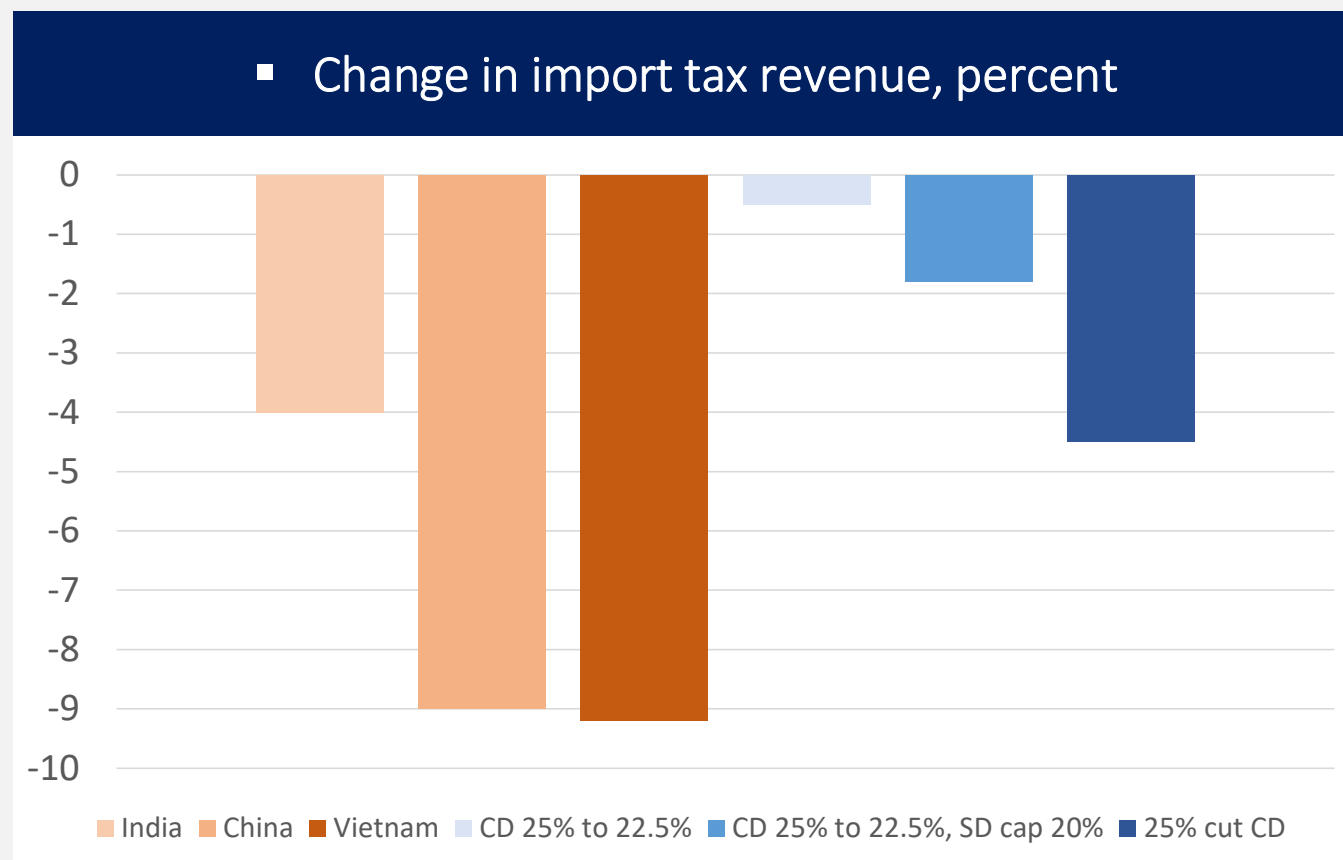| Country	LDC tariffs	Graduation tariffs	LDC ROOs	Graduation ROOs
EU	EBA, duty free for all products except arms	Standard GSP, possibly GSP+	70% value-added can be imported Single-transformation for apparel	50% value-added can be imported Double transformation for apparel
US	GSP+, no preferences currently apply due to suspension in 2013	Standard GSP	35% domestic content requirement + other LDCs	35% domestic content requirement only
Canada	LDC GSP, duty free for all products except dairy, poultry, and egg products	Standard GSP	60% value-added can be imported	40% value-added can be imported
Japan	Special preferential treatment for LDCs	Standard GSP	No specific rules of origin	No specific rules of origin
China	LDC GSP, duty free for 61% of tariff lines	APTA or MFN	Specific criteria for substantial transformation	N.A.

