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**Working Paper**

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**ADB Working Paper Series**

**FOSTERING GREEN FINANCE FOR  
SUSTAINABLE DEVELOPMENT IN ASIA**

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**Abstract**

Placing the Asian economies onto a sustainable development pathway requires an unprecedented shift in investment away from greenhouse gas, fossil fuel and natural resource intensive industries towards more resource efficient technologies and business models. The financial sector will have to play a central role in this 'green transformation'. This study discusses the need for greening the financial system and the role of financial governance. It reviews the state of green lending and investment in Asia and provides an overview of green financial governance initiatives across Asia. It also identifies market innovations to increase green finance in Asia as well as barriers to green investments and financial policy and highlights priority areas for policy makers.

**Keywords:** Green finance, sustainable investment, green transformation, Asia

**JEL Classification:** G1, G2, G3, Q01, Q5

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# 1. INTRODUCTION: GREEN FINANCE FOR SUSTAINABLE DEVELOPMENT

To place the Asian economies onto a sustainable development pathway requires an unprecedented shift in investment away from greenhouse gas, fossil fuel and natural resource intensive industries towards more resource efficient technologies and business models. The financial sector will have to play a central role in this green transformation. Green finance is defined as comprising “all forms of investment or lending that consider environmental effect and enhance environmental sustainability” (Volz et al. 2015: 2). Important aspects of green finance are sustainable investment and banking, where investment and lending decisions are taken based on environmental screening and risk assessment to meet sustainability standards, as well as insurance services that cover environmental and climate risk.

Aligning economic growth with sustainable development is a universal challenge. Yet the challenge is vast for most developing Asian economies given that their growth models have been very resource and carbon intensive. Although the carbon intensity of economic output has declined substantially in most developing Asian economies over the last decades – with Bangladesh, Lao PDR, Nepal, Thailand and Viet Nam being notable exceptions – it is still much higher than in advanced economies inside or outside of the region (Table 1).

Moreover, many Asian countries are also extremely vulnerable to climate risk. Myanmar, the Philippines, Bangladesh, Viet Nam and Thailand have been among the countries world-wide that have been most affected by climate change over the last two decades (Kreft et al. 2016). According to the University of Notre Dame’s (2017) Global Adaptation Index, many South and Southeast Asian countries are highly vulnerable to climate change while economic, social and governance readiness to improve resilience is lacking.

Against the backdrop of climate change vulnerability and the need for a reduction of carbon emissions, huge investments in green and climate-resilient infrastructure are needed across the region. The infrastructure gap in developing Asia has been assessed by the Asian Development Bank to amount to USD 26.2 trillion between 2016 and 2030 or USD 1.7 trillion annually (ADB 2017). Of the USD 26.2 trillion that need to be invested by the ADB’s 45 developing member countries (DMC), USD 3.6 trillion are specifically required for climate change mitigation and adaptation costs. 56% of the investment is needed for power, 32% for transportation, 9% for telecommunications and 3% for sanitation (Figure 1). For Southeast Asia alone, the *ASEAN Investment Report 2015* estimates that USD 110 billion a year will be needed for infrastructure investment in power, transport, information and communication technology, and water and sanitation in ASEAN through 2025 (ASEAN Secretariat and UNCTAD 2015).

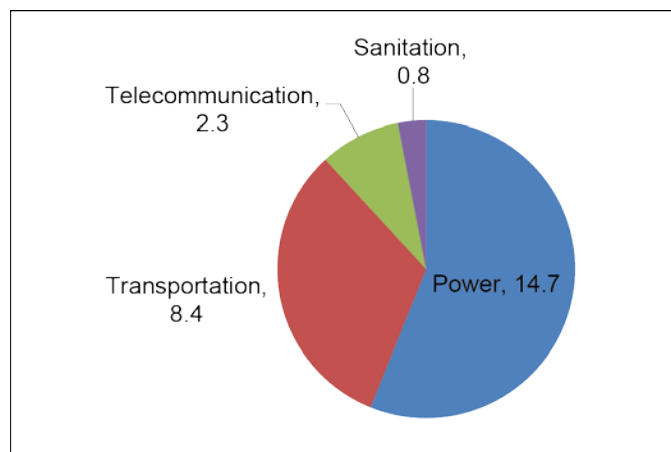
**Table 1: Carbon Intensity of Selected Asian Countries**  
(CO<sub>2</sub> emissions (kg per 2010 US\$ of GDP))

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bangladesh	0.36	0.38	0.43	0.43	0.43	0.40	0.40	0.42	0.46	0.46	0.47	0.47	0.46	0.48	0.45	0.48	0.49	0.52	0.52	0.52	0.50	0.50
Cambodia	0.44	0.43	0.42	0.42	0.38	0.46	0.40	0.38	0.40	0.37	0.37	0.34	0.34	0.33	0.35	0.37	0.44	0.45	0.43	0.42	0.40	0.45
PRC	2.44	2.29	2.24	2.13	1.95	1.74	1.61	1.52	1.44	1.46	1.56	1.63	1.65	1.62	1.53	1.50	1.45	1.44	1.46	1.39	1.32	1.24
India	1.39	1.38	1.36	1.37	1.37	1.32	1.29	1.29	1.24	1.21	1.17	1.14	1.10	1.07	1.06	1.13	1.16	1.04	1.04	1.08	1.03	1.05
Indonesia	0.58	0.55	0.51	0.54	0.56	0.50	0.56	0.58	0.63	0.62	0.62	0.62	0.60	0.57	0.59	0.61	0.63	0.57	0.75	0.75	0.55	0.49
Japan	0.23	0.24	0.23	0.23	0.23	0.22	0.23	0.23	0.22	0.23	0.23	0.23	0.22	0.21	0.21	0.21	0.20	0.21	0.21	0.21	0.21	0.21
Korea, Rep.	0.71	0.69	0.69	0.69	0.69	0.62	0.61	0.63	0.61	0.58	0.57	0.56	0.52	0.50	0.50	0.50	0.50	0.52	0.52	0.50	0.50	0.48
Lao PDR	0.11	0.11	0.13	0.17	0.20	0.22	0.27	0.26	0.23	0.29	0.26	0.31	0.29	0.29	0.16	0.15	0.19	0.23	0.21	0.20	0.18	0.20
Malaysia	0.86	0.80	0.94	0.89	0.82	0.81	0.72	0.77	0.83	0.78	0.87	0.84	0.85	0.78	0.78	0.83	0.83	0.86	0.82	0.77	0.80	0.77
Nepal	0.19	0.20	0.24	0.27	0.29	0.23	0.31	0.28	0.29	0.23	0.24	0.21	0.24	0.19	0.19	0.23	0.28	0.32	0.33	0.34	0.37	0.42
Pakistan	0.85	0.89	0.84	0.90	0.89	0.90	0.89	0.91	0.90	0.92	0.92	0.94	0.91	0.92	0.95	0.94	0.91	0.91	0.89	0.87	0.83	0.81
Philippines	0.51	0.55	0.58	0.56	0.61	0.59	0.58	0.58	0.55	0.53	0.51	0.49	0.48	0.41	0.41	0.43	0.42	0.43	0.41	0.41	0.42	0.42
Singapore	0.59	0.65	0.41	0.45	0.49	0.42	0.41	0.36	0.37	0.34	0.21	0.18	0.18	0.17	0.10	0.18	0.27	0.24	0.18	0.14	0.20	0.20
Sri Lanka	0.21	0.22	0.22	0.25	0.26	0.25	0.27	0.30	0.31	0.32	0.30	0.31	0.29	0.27	0.26	0.24	0.25	0.23	0.25	0.24	0.22	0.25
Thailand	0.69	0.72	0.77	0.81	0.86	0.82	0.85	0.83	0.86	0.87	0.88	0.80	0.87	0.85	0.80	0.79	0.84	0.83	0.81	0.80	0.79	0.83
Viet Nam	0.63	0.66	0.67	0.73	0.87	0.87	0.83	0.88	0.94	1.03	1.07	1.14	1.15	1.13	1.07	1.14	1.18	1.23	1.24	1.10	1.08	1.15

PRC = People's Republic of China.

Source: Compiled with data from World Development Indicators (December 2017).

