

Commentary

India's Future Commitments to the Paris Agreement: A Conflict Between Energy Security and Economic Growth

December 2019

Yagyavalk Bhatt



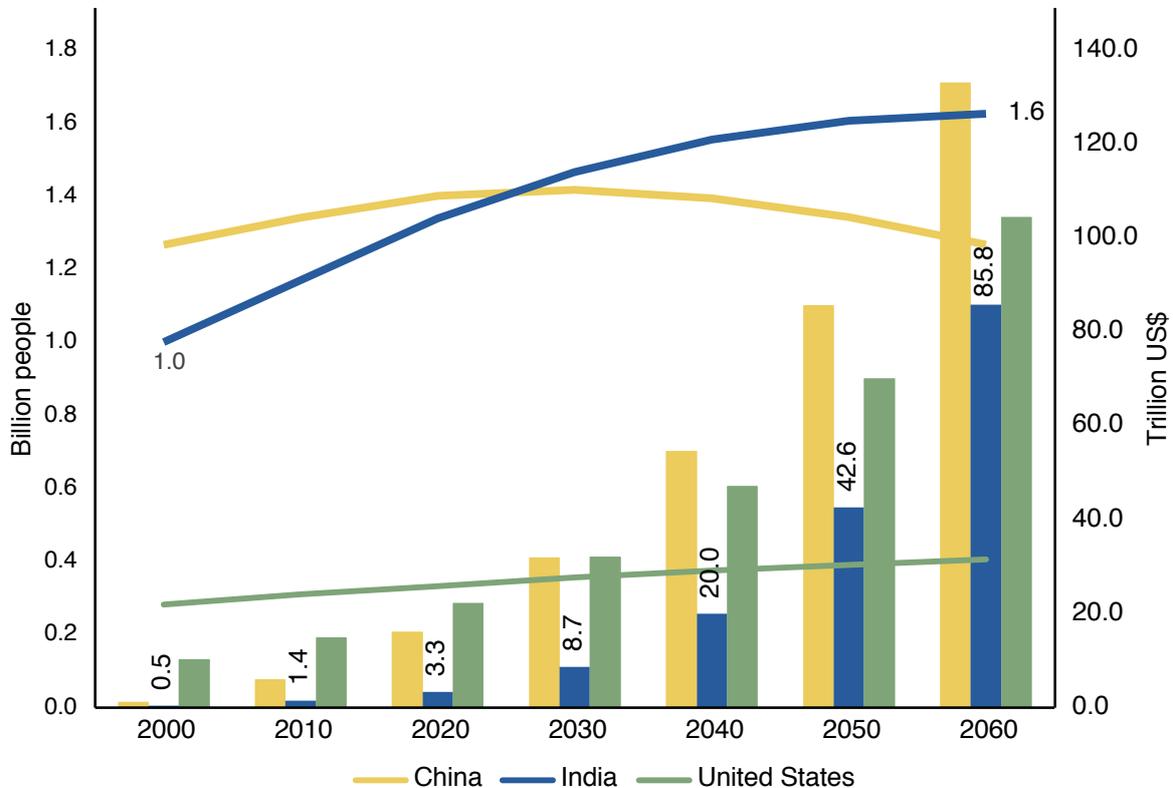
India has increased the pace of its climate change mitigation efforts and is becoming increasingly ambitious in its attempts to address this issue.

From 2-15 December, 2018, almost 200 countries gathered at the 2018 United Nations Climate Change Conference in Katowice, Poland to adopt a set of guidelines to limit global warming. During this event, India reaffirmed its promise to implement the Paris Agreement, collectively with other countries. Under the leadership of Prime Minister Shri Narendra Modi, India has increased the pace of its climate change mitigation efforts and is becoming increasingly ambitious in its attempts to address this issue (Mohan 2017).

Unlike other commitments and agreements, the Paris Agreement of 2015, with 197 signatories, provided the international community with the means to step up the fight against climate change. All 197 signatories, including India, announced their Nationally Determined Contributions (NDCs) to the collective effort (Bhatt et al. 2018).

India’s economy has been growing strongly over the last decade and is expected to be one of the top three global economic powers by 2035. The country also faces a number of challenges, including energy access and employment (OECD 2013). Further, according to United Nations (U.N.) estimates, India’s population is expected to overtake China’s by 2028 (Figure 1), which will further increase India’s already high consumption of energy resources (U.N. 2019).