LDC graduation will reduce exports to the EU by 22 percent with 12 products accounting for three quarters of the impact

- Decline in exports due to switch from EBA to GSP in the EU, US$ million

Product	Value
T-shirts (cotton)	990
Trousers for men (cotton)	535
Jerseys (fibers)	436
Jerseys (cotton)	402
Trousers for women (cotton)	323
Shirts for men (cotton)	211
T-shirts (Other)	175
Trousers for women (cotton)	168
T-shirts for men (cotton)	150
Shrimps and prawns	90
Trousers for men (synthetic)	79
Babies' clothing (cotton)	68

Tariff rationalization needs to be accompanied by revenue offsets

- Modernization of the tariff regime can support Bangladesh's export diversification and LDC graduation; & reduce anti-export bias

- But adjusting the tariff structure to peer country levels may result in high loss of revenue

- Revenue offsets of tariffs may make the impact more manageable


Change in import tax revenue, percent

India — China — Vietnam — CD 25% to 22.5% — CD 25% to 22.5%, SD cap 20% — 25% cut CD

Assessing the impacts of policy reform: methodological framework

- GTAP-FDI Computable General Equilibrium (CGE) model (Lakatos and Fukui 2014). Two major extensions to the standard specification:

  - Explicit treatment of FDI
  - Representation of multinationals and foreign affiliates

- GTAP database complemented and disaggregated:

  - FDI stocks data: industry, host, source (Bekkers et al. 2021)
  - Foreign affiliates sales data: industry, host, source (Bekkers et al. 2021)

- Ideal for considering:

  - Linkages between trade and investment policy
  - Services trade policies– especially mode 1 (cross border) and mode 3 (foreign affiliates)