**Figure 1: Asia Infrastructure Investment Needs by Sector, 2016–2030**  
(in trillion USD)



Source: ADB (2017).

All of this investment will have to be sensitive to environmental, climate and associated policy risks. Funds for this investment will need to come from both the private and public sectors, including both domestic and international sources. The financing of sustainable infrastructure requires new approaches for mobilising and intermediating long-term finance in the region. Integrating environmental and social considerations into lending decisions and product design is only a first step in making the financial systems instrumental in funding the required transformation towards a green economy in the region. The funding of energy efficiency, renewable energy and sustainable infrastructure requires new concepts and new financial instruments which are adapted to local circumstances. Green banks, green bonds and appropriate regulatory frameworks are to be introduced in a coordinated framework. Last but not least, there is also a need for developing the insurance of climate risk, including risk mitigation instruments for agriculture, which for many countries in developing Asia remains a major economic sector.

As pointed out in a recent study by ADB and ADBI (2012: 6), “[d]ecoupling emissions from economic growth requires a fundamental and wide-ranging response encompassing the public and private sector, targets and regulations as well as deep investment.” There is no question about the importance of implementing an adequate environmental policy and regulation and for the need of targeted industrial policies for creating the conditions for sustainable investment and thereby enhancing green, low-carbon growth. But there has been a growing recognition that for achieving a green transformation it is also crucial to align the financial system with sustainability goals, given that the financial system is the place where investment decisions are taken or influenced. The need for financial institutions to “incorporate climate-proofing and climate resilience measures” (UNFCCC 2015: §44) has also been recognised in the Paris Agreement. Accounting for climate and other environmental risk is not least important with respect to safeguarding the stability of financial systems (Volz 2016b). A failure to address systemic sustainability challenges will in the longer-term impinge on the growth and returns of individual firms and economies at large, with repercussions for the financial institutions that have financed non-sustainable investments. There is hence a strong case for financial institutions as well as for financial regulators to take account of environmental, social and governance (ESG) risks.



Against this backdrop, this chapter reviews the state of green lending and investment in Asia and provides an overview of green financial governance initiatives across Asia. It also identifies market innovations to increase green finance in Asia as well as barriers to green investments and financial policy. Based on an analysis of current developments in Asia in the financial markets and in the regulatory sphere, the chapter highlights priority areas for enhancing the scope for green finance in Asia.

## 2. WHAT ARE ASIAN BANKS AND INSTITUTIONAL INVESTORS CURRENTLY DOING?

For the time being, only relatively few financial institutions in Asia systematically integrate ESG factors into their lending or investment decision-making processes. Green banking and sustainable investment are still a niche market, and few staff in the industry have been trained in ESG issues.

A relatively small number of Asian financial institutions have signed up to global sustainable finance initiatives. Only 122 out of 1,874 Signatories to the Principles for Responsible Investment (6.5%) are from Asia. Signatories include asset owners, investment managers and professional service partner. 38 out of 214 global signatories (17.8%) of the UNEP Statement of Commitment by Financial Institutions on Sustainable Development are from the Asia, while 12 out of 91 Equator Principles Financial Institutions (13%) are from the region. Of the 66 partner exchanges of the Sustainable Stock Exchanges (SSE) initiative, 14 are from Asia (21%).<sup>1</sup> Like all SSE partner exchanges they have made voluntary public commitments to promote improved ESG disclosure and performance among listed companies. Of the 57 insurance companies that have globally signed the UNEP FI Principles for Sustainable Insurance, 8 are from Asia (14%).

The relatively low scale of involvement of Asian financial institutions in international sustainability initiatives is reflected in the low level of green lending and investment. According to the *2016 Global Sustainable Investment Review*, the total amount of sustainable investment assets under management in Asia (excluding Japan) reached USD 52 billion in 2016 (GSIA 2017; Table 2). The most widely adopted sustainable investment strategies in Asia, according to ASRIA (2015: 8), are ESG integration and exclusion/negative screening. Singapore; Hong Kong, China; Seoul; and Kuala Lumpur have emerged as the main Asian (excl. Japan) financial centres in which sustainable assets are managed. However, the fastest growing market for sustainable investments in the region between 2014 and 2016 was in Japan where sustainable investment assets increased from USD 7 billion to USD 473.6 billion (GSIA 2017: 4). This surge in sustainable assets can be explained by changes in the sustainable investment market in Japan as well as greater reporting and sustainable investment activity by institutional asset owners (cf. GSIA 2017: 18).

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<sup>1</sup> These are: BSE India Ltd., National Stock Exchange of India (NSE), Kazakhstan Stock Exchange (KASE), Korea Exchange, Bursa Malaysia, Colombo Stock Exchange, Stock Exchange of Thailand, Hanoi Stock Exchange, and HoChiMinh Stock Exchange.

**Table 2: Sustainable Investment Assets under Management by Market**  
(USD millions)

	2011	2013	2016
Bangladesh		14	
People's Republic of China	1,535	1,729	7,290
Hong Kong, China	7,328	11,329	13,538
India	153	115	
Indonesia	595	1,142	
Japan	10,000	6,507	473,570
Republic of Korea	6,288	8,426	7,290
Malaysia	9,956	15,087	15,621
Pakistan	427	505	
Singapore	2,967	5,660	
Taipei,China	724	714	
Thailand	14	20	
Viet Nam		195	
Asia (including Japan)	39,987	51,443	525,640
Asia (excluding Japan)	29,987	44,936	52,070

Source: Compiled with data from ASrIA (2015: 11), GSIA (2017: 16, 27), JSIF (2013a: 4), JSIF (2013b).

Overall, sustainability-themed investment strategies are becoming more prominent in Asia with rising awareness of challenges such as climate change, energy and water security. However, whilst the sustainable market segment has grown rapidly in absolute terms over recent years, it has grown from a very small base and still constitutes only a small percentage of the funds under management in Asia. Indeed, with USD 52 billion the proportion of socially responsible investments (SRI) relative to total managed assets in Asia (excluding Japan) stood at only 0.8% in 2016, much lower than in other world regions (Table 3).<sup>2</sup> In Japan, SRI accounted for 3.4% of total assets under management. Including Japan, Asia reached a global share of SRI assets of only 2.3% in 2016; Japan alone accounted for 2.1% of global SRI assets (GSIA 2017: 8).

A common problem complicating sustainable investment across the region has been the lack of or insufficient disclosure requirements that address environmental or long-term systemic risk factors. A good example for insufficient disclosure practices are palm oil, timber and pulp and paper companies in Indonesia, Malaysia and Singapore. Even though there is a strong business rationale for improved ESG performance of these firms, WWF (2015: 11) points out that “the leading companies from these sectors listed in Singapore, Indonesia and Malaysia provide insufficient relevant disclosure for investors to assess their management of material ESG issues.” WWF (2015) also highlights that domestic investors have undertaken little efforts to address the disclosure gaps – in contrast to international investors for whom ESG scrutiny has already become standard practice. A survey among institutional investors in Indonesia

<sup>2</sup> Sustainable investment is defined by GSIA (2015) as encompassing the following activities and strategies: (i) Negative/exclusionary screening; (ii) Positive/best-in-class screening; (iii) Norms-based screening; (iv) Integration of ESG factors; (v) Sustainability-themed investing (vi) Impact/community investing, and (vii) Corporate engagement and shareholder action. GSIA (2015) comprises data for 13 Asian markets: Bangladesh; China; Hong Kong, China; India; Indonesia; Japan; Republic of Korea; Malaysia; Pakistan; Singapore; Taipei,China; Thailand and Viet Nam.

confirmed this general picture (Volz 2015a): with the exemption of general insurance firms, hardly any institutional investors in Indonesia integrate ESG factors into their decision-making processes, and very few professional investment staff in the industry have been trained in ESG issues. Only recently, ESG disclosure and reporting requirements have been enhanced across the region (cf. Section 3).

**Table 3: Percentage of SRI Relative to Total Managed Assets**

	2012	2014	2016
Europe	49.0	58.8	52.6
Canada	20.2	31.3	37.8
United States	11.2	17.9	21.6
Australia/New Zealand	12.5	16.6	50.6
Asia	0.6	0.8	0.8
Japan			3.4
Global	21.5	30.2	26.3

Note: Asia figures for 2012 and 2014 include Japan.