Figure 1. India’s gross domestic product (GDP) vs. population.

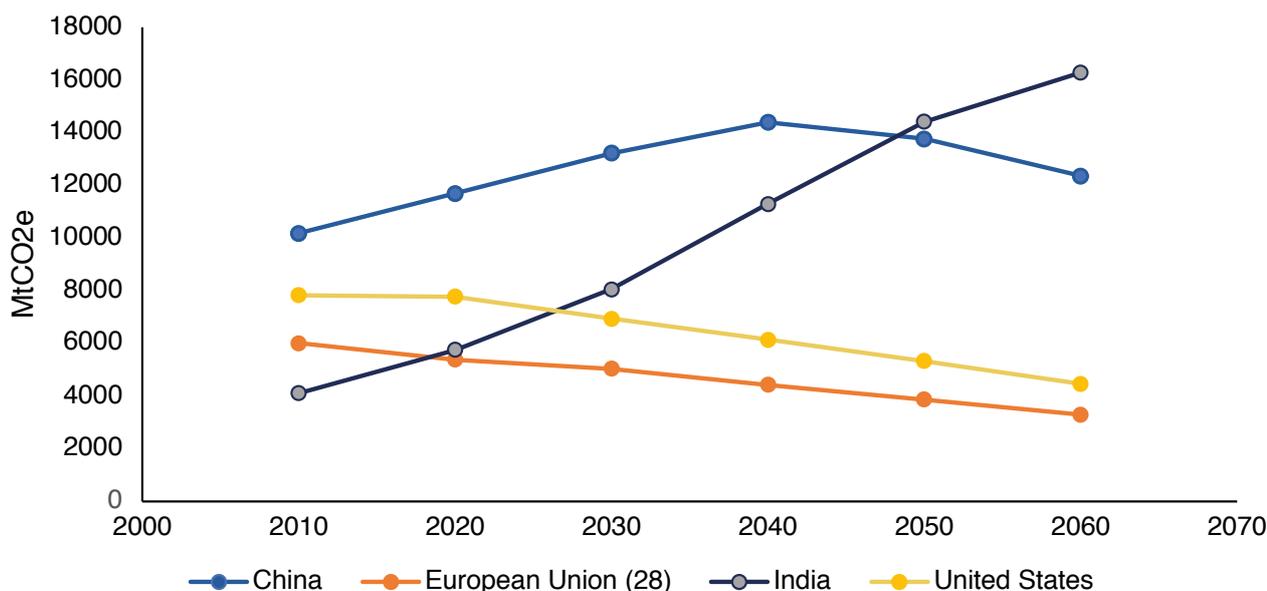


Sources: OECD and UN.

India is also tipped to overtake China in overall greenhouse gas (GHG) emissions by 2050 (Figure 2). Given the anticipated growth trajectory of India's emissions and energy consumption, the success or failure of global climate change efforts will be influenced by India's future energy mix.

India should overtake China in overall greenhouse gas (GHG) emissions by 2050.

Figure 2. GHG emissions with land-use change and forestry.



