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# A Comparative Analysis Between Green Industrial Policies of India and China: Review and Implications

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## Abstract

In the last century, the world has experienced adverse impacts of myopic industrialization on the environment in various countries. It drives policymakers to focus on designing an environment-friendly industrial policy i.e., “Green Industrial Policy.” In this context, the role of developing economy countries such as India and China becomes instrumental. This motivates us to investigate the green industrial policies of India and China and perform an in-depth comparative analysis. Here, we propose a framework encompassing different dimensions, namely, drivers, policy level reforms, and barriers of the green industrial policies of the abovementioned countries. Subsequently, we present a comparative analysis between India and China in the context of policy level reforms. We narrate the comparative study of the green industrial policies of these two countries from the perspective of legislation and government programs, economic policies, and technical research and development policies. Finally, we explain the challenges associated with the green industrial policies of India and China and how these issues can be addressed.

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## Keywords

Green industrial policy • Energy conservation • Integrated energy policy • Renewable energy

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## Introduction

In the last century, the world has experienced adverse impacts of industrialization several times. Increasing pollution level, depletion of nonrenewable resources, climate change, and so on have emerged as serious threats to the human civilization. Dire consequences of manmade disasters such as the Bhopal gas tragedy in 1984, the Chernobyl gas leak in 1986, etc. compel policymakers to introspect the myopic views of industrialization. As a result, different countries revisit respective industrial policies and focus on maintaining the delicate balance between the economic development and environmental security. This has led to the rising significance of “green industrial policy” across the nations. According to Lütkenhorst et al. (2014), the green industrial policy can be defined as “encompassing any policy measure aimed at aligning the structure of a country’s economy with the needs of sustainable development within established planetary boundaries.” Our investigation into the *green* industrial policies of different countries indicates that it mainly focuses on two areas: use of renewable energy and development of environmental-friendly technologies. Several developed economy countries, such as the USA, the UK, Australia, Germany, have already recognized the importance of the inclusion of sustainability measures in devising the industrial policy. For instance, the USA has brought several legislative reforms such as clean air act in 2005, energy independence act in 2007, etc. and launched various programs, namely, Renewable Fuel Standard Program, Energy Star, and so on (Rodrik 2014). Similarly, Germany has introduced Energy Industry Act in 2005, Integrated Energy and Climate Program in 2007, Renewable Energies Heat Act in 2009, and so on. In the context of green retailing, Adhikari et al. (2016) discuss several countries’ initiatives. For example, South Australian government has introduced retailer energy efficiency scheme (REES) to promote

the efficient energy usage as well as the reduction in greenhouse gas (GHG). European Union (EU) has brought renewable energy directive (RD) to encourage the usage of renewable energy sources. Here, it is worthwhile to mention that the green industrial policy is gaining significance in the developing economy countries day by day. In this context, the role of India and China becomes instrumental to achieve the desired success.

The green industrial policies of India and China are led by two primary objectives: reduction of pollution level and exploration of alternative energy sources. Currently, China is the largest emitter of GHG gases, whereas India secures the fourth position of the list (Times of India 2015). Also, rising demand for energy in both the countries signifies the importance of the usage of renewable energy sources (Allen and Day 2014). India's recent renewable energy projects, i.e., wind and solar energy projects in various states such as Tamil Nadu, Gujarat, Maharashtra, Rajasthan, etc. as well as the policies such as Integrated Energy Policy signify this phenomenon (Ganesan et al. 2014). In the context of China, the abundance of solar energy, wind energy, hydropower energy projects, and so on reflects the rising importance of green industrial policy. This motivates us to investigate the green industrial policies of India and China and perform an in-depth comparative analysis.

The paper is organized as follows. In section "Different Dimensions of Green Industrial Policies of India and China: A Framework," we propose a framework that presents the different dimensions, i.e., drivers, policy level reforms, and barriers of green industrial policies of India and China. The main driving forces behind the green industrial policies of these two countries are described in section "Drivers." In section "Policy Level Reforms," we present a comparative study between the policy level reforms of India and China. In section "Barriers and Suggested Policy Level Reforms," we describe the barriers and how the challenges associated with the policies can be addressed. The chapter concludes by discussing the contribution as well as the future research avenues in section "Conclusion."