Source: GSIA (2015: 7), GSIA (2017: 7).

The case of Malaysian palm oil firm IOI, whose sustainability certification was temporarily suspended by the Roundtable on Sustainable Palm Oil (RSPO) in March 2016 because of serious non-compliance with RSPO standards, causing major international customers to cancel their contracts with IOI (Taufik 2016), shows clearly how non-sustainable business practices can adversely affect a firm's cash flow – and diminish its market value. Given the importance of the palm oil and other extractive sectors in many of the region's countries, there is a strong case for both investors and financial authorities to take sustainability challenges more seriously.

At the same time, however, there are examples of green financial innovation across Asian markets, even if the market for sustainable investment is still nascent. In the PRC, for instance, the Shanghai Stock Exchange (SSE) launched the SSE Sustainable Development Index in 2013. In Malaysia, Bursa Malaysia Bhd launched an ESG index, FTSE4Good Bursa Malaysia (F4GBM) Index in December 2014, including listed companies demonstrating strong ESG practices. In neighbouring Indonesia, the Indonesian Stock Exchange (IDX) and KEHATI launched a Social and Responsible Investment (SRI) index in June 2009.<sup>3</sup> The stocks of 25 companies listed at IDX are selected based on both negative (excluded sectors) and positive (enhanced social and environmental management) criteria. IDX and KEHATI consider the SRI KEHATI Index as the “first green index in ASEAN”, even though the criteria for “green” are rather low. In 2014, an exchange-traded fund tracking the SRI KEHATI index was listed on the IDX. Yet, despite such positive developments, the sustainable investment market in Indonesia is still embryonic, and “investors continue to channel funds towards assets that maximize short-term risk adjusted investment returns, with environmental, social or governance considerations of less concern” (ASrIA 2014: 34).

Local-currency bond markets as a source of long-term finance have developed quite well in a number of Asian countries, although governments and enterprises still rely to a large extent on bank finance and forex lending, which entails considerable macroeconomic and stability risks. The reasons for the relative underdevelopment of bond markets differ between countries, but regulatory and corporate governance

<sup>3</sup> For a survey of sustainable finance in Indonesia, see Volz (2015a).

issues are at the core. It will be important to further develop local currency bond markets as a source for financing long-term infrastructure, while at the same time enhancing ESG disclosure requirements through bond exchanges and financial regulation.

The Asian green bond market has started to develop only recently, but current developments are encouraging. In an attempt to quantify bonds used to finance low-carbon and climate resilient infrastructure, the Climate Bond Initiative is looking at 'labelled green bonds' that fund strictly defined and labelled green projects, as well as at 'climate-aligned' bonds that do not carry a strict green label. The total amount of outstanding climate-aligned bonds reached USD 895 billion in September 2017 (up from USD 174 billion in 2012), out of which USD 221 billion were labelled green bonds (CBI 2017). While Asia accounted for only 4.1% of all global climate-aligned bonds outstanding in 2012, its share rose to 42.2% in September 2017 – a development that is very much related to the rapid growth of the Chinese green bond market over the last two years.

The People's Republic of China (PRC)'s first corporate green bond was issued offshore in Hong Kong, China by Xinjiang Goldwind Science and Technology in August 2015 (Kidney 2016). This was followed by the first green bond issue by a Chinese bank by Agricultural Bank of China in London in October 2015. According to Reuters (2015), 94% of the USD 1 billion issue was sold to Asian investors, showing that demand for such assets is there. Following the release of the Green Financial Bond Guidelines by the People's Bank of China in December 2015, the PRC has seen the launch of its first two domestic green bonds (by China Industrial Bank and the Shanghai Pudong Development Bank) in January 2016. Since then, the Chinese green bond market has grown rapidly, reflecting the government's ambitions to make it a cornerstone of its plan to meet annual investment needs in clean energy, energy efficiency and environmental protection which are estimated to amount to about RMB 2 trillion (Zhang et al. 2015). In 2016, the total issuance of labelled green bonds amounted to RMB 238 billion (USD 36.2 billion); with 39% of global issuance, the PRC was the biggest issuer of green bonds in 2016 (CBI and CCDC 2017). Total green bond issuance rose slightly to RMB 248.6 billion (USD 37.1bn) in 2017 (CBI and CCDC 2018). The total amount of outstanding climate-aligned bonds in the PRC is estimated at USD 246 billion and USD 310 billion for 2016 and 2017, respectively. The PRC therefore accounts now for about four-fifth of climate-aligned bonds in the Asia Pacific region (CBI 2017).

The first Asian green bond was issued in 2013 by Export-Import Bank of Korea, raising USD 500 million (AllensLinklaters 2015). Indonesia saw its first green bond launch in April 2014. Supported by a partial credit guarantee from the International Finance Corporation (IFC), PT Ciputra Residence, a residential property developer, issued an IDR 500 billion (USD 44 million) bond based on green building standards on the IDX. In July 2014, Advanced Semiconductor Engineering from Taipei, China issued the first Asian corporate green bond without public support (Münzer-Jones and Johnson 2016).

India saw its first green bond issuance by Yes Bank in February 2015, with further issuances over the year by Yes Bank, Export-Import Bank of India, CLP Wind Farms and IDBI that brought the total green bond issuance to USD 1.1 billion for 2015 (Kidney 2016). The September 2015 issuance of Yes Bank was purchased by the IFC which financed this through the issue of the first green "Masala" bond, the first green bond issued in the offshore rupee markets (IFC 2015). The Indian green bond market is expected to expand after the Securities and Exchange Board of India (SEBI) published official green bond requirements in January 2016. In February 2016, Hero Future Energies issued India's first certified climate bond with proceeds being used to fund

wind energy (Münzer-Jones and Johnson 2016). India has since seen various green bond issuances, with labelled green bond issuances of USD 4.3 billion in 2017.

Efforts to develop green bond markets are also under way elsewhere in the region. In March 2017, the Monetary Authority of Singapore (MAS) launched a Green Bond Grant Scheme which covers the costs up to S\$100,000 per issuance of obtaining an external review for qualifying green bond issuances (Tan 2017). In September 2017, the ASEAN Capital Markets Forum, which brings together the capital market regulators of the ten member countries of the Association of Southeast Asian Nations (ASEAN), launched the ASEAN Green Bond Standards, which are based on the International Capital Markets Association' Green Bond Principles. In February 2018, Indonesia issued the world's first sovereign green sukuk bond (Dunkley 2018).

The green bond market has been developed not least by public development banks and international financial institutions which also helped to develop standards such as the Green Bond Principles. In Asia, the IFC has helped several green bond issuances. The Development Bank of Japan placed the first Japanese green bond issuance of EUR 250 million in October 2014 (AllensLinklaters 2015). The Asian Development Bank, which has issued USD 2.2 billion of water and clean-energy bonds since 2010, issued its first green bond over USD 500 million in March 2015. The ADB raised USD 1.3 billion and USD 1.25 billion in further green bond issuances in August 2016 and August 2017, respectively.

A crucial step in opening up demand for green bonds to institutional investors, such as pension funds and insurance companies lies in rating and labelling these bonds as benchmark-eligible securities in order to allow these institutions to add them to their portfolios. Initial steps into this direction are uniform standards for bonds that carry the label "green", through standards for what constitutes green projects and activities. Another measure implemented to attract institutional investors has been the creation of green bond indices in 2014 by banks and rating agencies (OECD 2017).

A more recent development in the Asia-Pacific region has been the interest in a market for the issuance of catastrophe bonds, or so-called 'cat bonds' that pay out in the event of a natural disaster. So far, cat bonds have been mainly used in the US to mitigate storm-related risks and are one of the fastest growing parts of the global insurance market with bonds worth USD 11 billion issued in the first 6 months of 2017 (Ralph 2017). Most recently in Asia, Singapore has entered the cat bond market for insurance-linked securities (ILS) with the announcement that the MAS is to fund 100% of the upfront issuance costs for cat bonds out of Singapore starting January 2018 (Ralph 2017). Singapore is the first Asian country to roll out an incentive scheme of this scale in order to encourage the ILS market. The MAS has also discussed the creation of special purpose reinsurance vehicle legislation in order to further encourage the ILS and catastrophe business (MAS 2008) and has recently introduced an application process for the prior approval by the MAS for the establishment of special purpose reinsurance vehicles (MAS 2017).