Deep integration that covers goods and services can speed up growth

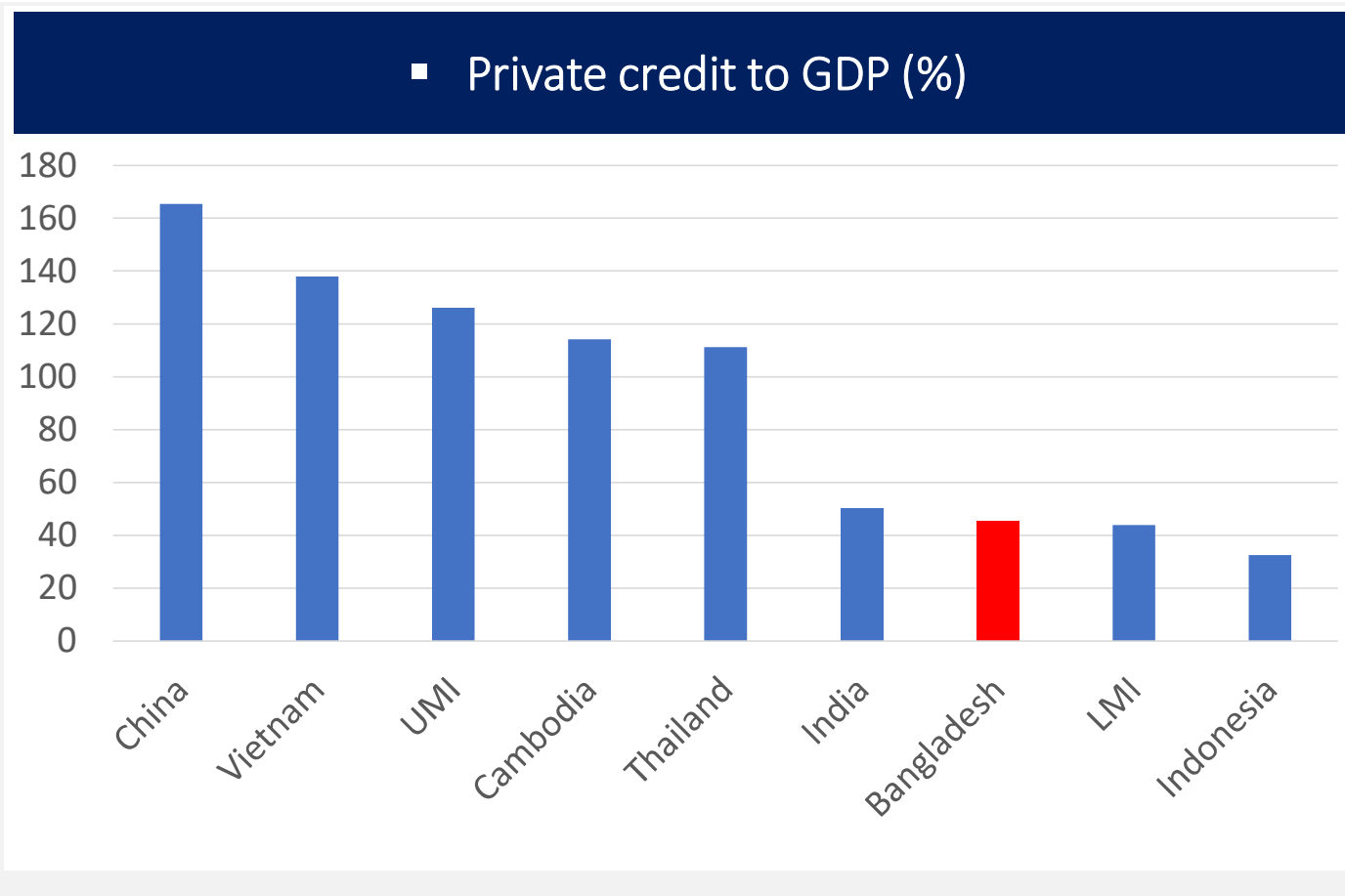**▪ Impact of regional integration on Bangladesh's GDP, percent**
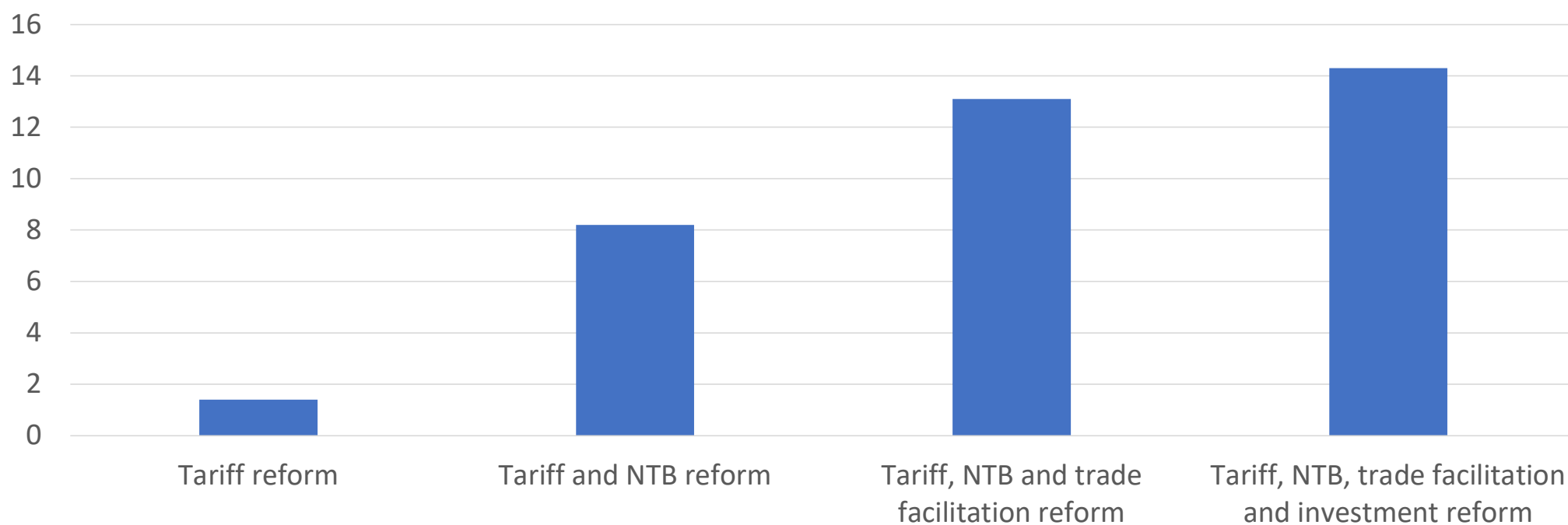
Boosting trade competitiveness