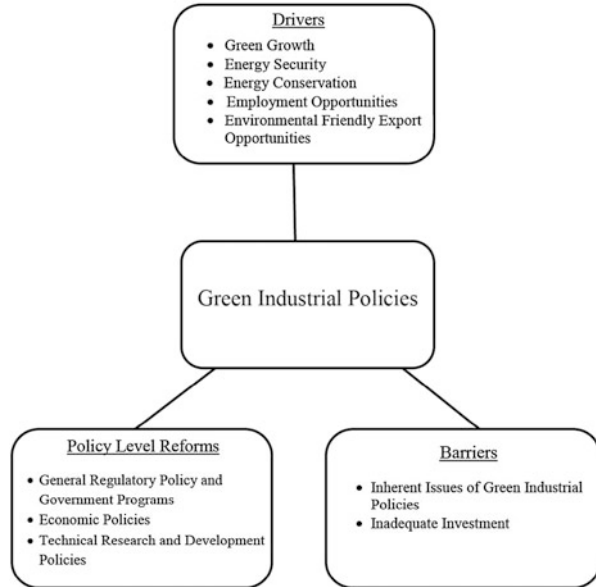
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## **Different Dimensions of Green Industrial Policies of India and China: A Framework**

Our investigation into the green industrial policies of India and China reveals that there are a number of dimensions that characterize the policies of both countries. We propose a framework to depict the different dimensions of green industrial policies, presented in Fig. 1:

Our exploration of the existing scholarly works reveals that there exist a number of major forces that act as stimuli behind the green industrial policies of India and China. These are green growth, energy conservation, energy security, employment opportunities, and environmental-friendly export opportunities. From the perspective of policy level reforms, we classify it into three categories, viz., general regulatory policy and government programs, economic policies, and technical research and development policies. Under each of these classes, we present a

**Fig. 1** Different dimensions of green industrial policies of India and China



comparative analysis of existing policy measures of India and China. From the challenges associated with the green industrial policies of these two countries, we deduce that inherent issues of existing policies and insufficient investment are major obstacles to achieve the desired success. The more detailed description of various dimensions of this framework is presented in the subsequent sections.

## Drivers

In this section, we describe the factors that drive India and China to devise their respective green industrial policies:

### Green Growth

Environmental degradation has emerged as a serious threat to the human civilization. The issues such as global warming, climate change, increasing level of greenhouse gas (GHG) emission, skyrocketing pollution, etc. compel the countries to incorporate environmental-friendly objectives in their policy level reforms. For instance, ISO 14064 is prevalent in practice for greenhouse gas management (Wintergreen and Delaney 2007). India and China are not exceptions to this ongoing trend. India has targeted to decrease the energy intensity by 20–25%, whereas China set a target to reduce energy intensity by 40–45% by 2020 compared to the energy intensity of 2005 (Jacob et al. 2013). Also, they promote the eco-friendly technologies, green

innovation, research and development related to the incorporation of sustainability measures in the existing practices, etc. Both the countries remain in top 15 green R&D performers (Popp 2012).

## **Energy Security**

Energy conservation remains an issue for both India and China. In the context of India, the large demand-supply mismatch in energy sector remains a problem from the inception. The price fluctuation of fuel along with the increasing demand adds more complexity to the situation. To deal with this issue, India announced Integrated Energy Policy in 2006. In a similar fashion, China established a National Energy Commission (NEC) in 2010 to tackle the consequences of fluctuation in energy prices (Jian 2011).

## **Energy Conservation**

The depletion of nonrenewable resources is a concern for both India and China. For this reason, they focus on the energy conservation to reduce the depletion of nonrenewable energy sources as well as to enhance the energy efficiency. India introduced Integrated Energy Policy (IEP) in 2006 to facilitate the efficient use of energy and to encourage the use of renewable energy (IEP 2006). In the 11th five-year plan, China concentrated on energy conservation to ensure economic development as well as the environmental preservation (Jian 2011).