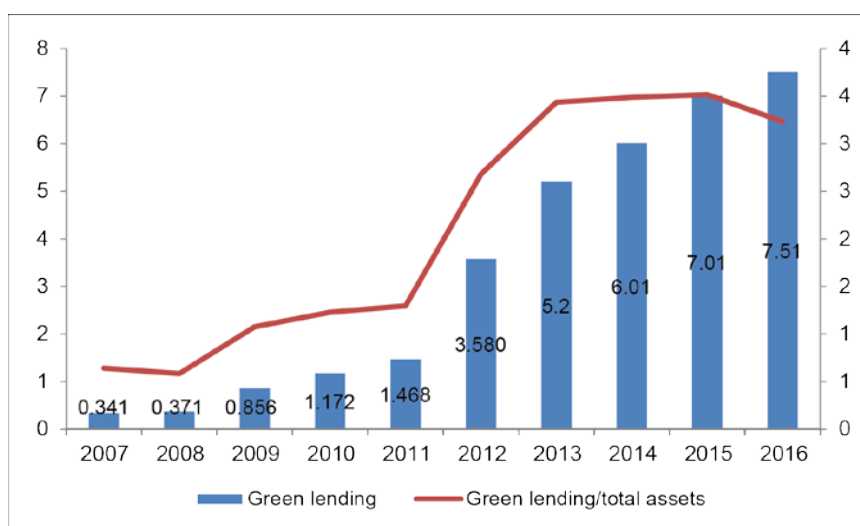
While bond markets have become more important as a source of long-term finance across Asia, Asian financial systems continue to be dominated by banking. Reliable data on green banking is scarce, given that only few Asian countries have introduced green lending frameworks and therefore for most part banks had no definition of what constitutes green or sustainable lending. In most Asian economies, the concept of green banking is rather new, and most banks have little or no experience in environmental risk analysis. Overall, lending for sustainable consumption and production constitutes only a small share of total commercial lending and is sold at a

premium compared to conventional finance (e.g., SWITCH-Asia and ASrIA 2015a; SWITCH-Asia and ASrIA 2015b).

There are, however, also positive developments as increased efforts at green financial governance (which will be discussed in Section 3) have raised awareness in the banking industry. Two notable pioneers in green banking in Asia are the PRC and Bangladesh.

In the PRC, green lending has increased substantially over recent years as a result of Chinese financial authorities' efforts to boost green finance.<sup>4</sup> While green credit stood at RMB 341 billion in 2007, it has increased to RMB 7.5 trillion (USD 1.14 trillion) at the end of 2016 – an increase from 0.6% of total banking assets to 3.2% (Figure 2). According to the China Banking Association, 21 major Chinese banks reported more than RMB 8.2 trillion in lending to green projects by 2017, about 10% of their total outstanding loans.

**Figure 2: Green Lending by Chinese Banks**  
(in RMB trillion and as share of total banking assets)



Note: Scale for green lending/total assets is on the right axis.

Source: Compiled with data from Zadek and Zhang (2014: 17), UNEP (2017), CBRC (2016: 192), China Daily (2015) and CBRC.

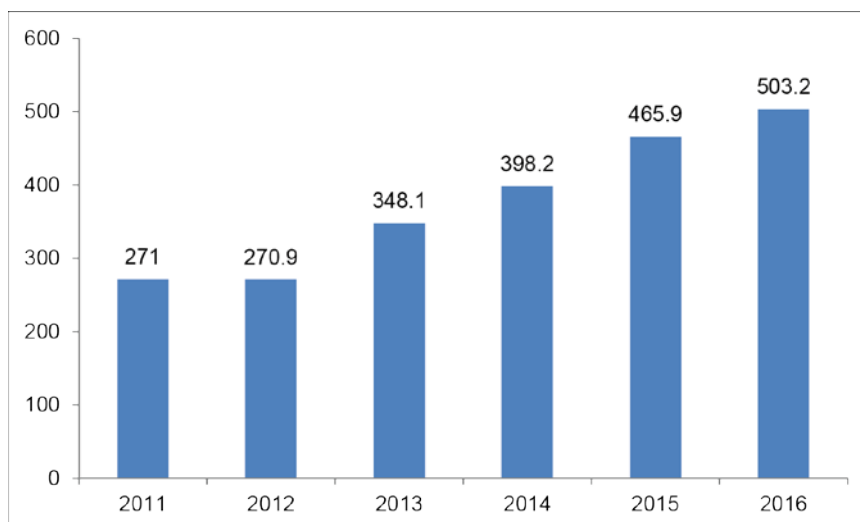
In Bangladesh, the central bank's efforts at greening the banking system have had considerable effect. In the fiscal year 2016, Bangladeshi banks extended a total of BDT 503.2 billion in green finance (Figure 3) – a share of 7.5% of total credit; moreover, all banks have conducted environmental risk rating of new projects financed (BB 2017a).

In Indonesia, efforts by Bank Indonesia and Otoritas Jasa Keuangan (OJK), the financial regulatory authority, to boost green finance still need to yield tangible results. A review by Bank Indonesia of green lending by banks (defined as lending for renewables, sustainable agriculture, green industry and ecotourism) found that amongst 29 banks surveyed between 2011 and 2013 the share of lending identified

<sup>4</sup> According to CBRC's definition, green credit comprises loans to: green agriculture; green forestry; energy/water saving in industrial sector; nature protection, biological restoring and disaster prevention; recycling projects; garbage treatment and pollution prevention; renewable energy and clean energy; water projects in urban and rural areas; green buildings; green transportation; energy efficiency and environmental services; overseas green projects.

as green was very small, with only 1.2% of total lending described as green in 2011, a share that increased only slightly to 1.3% in 2012 and 1.4% in 2013, amounting to IDR 10.2 trillion (about USD 1 billion) (Volz 2016b). For the time being, banks mostly still lack the necessary tools to assess environmental credit risks, but the Indonesian financial authorities have been trying to help the development of capacities through various training schemes and green lending manuals, often in cooperation with international development partners such as GIZ or IFC.

**Figure 3: Total Green Finance Extended in Bangladesh**  
(in billion taka)



Note: 'Total green finance' includes loans disbursed to key green sectors and loans disbursed to industrial facilities with effluent treatment ('indirect green financing').

Source: Compiled with data from Bank Bangladesh (various publications).

Lastly, turning to the insurance sector, even though efforts have been made for several years to establish weather and climate insurance products across Asian countries, the share of uninsured households is still large. Green insurance can be defined in narrow terms as environmental pollution liability insurance and in broader terms as insurance that covers schemes related to environmental risk management and resilience as well as innovative products safeguarding low-carbon solutions (UNEP 2017). For instance, according to World Bank FINDEX data for 2011, only 5.7% of people working in agriculture in South Asia are insured against climate-related risks (GIZ 2015). Traditional, publicly subsidised agricultural insurance schemes such as the ones provided by the Agricultural Insurance Company of India have already been in place for a while. However, the success of such traditional indemnity based weather insurance schemes has been viewed critically by some (Sirimanne and Srivastava 2015), and there is clearly a need to further develop innovative insurance products such as index-based insurance programmes for farmers or flooding risk insurance and extend their outreach in Asia (e.g., Schanz and Wang 2015).

### 3. GREEN FINANCE POLICIES IN ASIA

Several Asian countries have been at the forefront of introducing sustainable finance guidelines and regulation. As can be seen in Figure 4, 13 out of the 32 countries represented in the Sustainable Banking Network – a knowledge-sharing network of

banking regulators and banking associations established in 2012 that supports the development of environmental and social risk management by financial institutions and promotes green and inclusive lending – are from Asia.<sup>5</sup>

The Monetary Authority of Singapore and the People's Bank of China were two of the eight founding members of the Central Banks and Supervisors Network for Greening the Financial System, which was launched at the One Planet Summit in Paris in December 2017 (CBSNGFS 2017). Four Asian cities – Astana; Hong Kong, China; Qatar; and Shanghai – were amongst the 11 founding members of the International Network of Financial Centres for Sustainability, which was launched in September 2017. Members of the network have committed to utilise their financial expertise to drive action on climate change and sustainable development. In December 2017, five other financial centres joined the network, including Shenzhen, so that 5 out of the 16 financial centres of the network are Asian.