- Tariff modernization first crucial step to support export diversification but must be accompanied by revenue performance improvements

- Beyond tariffs

  - Streamlining of non-tariff barriers

  - Improving trade facilitation

  - Services and investment reforms

  - Green trade

- Integration strategies to speed up growth

  - How to liberalize – Unilaterally, Bilaterally, Regionally, or Multilaterally?

Private credit penetration is low

- The intensity of the private credit matters in the long run for GDP per capita growth

- Large financing gaps in infrastructure (1.8 % of GDP) and MSME (20% of GDP)

- Anecdotally large share of credit going to related parties with big loan losses from fraudulent schemes (Sonali Bank, BASIC Bank, Padma Bank)

Private credit to GDP (%)

Country	Value
China	165
Vietnam	138
UMI	126
Cambodia	114
Thailand	111
India	50
Bangladesh	45
LMI	44
Indonesia	32

Financial inclusion is low, but digitalization has shown promise

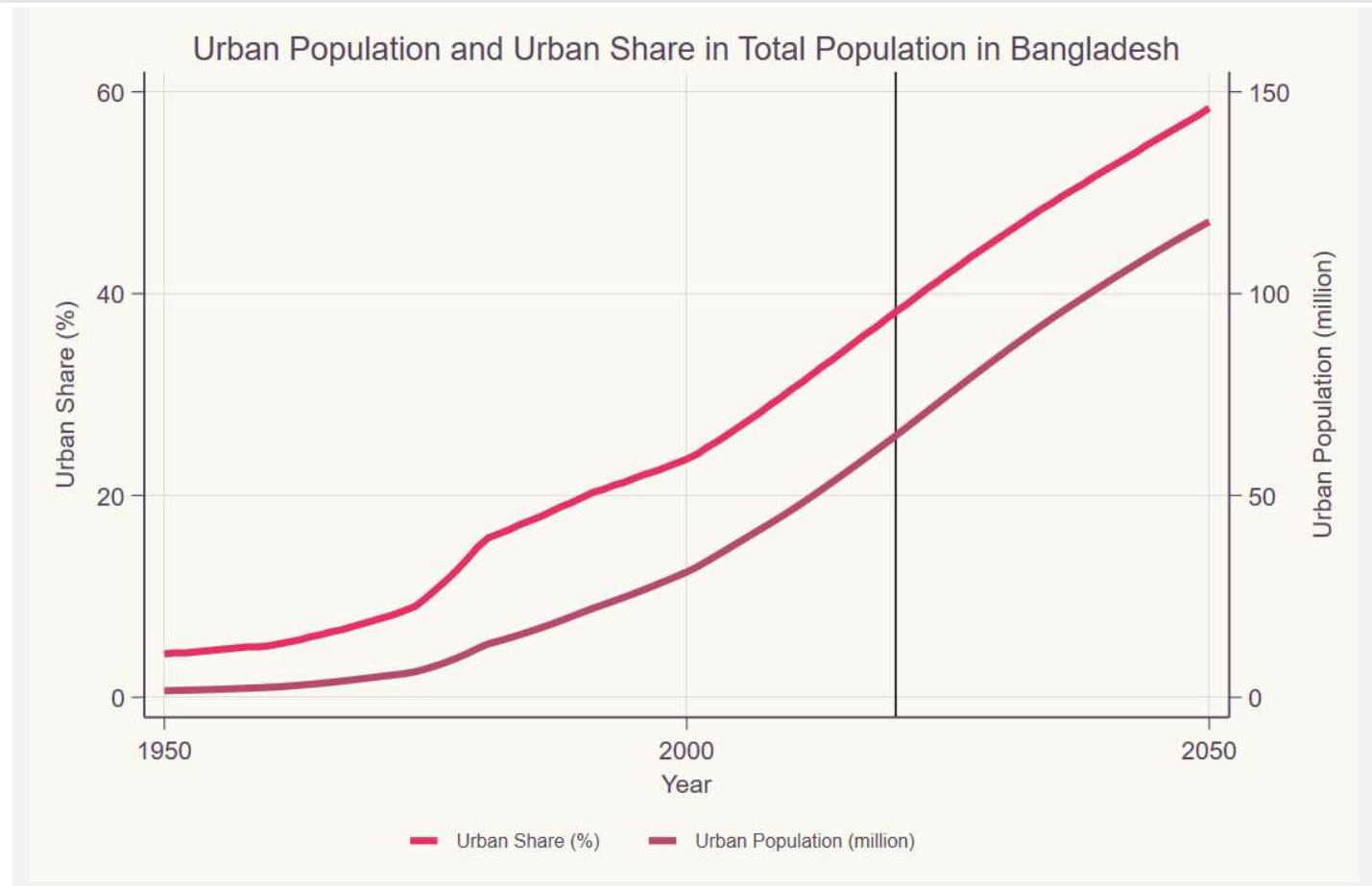▪ Usage of financial services, percent
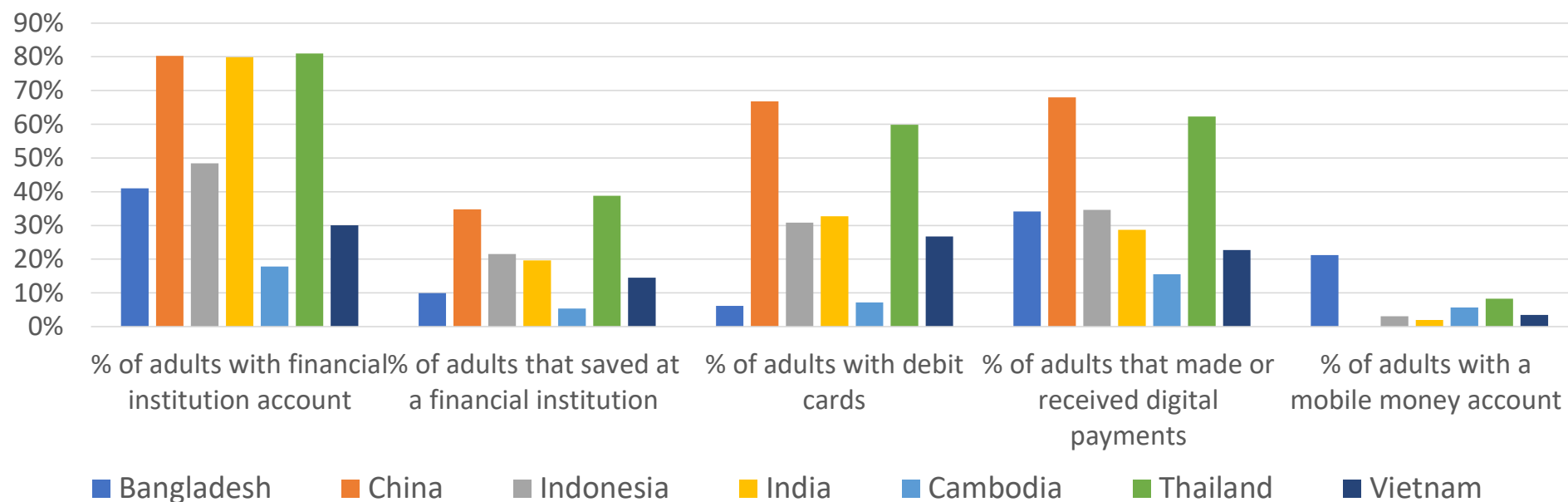
Source: World Bank Findex