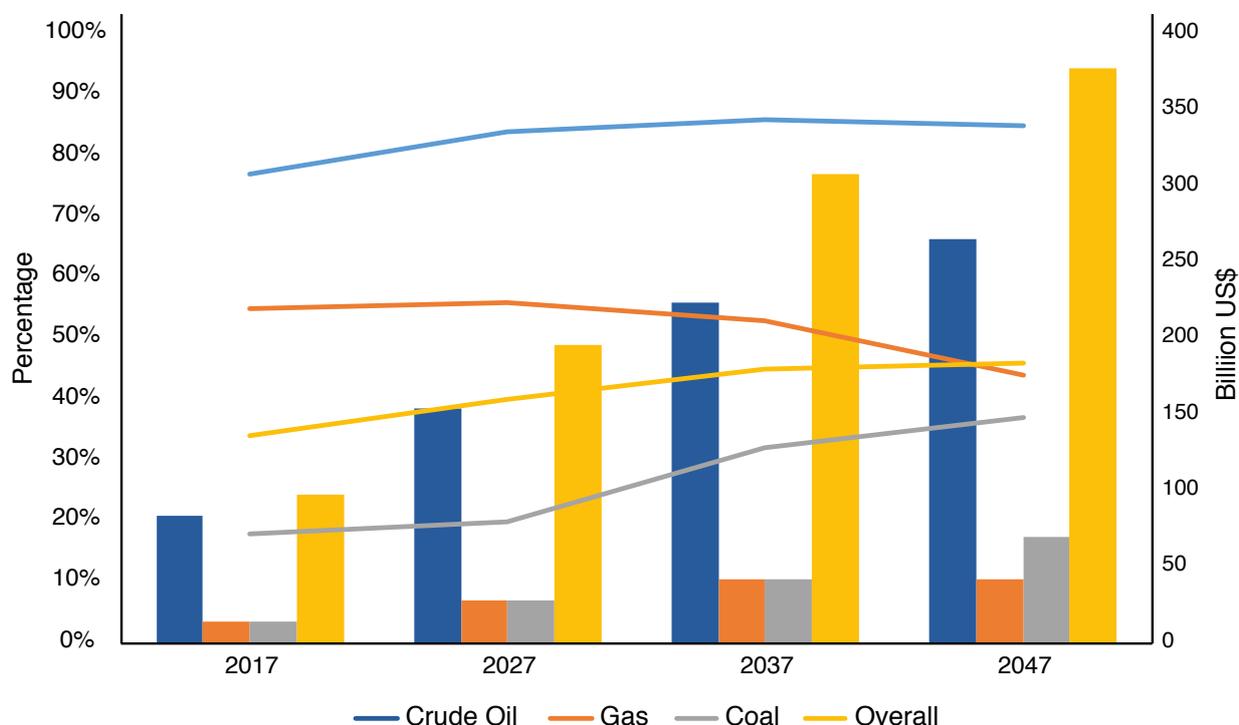
Source: World Resources Institute.

Note: MtCO₂e= million tonnes of carbon dioxide equivalent.

Prime Minister Narendra Modi has set a target to cut India's oil import dependence by 10%. In its Indian Energy Security Scenarios (IESS), NITI Aayog forecasts that India's crude oil imports and its cost will rise from US\$ 84 billion in 2017 to US\$ 266 billion by 2047 and will account for some 85% of the country's total domestic energy consumption (IESS team pathway) (Figure 3) (NITI Aayog 2015). According to the International Energy Agency (IEA), by 2040 India will be one of the world's largest crude oil importers, with imports in excess of 7 million barrels per day (an increase of roughly 52% from 2018). The current trend in India's energy use plays a critical role in assessing future global progress toward fulfilling the objectives of the Paris Agreement.

By 2040 India will be one of the world's largest crude oil importers, with imports in excess of 7 million barrels per day (an increase of roughly 52% from 2018).

Figure 3. India's import dependence (%) vs. the cost of its imports.



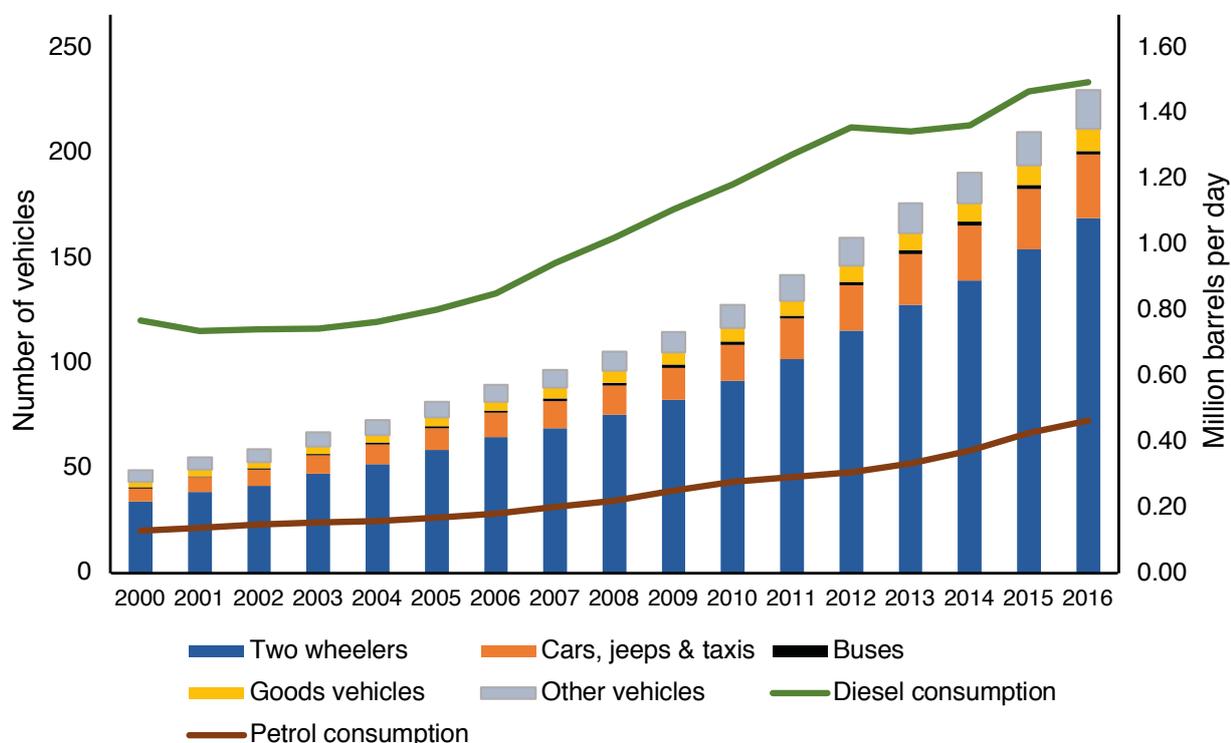
Sources: IESS 2047; NITI Aayog.