As can be seen in Table 4, financial authorities in Bangladesh; the PRC; Hong Kong, China; India; Indonesia; Japan; Mongolia; Singapore and Viet Nam have already started to take concrete steps to align the financial system or parts of it with sustainable development. Financial authorities in Cambodia; Lao PDR; Nepal; Pakistan; the Philippines; Sri Lanka and Thailand are currently working on green finance policies. Financial authorities in Bangladesh and the PRC in particular have been pioneers in green finance.

In the PRC attempts at addressing environmental risks through financial regulation date back to 1995 when the People's Bank of China issued an 'Announcement on Credit Policy for Environmental Protection' while the State Environmental Protection Agency (forerunner of the Ministry of Environmental Protection) issued a guideline an 'Announcement on Making Use of Credit Policy for Promoting Environmental Protection' (Bai et al. 2014). Neither was implemented, but over time new regulation was introduced and enacted, including the Green Credit, Green Insurance and Green Securities Policies introduced in 2007–08.<sup>6</sup> In 2012, the China Banking Regulatory Commission (CBRC) issued Green Credit Guidelines "for the purpose of encouraging banking institutions to, by focusing on green credit, actively adjust credit structure, effectively fend off environmental and social risks, better serve the real economy, and boost the transformation of economic growth mode and adjustment of economic structure" (CBRC 2012). In 2014, the CBRC complemented the Green Credit Guidelines by introducing a Green Credit Monitoring & Evaluation mechanism and a key Performance Indicators Checklist. The green credit policies have thus "evolved from an initial principle based approach in 2007 to a standardized, metrics-driven performance assessment of all licensed banks" (UNEP Inquiry 2015a: 27).

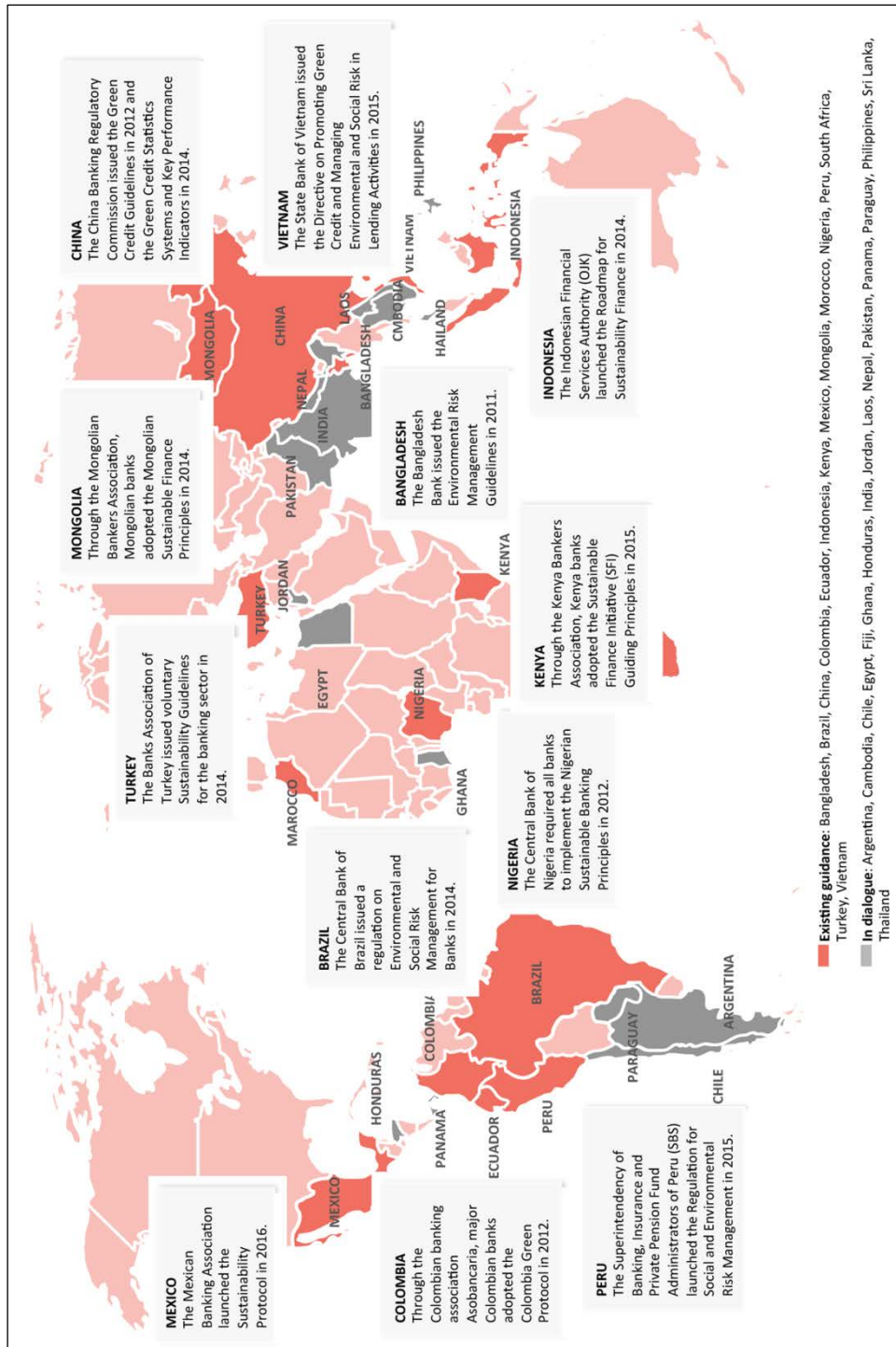
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<sup>5</sup> The Asian SBN members are: Bangko Sentral ng Pilipinas (Central Bank of the Philippines), Bank of Bangladesh, Bank of Lao PDR, Bank of Mongolia, China Banking Association, China Banking Regulatory Commission, China Ministry of Environmental Protection, Department of Environmental and Natural Resources of the Philippines (DENR), Mongolia Bankers Association, Mongolia Ministry of Environment and Green Development, Nepal Rastra Bank, Otoritas Jasa Keuangan (Indonesia Financial Services Authority), State Bank of Pakistan, State Bank of Vietnam, Thai Bankers Association, and Vietnam Ministry of Natural Resources & Environment.

<sup>6</sup> In 2004, the China Banking Regulatory Commission, the People's Bank of China and the National Development and Reform Commission issued an 'Announcement on Further Strengthening Industrial Policy and Credit Policy to Control Credit Risks' which banned or restricted lending to certain polluting activities. In 2005 and 2006, the State Council banned bank lending to projects and enterprises phased out because of severe pollution ('Regulation on Accelerating Adjustment of Industrial Structure' and 'Announcement on Accelerating Adjustment of Industrial Structure with Excess Capacity'). Cf. Bai et al. (2014).



**Figure 4: Sustainable Banking Network Members and Countries having Introduced Green Finance Guidelines and Regulations**



Source: Created with information from the Sustainable Banking Network website (December 2017), [http://www.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/sustainability-at-iftc/company-resources/sustainable-finance/sbn](http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-iftc/company-resources/sustainable-finance/sbn)