Financing the next phase of growth

- Improve asset quality

- Increase the capitalization of banks

- Expand access to finance in underserved segments, such as women and MSMEs

- Unlock private sector financing for green investments and climate risk financing
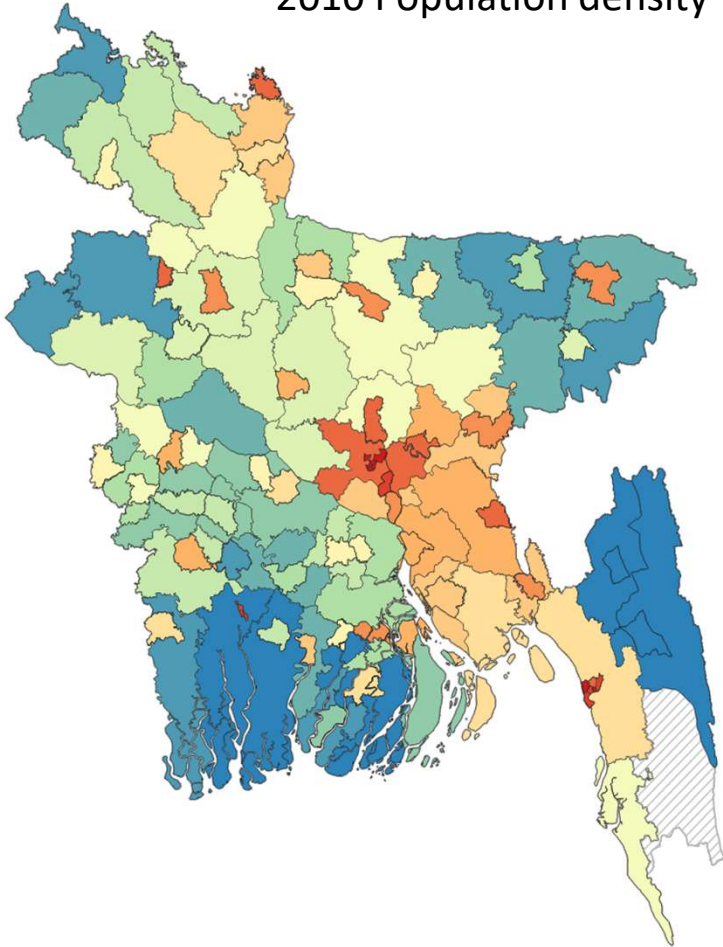
Rapid urbanization is expected in Bangladesh