## **Employment Opportunities**

Rising importance of green policies indicates higher job creation. Several core activities such as waste collection, recycling, recollection, etc. have the potential to provide employment opportunities to the higher number of people. Rutovitz and Atherton (2009) estimate that the global renewable energy sector provided around 1.8 million jobs in 2010. According to the Industrial Development Report (2013), increasing investment in green technologies will lead to a global job creation of 109 million by 2050. India alone will be able to create 900,000 jobs in renewable energy sector. In the context of China, high investment in clean technologies creates a significant number of green manufacturing jobs in China (The Economist 2010).

## **Environmental-Friendly Export Opportunities**

Increasing stress on the environmental friendly regulations, changing industrial structure, the demand for green products, etc. has propelled many countries to revise their respective international trade policies. According to ITC (2013), the global

market size of environmental friendly goods is expanding, i.e., from approximately US\$ 231 billion in 2001 to US\$ 656 billion in 2012. In this context, countries such as India and China play a crucial role to accelerate the growth. In Doha Ministerial Declaration, both the countries presented a number of policy reforms to facilitate the export and import of environmental-friendly goods (Asche and Khatun 2006). India proposed the liberalized import of goods and services for the environmental-friendly projects approved by a designated national authority. China suggested two lists, namely, developmental list and common lists to encourage the trade of environmental-friendly goods. Developmental list comprises of the products that require special treatment, whereas the common list highlights eco-friendly good related to the developed economy countries.

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## Policy Level Reforms

In this section, we present a comparative study of different dimensions of green industrial policy such as general regulatory policy, economic policy, and technology related policies.

### General Regulatory Policy and Government Programs

#### India

##### Electricity Act

The Electricity Act introduced by Central Electricity Regulatory Commission (CERC) in 2003 gives importance on the increased usage of renewable energy sources to promote the environmental-friendly policies (CERC 2003). It also signifies the role of State Electricity Regulatory Commission (SERC) for the successful implementation of the act. SERCs decide the tariff for renewable projects and provide the better connectivity to the projects situated at remote locations. In this context, a scheme called “Renewable Purchase Obligations (RPOs)” is designed to promote the usage of renewable energy. Under this scheme, large consumers have to buy a certain percentage of electricity from renewable energy sources. Though the central government sets a 5% RPO target, still the scheme is not very successful. Twenty-two out of 29 states failed to meet the desired benchmark (Pratap et al. 2013). CERC devised the regulation Indian Electricity Grid Code (IEGC) in 2010 to enhance the generation of renewable energies in various ways (CERC 2010). This code facilitates the better connectivity of the renewable energy generating stations to the grid. Using a Renewable Regulatory charge, it reduces the impact of the fluctuation in the generation of renewable energies.

##### Environmental Impact Assessment (EIA)

Under the Environmental (Protection) Rules 1986, Environment Impact Assessment (EIA) notification was introduced in 1994 to reduce the environmental degradation

caused by the diverse project-related activities. It mandates environmental clearance (EC) for expansion or modernization of any activity or new projects. To encourage the usage of renewable energy, EIA legislation 2006 and EIA legislation 2011 exempts wind power and solar power projects, respectively, from the gamut of EIA (MOEF 2006, 2011).

### **Integrated Energy Policy (IEP)**

In 2006, Planning Commission designed Integrated Energy Policy (IEP) for the efficient production, distribution, use of various renewable energy sources, and energy security (IEP 2006). Deviating from the capital subsidy-based approach, this framework gives stress on the performance-based incentive scheme. For example, depending on the actual energy generated, the capital subsidy can be provided in the form of Tradable Tax Rebate Certificate (TTRC). It facilitates better rebate claims based on actual energy generated.

### **National Action Plan on Climate Change (NAPCC)**

The Government of India devised the National Action Plan on Climate Change (NAPCC) in 2008 comprising eight national missions. These are, namely, national solar mission, national mission for enhanced energy efficiency, national mission on sustainable habitat, national water mission, national mission for sustaining the Himalayan ecosystem, national mission for a green India, national mission for sustainable agriculture, and national mission on strategic knowledge for climate change (NAPCC 2008). The mission aims at environmental-friendly industrial development. Its successful implementation involves the participation of the government officials, industry experts, and the academicians.