The transport sector accounts for 8.44% of India's total final energy consumption.

India's energy imports are forecast to increase substantially. India's focus will therefore be on new policies to help reduce its rapidly rising energy consumption. The transportation sector, especially road transport, influences India's energy security and climate policies through its contribution to petroleum consumption and carbon dioxide (CO₂) emissions. According to India's Ministry of Statistics and Programme Implementation, the transport sector accounts for 8.44% of total final energy consumption. To put this into perspective, the combined consumption of the residential, agriculture/forestry, commercial and public sectors is 13.90% (MoSPI 2018).

The country's vehicle stock has increased by an average of 10% annually since 2000, rising to an estimated 230 million in 2016 (Figure 4) (MoSPI 2018). It is also important to note that, despite the annual 10% growth in vehicle ownership, the number of registered vehicles is still lower than in other countries. This suggests the prospect of even greater energy demand from road transportation in India as vehicle ownership grows.

Figure 4. Road transport in India (stock and consumption).



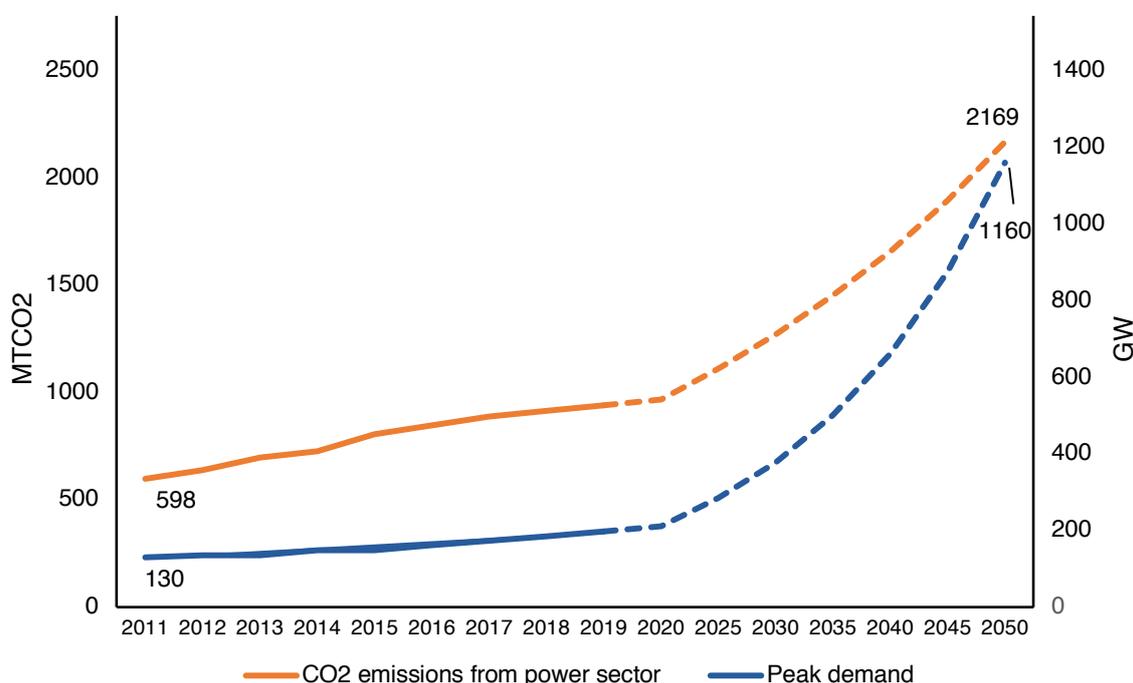
Source: Ministry of Road Transport and Highways, India.