**Table 4: Sustainable Finance Policies across Asia**

<b>Bangladesh</b>	
2008	Bangladesh Bank: Circular on 'Mainstreaming Corporate Social Responsibility in Banks and Financial Institutions in Bangladesh'
2011	Bangladesh Bank: 'Policy Guidelines for Green Banking' and 'Guidelines on Environmental Risk Management'
2015	Bangladesh Bank: Mandatory Green Finance Credit Targets I
2016	Bangladesh Bank: 'Integrated Risk Management Guidelines for Financial Institutions'
2017	Bangladesh Bank: Guidelines on Environmental & Social Risk Management for Banks and Financial Institutions
<b>People's Republic of China</b>	
2007	China Banking Regulatory Commission (CBRC), People's Bank of China (PBOC), and Ministry of Environmental Protection (MEP): Green Credit Policy ('Opinions on Enforcing Policies and Regulations on Environmental Protection to Prevent Credit Risk') MEP and China Insurance Regulatory Commission (CIRC): Green Insurance Policy ('Guiding Opinions on Environmental Pollution Liability Insurance')
2008	China Securities Regulatory Commission (CSRC) and MEP: Green Securities Policy ('Guidance Opinions on Strengthening the Oversight of Public Companies') Shanghai Stock Exchange: Shanghai CSR Notice and Shanghai Environmental Disclosure Guidelines
2009	Shenzhen Stock Exchange: Social Responsibility Instructions to Listed Companies
2012	CBRC: Green Credit Guidelines
2013	MEP and CIRC: 'Guiding Opinions on Implementing the Pilot Programs of Compulsory Environmental Pollution Liability'
2014	CBRC: Green Credit Monitoring & Evaluation mechanism and Key Performance Indicators Checklist PBOC: Green Finance Task Force MEP and CIRC: 'Guiding Opinions on Pilot Scheme for Compulsory Environmental Pollution Liability Insurance'
2015	PBOC: Green Financial Bond Directive and Green Bond-Endorsed Project Catalogue for Bonds Issued by Financial Institutions and Corporations PBOC: Green Finance Committee
2016	PBOC: Guidelines for Establishing the Green Financial System NDRC and Shanghai Stock Exchange: Green Bond Guidelines ChinaBond Green and Climate-Aligned Bond Index
2017	State Council: Establishment of five green finance pilot zones in Zhejiang, Jiangxi, Guangdong, Guizhou and Xinjiang MEP and CSRC: Environmental Disclosure for Listed Companies CSRC: Guidelines for Green Bond Issuance by Listed Companies MEP and CIRC: Draft Guideline on Environmental Pollution Liability Insurance Shanghai's Lujiazui Financial City: Lujiazui Standard of Green Finance
2018	CSRC and MEP: Mandatory ESG disclosures for listed companies and bond issuers by 2020

*continued on next page*

**Table 4** *continued*

<b>Hong Kong, China</b>	
2016	Securities and Futures Commission: Principles of Responsible Ownership Financial Services Development Council: Report on “Hong Kong as a Regional Green Finance Hub”
2018	Hong Kong Quality Assurance Agency: Green Finance Certification Scheme
<b>India</b>	
2007	Corporate Social Responsibility, Sustainable Development and Non-Financial Reporting – Role of Banks
2011	Ministry of Corporate Affairs: National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business
2012	Securities and Exchange Board of India (SEBI): Annual Business Responsibility Reporting
2014	SEBI: Infrastructure Investment Trusts (InvIT) Regulations
2015	Reserve Bank of India: Priority Sector Lending – Targets and Classification Indian Banks Association: National Voluntary Guidelines for Responsible Financing
2016	SEBI: Guidelines for the Issuance and Listing of Green Bonds
2017	SEBI: Disclosure Requirements for Issuance and Listing of Green Bonds
<b>Indonesia</b>	
2012	Bank Indonesia: Green Lending Model Guidelines for Mini Hydro Power Plant Projects Government Regulation on Social and Environmental Responsibility of Limited Liability Companies
2014	Otoritas Jasa Keuangan (OJK)/ Financial Services Authority: Roadmap for Sustainable Finance in Indonesia 2015-2019
2015	IFC, USAID, OJK: Clean Energy Handbook for Financial Service Institutions
2017	OJK: Framework and regulation for green bond issuance in Indonesia OJK: Regulation on the Application of Sustainable Finance for Financial Services Companies, Issuers and Publicly Listed Companies
<b>Japan</b>	
2012	Ministry of the Environment: Principles for financial action towards a sustainable society
2014	Financial Services Agency: Japan Stewardship Code
2015	Tokyo Stock Exchange: Corporate Governance Code and Infrastructure Fund Market
2017	Ministry of the Environment: Green Bond Guidelines
<b>Mongolia</b>	
2014	Bank of Mongolia and Mongolia Banking Association: Mongolia Sustainable Finance Principles and Sector Guidelines
<b>Philippines</b>	
2008	Government of Philippines: National Disaster Risk Reduction and Management Law
2011	Securities and Exchange Commission: Corporate Governance Guidelines for Companies Corporate Responsibility Act updated
2015	Government of Philippines: Joint Catastrophe Risk Insurance Facility for Governments (Local Government Units Pool)

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**Table 4** *continued*

<b>Singapore</b>	
2010	Singapore Stock Exchange (SGX): 'Guide to Sustainability Reporting for Listed Companies'
2015	Association of Banks in Singapore: Guidelines on Responsible Financing
2017	Monetary Authority of Singapore: Green Bond Grant Scheme
<b>Thailand</b>	
2008	Stock Exchange Thailand and Securities and Exchange Commission of Thailand: Guidelines for Sustainability Reporting
2014	Stock Exchange Thailand: CSR Reporting Requirements Securities and Exchange Commission of Thailand: Sustainability Development Roadmap for Listed Companies
<b>Viet Nam</b>	
2015	State Bank of Vietnam (SBV): Directive on Promoting Green Credit Growth and Managing Environmental and Social Risks in Credit Extension SBV: Action Plan of Banking Sector to Implement the National Green Growth Strategy until 2020
2016	SBV: Circular on lending transactions of credit institutions and/or foreign bank branches with customers
2017	SBV: Renewed commitment to implementing the Green Growth program and the program of preventing climate change

Source: Compiled by author.

In 2014, the PBRC launched a Green Finance Task Force which developed 14 recommendations relating to disclosure and information flows, legal frameworks, fiscal incentives and institutional design (PBOC and UNEP Inquiry 2015). The Green Finance Task Force was succeeded by the Green Finance Committee which is tasked by the PBOC to develop green finance practices including environmental disclosure, environmental stress testing for the banking sector, and guidelines on greening the PRC's overseas investment. In December 2015, the PBOC published a Green Financial Bond Directive and the Green Bond-Endorsed Project Catalogue for bonds issued by financial institutions and corporations. At the same time, the National Development and Reform Commission (NDRC) issued guidelines for enterprise and municipality bonds – the first government-sponsored green bond guidelines world-wide. As mentioned before, Chinese authorities regard the development of a green bond market as an important source of raising private capital for sustainable development. The PRC has also started to promote the idea of green finance globally; in January 2016, the Chinese G20 Presidency launched the Green Finance Study Group which is co-chaired by the PRC and the UK (i.e., the PBOC and the Bank of England). In August 2016, the PBoC and seven other ministerial agencies launched the world's first systematic green finance policy framework in the form of comprehensive guidelines. In June 2017, the State Council established five green finance pilot zones in Zhejiang, Jiangxi, Guangdong, Guizhou and Xinjiang to explore different green finance reforms, innovations and systems in order to rely on an empirical sample for promoting green finance across the PRC (UNEP 2017).

Two further green financial policy issues in the PRC have been green insurance and environmental risk analysis. In the field of green insurance, in 2013 the Ministry of Environmental Protection and China Insurance Regulatory Commission (CIRC) have in a joint initiative taken first steps to launch a national mandatory pollution liability insurance system. Thus far the system has been piloted at the local level in

30 provinces (UNEP 2017). Furthermore, encouraged through policy on environmental information disclosure and increasing public availability of data, environmental risk analysis through stress testing has also become an increasingly prominent element in the investment practice of firms and financial institutions in the PRC.

Like in the PRC, financial authorities in Bangladesh have been working on a regulatory framework for sustainable banking for more than a decade.<sup>7</sup> The cornerstone of Bangladesh Bank's (BB) efforts to green the financial system are its policy guidelines for green banking. In 2008, Bangladesh Bank (BB) published a circular on 'Mainstreaming Corporate Social Responsibility (CSR) in Banks and Financial Institutions in Bangladesh'. Banks have to report bi-annually to BB on their CSR activities, and since 2010 BB publishes an annual report on CSR Initiatives in Banks. In 2011, BB published 'Policy Guidelines for Green Banking' and 'Guidelines on Environmental Risk Management' (ERM) to encourage banks to conduct systematic environmental risk analysis as part of the credit appraisal process. The green banking policy was extended to all non-bank financial institutions (NBFIs) in 2013. The same year, a uniform reporting format was introduced by BB. The Policy Guidelines set out three phases for banks and NBFIs:

- **Phase one:** policy formulation and governance, incorporation of environmental risk in credit risk methodology, initiating in-house environmental management, introducing green finance, creating a climate risk fund, introducing green marketing, supporting employee training, promoting consumer awareness, and conducting green events.
- **Phase two:** developing sector specific environmental policies and green strategic planning together with setting up green branches and improving in-house environmental management.
- **Phase three:** developing environment-friendly initiatives and introducing innovative products.