- Urbanization rate to rise from 38% in 2020 to 60% by 2050

- Total urban population will double by 2050

- Lots of attention on Dhaka city but can it absorb another 50 million people?
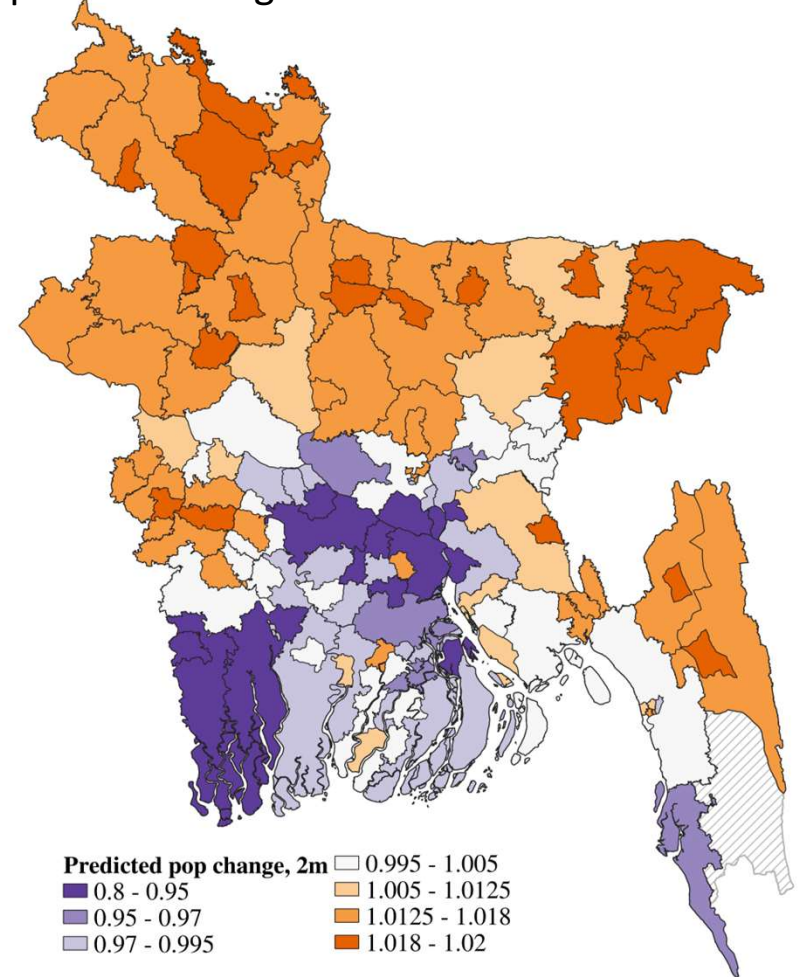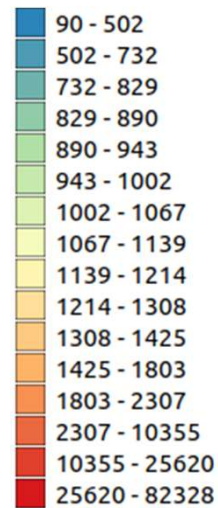

Urban Population and Urban Share in Total Population in Bangladesh

Urbanization is affected by climate induced migration

2010 Population density

90 - 502	
502 - 732	
732 - 829	
829 - 890	
890 - 943	
943 - 1002	
1002 - 1067	
1067 - 1139	
1139 - 1214	
1214 - 1308	
1308 - 1425	
1425 - 1803	
1803 - 2307	
2307 - 10355	
10355 - 25620	
25620 - 82328	

Population change due to 2m rise in sea level

Predicted pop change, 2m

0.8 - 0.95	0.995 - 1.005
0.95 - 0.97	1.005 - 1.0125
0.97 - 0.995	1.0125 - 1.018
	1.018 - 1.02

Improvement in transport connectivity is a key determinant of productive urbanization

- The night lights closely trace the main highway network connecting cities in the country