## **China**

### **Legal Policies Related to Energy Conservation and Mitigation of Air Pollution**

China introduced the energy conservation law in 1997 to direct the appropriate use of energy, to promote energy-saving technologies, and to protect the environment. Both energy development and conservation projects come under this law while more importance is given to the energy conservation laws. In the context of energy-saving technologies, the government focuses on the achieving higher energy efficiency through the development of energy-efficient devices (World Bank 2012). In 2000, the Chinese government introduced law for prevention and control of air pollution. The main objective is to improve total emission control system, to reduce air pollution through the efficient mechanism, to establish heavy pollution weather alert systems, and to clearly define the responsibilities of government (OECD 2006).

### **Renewable Energy Law**

China introduced the renewable energy law in 2005 (Meisen and Hawkins 2009). The main goals of this legal reform are the promotion of the development of renewable energy sources, diversification of energy sources, energy security, environmental protection, and sustainable economic development. This law stipulates

the purchase of renewable energy by the operators. Also, it facilitates several financial benefits such as the creation of national fund solely dedicated to renewable energy, preferential taxation, financial subsidies, and so on.

### **Medium and Long-Term Renewable Energy Development Program**

The medium and long-term renewable energy development program was launched in 2007. Through this program, the Government of China aims at achieving the share of renewable energy to 15% of total consumed energy (Peidong et al. 2009). The program concentrates on the proper implementation of renewable energy law, development of energy-efficient technologies, rising market competitiveness, enhancing the usage of energy sources such as hydropower, wind power, solar energy, and so on.

### **Five-Year Plans (FYPs)**

The government of China always pays attention maintaining the balance between the economic development and environmental security. It is properly reflected in their five-year plans. In the tenth five-year plan (2001–2005), the amount of US \$2.4 billion is allocated to 12 megaprojects of National High Tech R&D Program (Program 863). Also, other initiatives include clean fuel demonstration projects, setting up energy efficiency standards, devising efficiency incentives, etc. (Peoples' Daily 2002; WRI 2016). In the 11th five-year plan, the government focuses on energy-saving and environmental protection (China Daily 2006). Also, identification of the clean technologies is prioritized. In the 12th five-year plan, the energy efficiency and the increasing use of renewable energy are given utmost importance. Several policy level reforms that foster green growth include setting up investment plans for renewable energy projects, controlling the greenhouse gas emission, encouraging the use of renewable energy, new vehicle economy rules, and so on (Campbell 2011).

## **Economic Policies**

### **India**

#### **Feed-in-Tariffs (FIT)**

FIT is a policy reform to encourage the investment in the renewable energy sector. In the context of India, the tariff is determined based on return on equity (ROE), depreciation, interest on loan capital and working capital, expenditure related to operations and maintenance, technology, etc. It varies across states in India. Still now, FITs are available only for solar photovoltaic projects (Winston and Strawn 2014).

#### **Generation-Based Incentive (GBI) Scheme**

The Government of India launched separate Generation-Based Incentive (GBI) schemes for the solar projects and wind projects (PIB 2011). The main objectives



of this scheme are to encourage the participation of Independent Power Producers (IPPs) and Foreign Direct Investment (FDI) in the renewable energy sector and to increase the actual generation instead of only capacity expansion. Solar projects with the capacity range of 100 KW to 2 MW come under this scheme whereas there is no explicit requirement regarding the capacity for wind projects.

### **Low-Cost Financing**

In Union Budget of India 2013, the government announced a scheme to provide loans at low interest rate to the viable renewable energy projects through the National Clean Energy Fund (NCEF) to IREDA (Union Budget of India 2013). The span of this scheme will be 5 years. The major initiatives include low-cost borrowing through World Bank, Asian Development Bank, etc., incorporation of renewable energy projects into priority sector lending norms of commercial banks, and so on (PIB 2011).