The largest driver of overall GHG emissions is CO₂ emitted from fossil fuel combustion. The transport sector contributes to about 13% of India’s energy demand, but it is India’s power sector that is the biggest contributor of GHG emissions, at about 47%. India’s power sector is dominated by fossil fuels, mostly coal. As of 2018, the installed capacity of coal-fired power plants was 197 gigawatts (GW), 57% of total installed capacity (344 GW), and accounted for almost 76.08% of India’s total power generation (Bhatt et al. 2018). India’s power generation sector contributes around 77% of the country’s overall emissions. India’s emissions are expected to decline due to various policy initiatives, such as the adoption of cleaner technologies and its climate commitments. However, the country still needs the support of coal power plants to provide reliable and cheap electricity.

India’s Central Electricity Authority plans to add 47.9 GW of coal-based capacity from 2017-22, adding a further 46.42 GW from 2022-27 (Figure 5). This additional coal capacity will come from increased coal imports and domestic coal production (CEA 2018).

India’s power sector is the biggest contributor of GHG emissions.

Figure 5. Growth of peak demand and emissions from the power sector.



Sources: Central Electricity Authority; Ministry of Power.

India's per capita energy consumption is far below major emitters such as the United States and China.

India has developed coherent plans and policies to promote renewable energy and energy efficiency, but it needs a strong institutional framework through which to implement them. It also needs to build its labor capacity and raise awareness of the risks posed by climate change. The country therefore needs the active participation of central and state governments to achieve its climate targets.

India's rapidly growing economy and energy-related issues could lead to many challenges. One of the biggest challenges it faces is the air quality of its cities. According to IQAir, AirVisual and Greenpeace's World Air Quality Report 2018, India has 22 of the top 30 most polluted cities globally (IQAir 2018). Five of the other eight are in China, two are in Pakistan and one is in Bangladesh. To address this issue, India is promoting alternative fuel technologies such as electric vehicles and compressed natural gas. It also joined the Climate and Clean Air Coalition, a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to improving air quality and protecting the climate through actions to reduce short-lived climate pollutants (UNEP 2019). Even with its air quality issues and its status as one of the largest consumers of fossil fuels in the world, India's per capita energy consumption is far below major emitters such as the United States and China. Furthermore, India is extremely vulnerable to climate change. With its population projected to surpass China's by 2028, India's energy demand and its increasing climate vulnerability will only accelerate. Given these issues, India's energy and climate policies are critical to achieving its obligation to curb GHG emissions under the Paris Agreement.

According to U.N. estimates, global efforts to limit climate change to 1.5 degrees Celsius above pre-industrial levels, the objective of the Paris Agreement, need to increase fivefold. The U.N. estimates that any temperature rise above this target will lead to major and irreversible damage (Choudhary 2018). A recent KAPSARC paper used the KAPSARC Toolkit for Behavioral Analysis (KTAB) to provide an insight into the Indian climate debate, particularly its midcentury emissions intensity reduction target. The paper found that policymakers participating in decision-making, either directly or indirectly, are likely to support a midcentury emissions reduction target of around 52%. The simulation results suggest that the prime minister leads the climate conversation in India and that he is willing to make minor concessions to obtain the support of other decision-makers pushing for less ambitious emissions targets (Quayid et al. 2019).

It is clear that the major focus of India's midcentury commitments will be on the long-term role of fossil fuels (oil, gas, and coal) in its energy mix, the environmental consequences of using these fuels, and economic security. Focusing on these areas will enable the country to strike the right balance between fuel emissions and rising imports. Cities in India suffer from air pollution and congestion problems due to their high densities. Replacing the country's old transport infrastructure will create more congestion and contribute to higher emissions and increased energy consumption.