- Urban areas around Dhaka city are spreading following the highways

- Night light luminosity between Kharagpur in West Bengal and Jessore in Bangladesh differs significantly
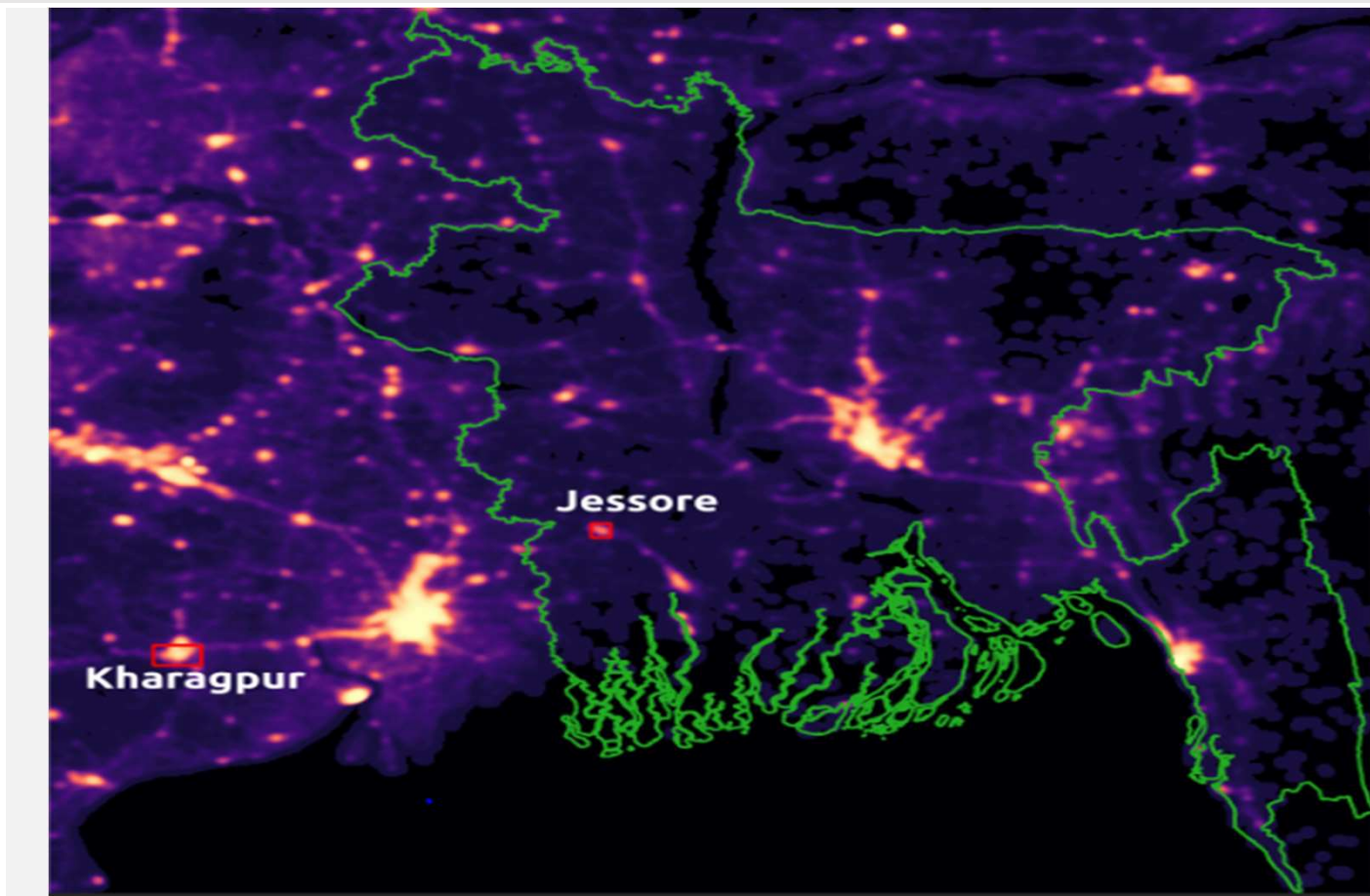
Improvement in transport connectivity will benefit connected districts

Simulated impacts of Padma bridge

- Wages in directly connected districts will increase by as much as 2 to 4 percent and the population by 6 to 12 percent

- Main beneficiaries are the districts of Barisal, Faridpur and Munshiganj

Getting urbanization right

- Improve intercity transport connectivity

- Improve digital connectivity

- Improve access to basic services