### **Preferential Taxation**

In the context of wind energy projects, Accelerated Depreciation (AD) remains very much beneficial for the investors as it facilitates them to claim 80% of depreciation in the first year of the project. It leads to a huge tax saving, thus attracting a higher investment in the specific sector. In India, it was in practice till 2012. In 2012, the Government of India discontinued it. It severely affected the development of the wind energy projects. The government brought it back to the practice in 2013. Though the sign of recovery is prevalent, its future growth potential can face several obstacles as the government has decided to bring down the upper threshold from 80% to 40% from the year 2017 (Shreya 2016).

## **China**

### **Feed-in-Tariffs (FIT)**

China designed its first solar-tariff policy in 2011. In the beginning, the tariff rate was the same irrespective of the regions. Now, the variation in the solar radiation across the areas led to the high tariff for the regions with lower solar radiation. Recognizing this fact, The Chinese government classified the country into three solar areas and introduced a region-specific, revised tariff rate in 2013. In 2014, the government raised the tariff on the hydropower projects commissioned after 1 February 2014. In the context of wind energy, the government categorized the country into four wind energy resource areas and issued a different FIT (Winston and Strawn 2014).

### **Financial Subsidies**

Financial subsidies play an instrumental role in the success of the green industrial policy of China. According to Peidong et al. (2009), there exist three types of financial subsidies, viz., investment subsidy, product subsidy, and user subsidy. The Chinese government provides a rural energy special cashing interest loan as an investment subsidy to promote the energy-efficient technology, R&D, etc. (Li and Shi 2006). Product subsidy is not very functional in China. Only the regulations

related to the temporary pricing management and cost sharing in renewable energy power generation comprise product subsidy. On the contrary, the user subsidy is considered as the most conventional measure. It provides region-specific subsidies rather than a uniform subsidy.

### **Preferential Taxation and Pricing**

Preferential taxation and pricing pave the way toward the successful implementation of green industrial policy in China. From the perspective of taxation, income tax of renewable projects has been exempted or reduced by some local governments. Also, reduction in value added tax (VAT) takes place in case of small hydropower and wind energy power projects. State Commission of Development and Reform issues Temporary Method for Managing Grid Electricity Price announcing that the new renewable energy projects will be out of the competition for a specified period (Peidong et al. 2009).

### **National Emission Trading System**

Recently, China has announced the introduction of emission trading scheme (The Conversation 2015). After carrying out the pilot study in seven provinces, the Chinese government decides to implement the scheme. The main objective of this scheme is to reduce the skyrocketing greenhouse gas emission. It is estimated that the country will be able to reduce the emission level by 40–45% by 2020. As per the experts' opinion, the success of this scheme depends on several factors such as monitoring, allocation, pricing, and so on (Swartz 2016).

## **Technical Research and Development Policies**

### **India**

#### **Special Incentive Package (SIP) Scheme**

The Government of India introduced “Special Incentive Package” (SIP) scheme to attract higher investment in the semiconductor industry (DEITY 2012). According to this scheme, the minimum threshold of investment for a fabrication unit and an ecosystem unit was US\$454 million and US\$182 million, respectively. Though it is estimated that the SIP will be very much helpful to generate a large amount of solar power, i.e., around 10 GW; still it is not very much successful due to the lack of higher investment requirement and documentation (Sahoo and Shrimali 2013). In a similar fashion, a special modified Modified-Special Incentive Scheme (M-SIS) was launched in 2012. In this scheme, the threshold of investment is reduced. The other facilities under M-SIS include 20% and 25% capital expenditure subsidy for the project locations in SEZ and not in SEZ, respectively (DEITY 2012).

#### **Investment in Green Technology**

In recent times, the Government of India pays special attention to the research and development related to the environmental-friendly technology. In Union Budget

2010, the National Clean Energy Fund (NCEF) was introduced to provide adequate funding to the projects of innovative technologies (India budget 2010). This fund is developed by imposing the clean energy cess on the coal produced domestically or imported. Though it signifies a higher accumulation of money, inadequate-quality projects often compel the government to allocate fund to the regular projects. Also, the government introduced Science, Technology and Innovation (STI) Policy in 2013 focusing on sustainable and inclusive growth. In the context of renewable energy, R&D related to the development of green technologies is given utmost importance.