In February 2017, BB released the Guidelines on Environmental & Social Risk Management (ESRM) for Banks and Financial Institutions in Bangladesh (BB 2017b) as an update to the ERM guidelines of 2011. The ESRM guidelines were developed based on the experience from the ERM as well as based on survey of the financial sector and with the technical support of the IFC. The central amendment concerns the expansion of the scope of the guidelines to also include social risk assessment and social parameters additionally to environmental parameters for the assessment of risk and to make the analysis of risk more objective. Furthermore, BB provides examples for sources of E&S risk for banks and financial institutions and emphasises the benefits of conducting E&S risk analysis.

Besides the policy guidelines for green banking, BB has implemented two other key policies to develop green finance: green refinancing and a mandatory credit quota for loans. As parts of its broader policy of targeted refinancing lines through which commercial banks investing in priority sectors of the economy can get concessional credit, BB introduced a revolving green refinancing scheme for banks in 2009. A BDT 2 billion (approx. USD 26 million) revolving fund was set up to disburse low-interest loans for solar energy, biogas and waste treatment projects. Over time the list of permissible projects has been expanded in 2017 and now covers 50 products in 11 categories, including renewable energy, energy efficiency, alternative energy and green industry as well as social categories, such as ensuring the safety and work environment of factories. Under this scheme, banks can obtain loans at 5% from BB

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<sup>7</sup> For an overview, see UNEP Inquiry (2015b) and Barkawi and Monin (2015).

with interest chargeable to bank customers capped at 9%. With support from the Asian Development Bank, BB introduced another USD 50 million refinancing window in 2012 for brick kiln efficiency improvement projects which will help lower carbon and other greenhouse emissions (ADB 2012). In January 2016, BB announced a new USD 200 million fund to “provide low-cost loans to textile and leather industries for switching to environment-friendly production” (ANN 2016). BB has also introduced priority lending requirements to rural enterprises and for green finance. Since 2015, at least 5% of banks’ loan portfolios has to be allocated to green finance (and at least 2.5% to the agricultural sector). The lending requirements are linked to capital adjustments and preferential refinancing opportunities.

For sure, the policies and guidelines implemented by financial authorities in the PRC and Bangladesh are not transferable one-to-one to other Asian countries, many of which have been experimenting with similar approaches to green financial governance. In a global survey of sustainable finance approaches, the UNEP Inquiry (2015a) identified five areas of emerging practice in embedding sustainable development into the financial system. Examples for each of these areas can be found across Asia and are given in the following.

**(i) Enhancing market practice: disclosure, analysis, risk management**

- **Sustainability disclosure:** The Shanghai Stock Exchange introduced Guidelines on Listed Companies’ Environmental Information Disclosure already in 2008. In 2010 the Singapore Stock Exchange (SGX) released a ‘Guide to Sustainability Reporting for Listed Companies’. In June 2016, SGX made it mandatory for all listed companies to publish sustainability reports from December 2017 onwards. In 2012, the Hong Kong Exchanges and Clearing Limited introduced voluntary ESG Reporting Guidelines. Since 2012, the Securities and Exchange Board of India (SEBI) requires the 100 largest listed enterprises to publish annual Business Responsibility Reports, while the Indian Ministry of Corporate Affairs’ imposed CSR reporting requirements under the Companies Act 2013. In 2015, SEBI established a ‘comply or explain’ reporting system for corporate governance under which the top 500 companies were asked to report, among other issues their E&S risk assessment standards and how climate change and global warming are addressed. The Philippines Securities Exchange Commission requests an Annual Corporate Governance Report from listed firms since 2013. In Viet Nam, the State Securities Commission introduced a Sustainability Reporting Handbook for Vietnamese Companies in 2013.
- **Integrating environmental risks into financial regulation:** Bank Bangladesh requires environmental risk management from bank and non-bank financial institutions. The State Bank of Vietnam issued the ‘Directive on Promoting Green Credit Growth and Environmental Social Risks Management in Credit Granting Activities’ (State Bank of Vietnam 2015), requiring financial institutions to take environmental factors into account in their lending decisions.
- **Industry guidelines for sustainable market practice:** The Association of Banks in Singapore released a ABS Guidelines on Responsible Financing in October 2015. The same year the Indian Banking Association introduced the National Voluntary Guidelines for Responsible Finance.

**(ii) Upgrading governance architectures: internalising sustainable development into financial decision-making of financial regulators and central banks**

- **Inclusion of environmental risk to secure financial and monetary stability:** The Bangladesh Bank considers its green finance policies as integral part of its mandate to maintain monetary and financial stability. The Reserve Bank of India pays close attention to agricultural prices as these have a significant impact on consumer price inflation. Bank Indonesia is considering to include environmental and climate risk into its macroprudential framework. In the PRC, the PBoC is considering to include the green credit performance of banks into the central banks' assessment of macroprudential risk (Yao and Borsuk 2017).
- **Multi-stakeholder dialogue between financial authorities and the financial industry:** In 2015, the PBOC established the Green Finance Committee to develop green finance practices, environmental stress testing for the banking sector, and guidelines on greening the PRC's overseas investment. Also in 2015, the Indonesian financial services regulator OJK has established a multi-stakeholder task force to promote and further develop its Roadmap for Sustainable Finance through dialogue.

**(iii) Encouraging cultural transformation: capacity building, behaviour, market structure**

- **Action to enhance the current skill set of financial professionals and regulators:** Indonesia's Sustainable Finance Roadmap seeks to develop the sustainability skills of professionals. In Viet Nam, the central bank has also voiced its intent to organise training workshops for bank personnel.
- **Mainstreaming CSR and ESG considerations:** Bangladesh Bank has been mainstreaming CSR in banks and financial institutions.
- **Market development:** With the new Green Financial Bond Directive, the PBOC has taken a first step to develop a new market segment for sustainable investment in the Chinese capital market.

**(iv) Harnessing the public balance sheets: fiscal incentives, public financial institutions and central banks**

- **Fiscal incentives for investors:** Thailand introduced a feed-in premium programme in 2010 which has helped to more than doubled its installed clean energy capacity.
- **Preferential central bank refinancing:** Banks in Bangladesh extending loans for green projects can access the Bangladesh Bank's refinancing arrangements and pass on preferential interest rates to their clients.
- **Green credit and bond guarantees:** Development banks such as the ADB have offered risk-sharing facilities in various Asian countries where partial credit guarantees were provided to partner banks sharing the payment risk of underlying borrowers, for example for energy efficiency projects. USAID's Development Credit Authority has extended bond guarantees to support Asian municipalities in raising funds for constructing urban resilient infrastructure.
- **Public pension funds:** In Japan, the Government Pension Investment Fund (GPIF) and the Pension Fund Association for Local Government Officials endorsed the Principles for Responsible Institutional Investors along with 160 other institutions within six months of its launch in February 2014 by Japan's

Financial Services Agency (GSIA 2014: 25). In 2017, GPIF adopted an ESG investment strategy. In 2014, the Korean National Assembly requested from the National Pension Service, the world's fourth largest pension fund, to enhance its ESG standards.

**(v) Directing finance through policy: requirements and prohibitions, enhanced liability**

- **Green lending requirements:** Since 2015, Bangladesh Bank requires banks to allocate 5% of bank lending into green projects, including renewable energy, energy efficiency and waste management. It also uses differentiated capital requirements and preferential refinancing to incentivise green financing.
- **Priority sector lending programmes:** In April 2015, the Reserve Bank of India (RBI) included lending to small renewable energy projects and drinking water facilities within the Priority Sector Lending (PSL) targets. The PSL scheme requires banks to allocate 40% of lending to key sectors such as agriculture and small and medium-sized enterprises.
- **Quotas for priority areas:** Since 2002, the 'Obligations of Insurers to Rural Social Sectors' issued by the Insurance Regulatory and Development Authority of India require Indian insurance firms to satisfy quotas for the extension of insurance coverage to low-income and rural clients.