India's future energy needs, and the environmental impact they may have, are of critical importance to the rest of the world.

References

- BBC. 2019. "India country profile." February 18. Accessed May 27, 2019. <https://www.bbc.com/news/world-south-asia-12557384>
- Bhatt, Yagyavalk, Aljawhara Al Quayid, Nourah Al Hosain, and Paul Mollet. 2018. "India's Balancing Act to Address Climate Change Under the Paris Agreement." KAPSARC Discussion Paper. <https://www.kapsarc.org/research/publications/indias-balancing-act-to-address-climate-change-under-the-paris-agreement/>
- World Resources Institute. n.d. "CAIT Climate Data Explorer." Accessed May 27, 2019. <http://cait.wri.org/projections/#/?collection=projections%20ghg%20emissions%20data&maxYear=undefined&minYear=undefined>
- Central Electricity Authority, Ministry of Power, India (CEA). 2018. "National Electricity Plan."
- Choudhary, Srishti. 2018. "What the Katowice climate change talks mean for India." Livemint, December 18. Accessed May 27, 2019. <https://www.livemint.com/Politics/vPESb3KBAJOCznPdKNYOII/What-the-Katowice-climate-change-talks-mean-for-India.html>
- Ebinger, Charles K. 2016. "India's energy and climate policy: Can India meet the challenge of industrialization and climate change?" The Brookings Institution.



India Brand Equity Foundation. 2019. "About Indian Economy Growth Rate & Statistics." April. Accessed May 27, 2019. <https://www.ibef.org/economy/indian-economy-overview>

IQAir. 2018. "2018 World Air Quality Report."

Ministry of Statistics and Programme Implementation (MoSPI). 2018. "Energy Statistics."

— — —. 2018. "Statistical Year Book India 2018."

Mohan, Aniruddh. 2017. "From Rio to Paris: India in global climate politics." Observer Research Foundation.

NITI Aayog. 2015. "India Energy Security Scenarios 2047." August 28. Accessed May 27, 2019. <http://iess2047.gov.in/>

OECD. 2013. "Economic Outlook No. 103 – July 2018 – Long-term baseline projections." May. Accessed May 27, 2019. https://stats.oecd.org/viewhtml.aspx?datasetcode=EO103_LTB&lang=en

Al Quayid, Aljawhara, Nourah Al Hosain, Yagyavalk Bhatt, and Paul Mollet. 2019. "Political Feasibility of Enhancing India's Midcentury Target for Emissions Intensity." KAPSARC Discussion Paper. <https://www.kapsarc.org/research/publications/political-feasibility-of-enhancing-indias-midcentury-target-for-emissions-intensity/>

United Nations Environment Programme (UNEP). 2019. "India Joins the Climate and Clean Air Coalition." July 5.

United Nations (U.N.). 2019. "World Population Prospects 2019."

Verma, Nidhi. 2019. "India imported a record 4.6 million bpd oil in 2018." <https://in.reuters.com/>. January 11. Accessed May 28, 2019. <https://in.reuters.com/article/india-oil/india-imported-a-record-46-million-bpd-oil-in-2018-idINKCN1P51TY>

About KAPSARC

The King Abdullah Petroleum Studies and Research Center (KAPSARC) is a non-profit global institution dedicated to independent research into energy economics, policy, technology and the environment, across all types of energy. KAPSARC's mandate is to advance the understanding of energy challenges and opportunities facing the world today and tomorrow, through unbiased, independent, and high-caliber research for the benefit of society. KAPSARC is located in Riyadh, Saudi Arabia.

Legal Notice

© Copyright 2019 King Abdullah Petroleum Studies and Research Center (“KAPSARC”). This Document (and any information, data or materials contained therein) (the “Document”) shall not be used without the proper attribution to KAPSARC. The Document shall not be reproduced, in whole or in part, without the written permission of KAPSARC. KAPSARC makes no warranty, representation or undertaking whether expressed or implied, nor does it assume any legal liability, whether direct or indirect, or responsibility for the accuracy, completeness, or usefulness of any information that is contained in the Document. Nothing in the Document constitutes or shall be implied to constitute advice, recommendation or option. The views and opinions expressed in this publication are those of the authors and do not necessarily reflect the official views or position of KAPSARC.



www.kapsarc.org