### **Clean Development Mechanism (CDM)**

The Clean Development Mechanism (CDM), one of the three flexibility mechanisms under the Kyoto Protocol, facilitates clean development in emerging economy countries (IPCC 2007). The main objective of CDM is to bring down the GHG emission as well as to foster the sustainable development. In India, there are 727 registered CDM projects comprising 520 renewable energy projects. Though India is the second largest country from number of registered CDM projects, the Government of India neither encourages nor discourages the implementation of the projects (Benecke 2009). According to Urpelainen (2012), this “laissez-faire system” approach hinders India to capitalize full growth potential.

### **Perform Achieve and Trade Scheme (PAT)**

Under of the Energy Conservation Act (2001), the Government of India introduced Perform Achieve and Trade Scheme (PAT) in 2008 (IEP 2006). The main objective of this scheme is to increase energy efficiency at the industry level. Under this scheme, the designated consumers are classified into eight sectors comprising aluminum, cement, and thermal power. These designated consumers contribute 255 of the country's GDP and consume the equitable amount of energy. The government sets an energy consumption limit for each of the designated consumers. The higher target is set for the lower energy-efficient designated consumer and vice versa. The threshold depends on the historical data of energy consumption by the designated consumers. The consumers who crossed this threshold are issued energy-saving certificates. It encourages the designated consumers to incorporate the use of renewable energy in their existing practices.

## **China**

### **Solar Roof and Golden Sun Program**

The Chinese government launched solar roof and golden sun to attract domestic investment in solar energy sector. Under solar roof program, the subsidies are provided to the qualifying solar projects. This subsidy facilitates solar projects to cover 30–50% of their manufacturing cost. Solar roof program mostly focuses on the installation and construction of the projects. On the other hand, golden sun program offers more flexibility regarding application. Apart from the conventional photovoltaic (PV) solar projects, the program also encompasses stand-alone and grid PV

projects. The subsidy given under golden sun program is higher (50–70%) compared to that of solar roof projects.

### **Clean Development Mechanism (CDM)**

In the context of CDM, China has experienced significant growth till date. Though the Chinese government was initially reluctant to enter into the arena of CDM, they started developing CDM projects from 2007 (Shen 2011). As of April 2011, a total of 3034 CDM projects are officially registered in China. The eligibility of Chinese CDM market with European Union Emissions Trading Systems (EU-ETS) plays an instrumental role to achieve the desired success. The Government of China formed a Chinese CDM fund by raising money from the companies that sell certified emission reduction credits (CERs). The fund size was expected to increase by 100% to encourage CDM projects by 2012 (Bloomberg 2010).

### **National Basic Research Program (973)**

National Basic Research Program was launched in 1997 focusing on the research related to the national socioeconomic development and encourage the primary innovation (National Basic Research Program of China 2006). Between 1998 and 2008, a total of 382 projects is funded, with a total investment of \$1.3 billion (Campbell 2011). The projects have a proper hierarchical structure where the team leader or chief scientist takes the responsibilities. A highly qualified advisory group comprising domain experts and government officials is associated with each of the projects to set the proper direction. The presence of stringent monitoring system ensures the quality of the deliverables.

### **National High Tech R&D Program (863)**

National High Tech R&D program, formerly known as National High-Tech Development Plan, was created in 1986 concentrating on the innovation in the high technology sectors. It is worthwhile to mention that energy technologies are given utmost priority in this scheme. The program primarily focuses on the implementation of a specific technology to the projects related to socioeconomic development. In the context of energy technology, the main objectives are the increase of energy efficiency, the increase of renewable technologies, and the development of clean coal technologies (Sergi 2011). The investment in this program for the time span 2001–2005 was around \$3 billion (Campbell 2011).