While the first three areas of emerging green finance practice are straightforward and fairly uncontroversial, this cannot be said about (iv) and (v). For instance, using the central bank balance sheet to incentivise green lending or even invest directly is considered a taboo in orthodox central banking circles (Volz 2016b). Likewise, directed credit allocation has earned a bad reputation in the 1960s and 1970s (e.g., Krueger 1990), although there certainly have been successful cases too. The initiatives referred to above are mostly too recent to provide a conclusive assessment of their efficacy, and in the case of Bangladesh, where the central bank's targeted refinancing policies have been in place since 2009, a comprehensive evaluation is still outstanding. In each specific country context, policy options have to be considered cautiously and instruments and policies have to be designed carefully to avoid potential adverse effects. The respective policy frameworks also have to take account of differences in financial market structure which are likely to impact on policy outcomes (Volz 2015b). To counter the danger that green finance policies may result in politicised or crony lending, it will be crucial to strengthen corporate governance of the involved institutions, including through tighter internal and external auditing, and improved accounting practices and risk management. Moreover, once implemented, green finance policies need to be reviewed regularly and adjusted– or abolished – if needed.

## **4. PRIORITIES FOR FINANCIAL SECTOR GOVERNANCE FOR ALIGNING THE FINANCIAL SYSTEM WITH SUSTAINABLE DEVELOPMENT AND FOSTERING GREEN INVESTMENTS**

Before turning to priorities for financial governance to enhance green finance and investment, it is imperative to highlight the role of 'real economy' barriers and bottlenecks. Gaps in the enforcement of environmental regulation and the non-pricing of negative production and consumption externalities such as carbon emissions clearly reduce the demand for green investment. Addressing such real economy barriers



through binding environmental regulation, emissions trading schemes or other policies that help to internalise negative externalities, is critical to mobilising green investment.<sup>8</sup>

Price distortions from fossil fuel subsidies constitute a particularly important challenge for most Asian economies (ADB 2016a; Bárány and Grigonytė 2015). Emerging and Developing Asia is the region with the second largest fossil fuel subsidies after the Middle East and North Africa (Bárány and Grigonytė 2015). Recent IMF estimates for post-tax energy subsidies – which also include costs of environmental damage – suggest that the distortions in a large number of Asian economies are enormous (Coady et al. 2015). To make progress in sustainable development, these economies will have to phase out energy subsidies.

Without ‘getting the prices right’, the quest for a green transformation will be elusive. There are, of course, many other real economy investment barriers that need to be addressed, especially in the energy sector.<sup>9</sup> Green investments, including investments in renewable energy, are often held back by difficult investment conditions, adverse regulatory and legal environment, inconsistent policies and cumbersome permission procedures (Volz 2015a). Countries with more transparent, coordinated long-term and credible policies capture more investment and build new industries, technologies and jobs while reducing emissions faster and more efficiently than countries with weak and disjointed policies.

However, as discussed earlier on, there are also weaknesses and failures within the financial system that are constraining its ability to respond to risks and opportunities for viable, resilient investments. At a general level, there is still a lack of awareness that environmental and climate risks can pose a threat to the financial sustainability of single projects or firms as well as entire industries; by implication these risks can also cause problems to individual lenders and investors or even constitute a systemic risk to the entire financial sector. This problem is compounded by the fact that the lending and investment horizon tends to be short while many of the risks are more long term. Bank of England Governor Mark Carney has famously termed this the ‘tragedy of the horizon’ (Carney 2015).

A second and related problem is the lack of staff in the financial industry that have been trained in assessing environmental and climate risk. Likewise, there is a shortage of staff with experience in green lending, for example for renewable energy projects. A small number of green lending projects increases transaction costs, which makes green lending less attractive compared to business as usual.

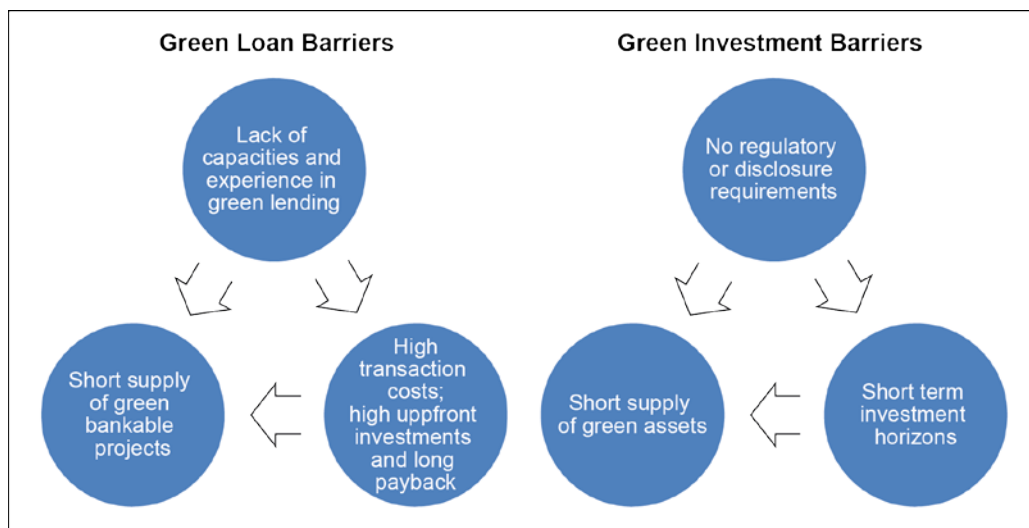
A third problem is the shortage of bankable and investable projects, a problem that is related to the ‘real economy’ barriers discussed above.

Fourth, where mandatory environmental risk analysis and ESG disclosure requirements are lacking, lenders and investors may be reluctant to forgo opportunities for fear that competitors will snap them up.

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<sup>8</sup> For a recent overview of emissions trading schemes in Asia see ADB (2016a).

<sup>9</sup> See, for instance, Wolff et al. (2016) for a recent study on renewable energy investments in Indonesia.

**Figure 5: Lending and Investment Barriers**

Source: Compiled by author.

As discussed above, many different instruments can be used to enhance green finance. The most adequate choice of instruments will depend on the specific country context; while certain market-based instruments may be more appropriate in one country, another country may opt for more interventionist policies. Yet what is needed in all countries to enable a fundamental cultural change in financial markets and to mainstream sustainability in financing and investment is a coordinated and systematic approach which involves all relevant stakeholders. Financial authorities need to set incentives for financial firms to enhance green finance and provide support and guidance, but experience from different countries suggests also that often rules and regulations are needed for financial firms to act.

To successfully align the financial system with sustainability goals, financial governance should target the following goals:

- Raising awareness among regulators and market participants in the financial sector for environmental and climate risks.
- Developing capacities in the financial industry for environmental risk analysis and management through knowledge-building and sharing.
- Building up the capacities in the financial industry needed to develop sustainable financing practices and new lending instruments for financing sustainable projects such as renewable energy.
- Enhancing transparency through ESG disclosure requirements.
- Providing incentives, where needed, to banks and NBFIs for the financing of green projects.
- Supporting the development of new market segments such as the green bond market or climate risk insurance.
- Developing long-term, local currency refinancing sources for banks to enable them to extend long-term credit.

To achieve these goals, a dialogue among all relevant domestic stakeholders is needed. Public financial institutions, including central banks, development banks and public pension funds, can play an important role in developing and promoting the adaption of new green financial products. International initiatives and networks such as the UNEP Finance Initiative, the Sustainable Banking Network, the Sustainable Stock Exchanges Initiative, the G7 Initiative on Climate Risk Insurance (“InsuResilience”) and the G20 Green Finance Study Group can help countries to leverage on international experiences.

While green finance and investment is currently still a niche market in Asian financial systems, growth rates have been high, and different Asian markets have already seen various green financial innovations. Moreover, the financial authorities of several Asian countries –Bangladesh, the PRC, India, Indonesia, Mongolia and Viet Nam – have been developing green finance frameworks, while other countries, including Lao PDR, Nepal, Pakistan, the Philippines, Singapore and Thailand are currently in the process of doing so. The challenges for achieving a green transformation to a low-carbon economy are high; aligning the financial sector with sustainable development will be a key element for Asian economies to succeed.

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