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## **Barriers and Suggested Policy Level Reforms**

In this section, we discuss the major challenges associated with the industrial policies of India and China that hinder the successful implementation of the policy. Also, we discuss the policy level implications to overcome the challenges associated with this.

## Barriers

### Inherent Issues of the Green Industrial Policies

Proper implementation of green industrial policies remains an area of concern for the policy makers. Often, lack of integration of environmental-friendly policies into the existing practices hinders the way of achieving desired success. Ganesan et al. (2014) investigate the impact of these policy reforms. As per their findings, the effect of financial incentive related policies such as GBI and FTI is ambiguous. The difference between CERC-determined tariff and SERC-determined tariffs brings down the effectiveness of the schemes. From demand simulation, research and development, and clean energy fund perspective, it shows adverse impact. Ganesan et al. (2014) point out that most of the RPOS available in the corresponding market have little demand. Interestingly, accelerated depreciation plays a crucial role in the renewable projects. In this context, withdrawal of AD in 2012 aggravated the situation. Though it is reinstated, reduction in the upper threshold from 80% to 40% from the year 2017 will affect its growth potential. On the other hand, high tariff on the renewable components, i.e., 7%, often acts as a deterrent for the global investors (Nie 2014). In the context of China, the coordination problem between the state and other governing bodies affects the performance of the policy (Peidong et al. 2009). Also, lack of improvisations in the regional policies leaves a negative impact on the successful implementation. Often absence of proper legal monitoring brings down the effectiveness of the policy measures. Also, trade barriers often affect China's growth in renewable energy sector. As per the requirement, a foreign investor has to build a local joint venture for investing in the renewable projects in China where a Chinese company should have 51% of the ownership (REW 2011).

### Inadequate Investment

Lack of investment in various domains, namely, technical research and renewable projects, acts as a roadblock achieving the desired success. In India, still, the participation of the private players in the research and development related to renewable projects is insignificant. From the financing perspective, Indian banks do not have a flexible and favorable lending policy to the renewable projects. For an example, State Bank of India (SBI) and other Indian banks provide the loan at 11–13% interest rate, whereas the international banks such as Asian Development Bank sanction loan at 4% to the renewable projects (Natural Group 2015). Also, in China, renewable projects are mostly dependent on the government funding. Still, the participation of the domestic investors is not significant. Often high investment associated with the renewable projects dissuades the domestic players to enter into this arena. Also, due to the lack of sufficient investment in the research and development related to renewable energy, China still depends on the developed economy countries in case of some advanced technologies.

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## Suggested Policy Level Reforms

Our investigation into the existing green industrial policies of these countries reveals that the policies have not achieved the desired level of success despite its potential. Often high investment associated with the renewable projects dissuades investors to participate in the renewable energy projects. Low-cost financing, the special interest rate on the investment in the renewable energy projects, government support such as the formation of special funds, etc. can be very helpful in this context. Government intervention can facilitate the inflow of the investments from private players. Also, the government should focus on higher investment in the research and development through the proper allocation of annual budgets and five-year plans. The conflicting objectives of state and other governing bodies can be resolved by appointing a special governing body who will be solely responsible for decision-making. It can pave the way toward unified decision-making as well as sustainability. Finally, proper monitoring of the existing projects can lead to the better implementation of the projects.

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## Conclusion

In this chapter, first, we discuss the rising importance of the inclusion of the environmental-friendly measures in the economic development of India and China. Then, we propose a framework depicting different dimensions, namely, drivers, policy level reforms, and the barriers of the green industrial policies of India and China. Subsequently, we present a comparative analysis between India and China in the context of policy level reforms. We demonstrate this comparative study from the perspective of legislation and government programs, economic policies, and technical research and development policies. Finally, we explain the challenges associated with the implementation of green industrial policies of India and China and how these issues can be addressed. From the future research avenues' point of view, a micro-level analysis of the drivers and barriers can be a potential research opportunity. Also, performance evaluation of different policies adopted by India and China can be an area of interest for the researchers. In this context, the present review of the design of frameworks that facilitate the successful implementation of green industrial policies in India and China can be helpful for researchers as well as practitioners.

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