

Strategies for Sustainable Design
Professor Doctor Shiva Ji
Indian Institute of Technology, Hyderabad
Lecture 26

Growth and Development in Construction and Allied Sectors

Hello everyone, in this lecture we will discuss about Growth and Development in Construction and Allied Sectors.

(Refer Slide Time: 00:17)



Introduction

Infrastructure sector is a key driver for the Indian economy. The sector is highly responsible for propelling India's overall development and enjoys intense focus from Government for initiating policies that would ensure time-bound creation of world class infrastructure in the country. Infrastructure sector includes power, bridges, dams, roads, and urban infrastructure development. India was ranked 44 out of 167 countries in World Bank's Logistics Performance Index (LPI) 2018. India ranked second in the 2019 Agility Emerging Markets Logistics Index.



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

<https://www.iitb.ac.in/industry/infrastucture-sector-india.aspx>

Dr. Shiva Ji
IIT Hyderabad, India

So, if you see infrastructure is a key driver force into the Indian economy and there is a lot of push happening in the in creating infrastructure in rural and urban areas. India was ranked also 44 out of 166 countries in World Bank Logistics Performance Index, LPI 2018. India ranked second in the 2019 Agility Emerging Market Logistic Index also. So, there are several industry initiatives which we have discussed in the previous lectures smart city development, make in India scheme.

So, there are several others also Golden Quadrangle Scheme are converting or creating our Dedicated Freight Corridors constructing national highways. So, these are all are the catalytic forces which will escalate the growth and development infrastructure growth and development in our country. In turn this will lead to further fueling of, how this development process is going to take place, whether it is going sustainably or not. But, anyways, if you see compared to other countries compared to other world countries, which are also there are several other countries who

are developing very fast. So, India is also in the recent times has adopted a fast pace of construction.

(Refer Slide Time: 01:41)



Market Size

Foreign Direct Investment (FDI) in Construction Development sector (townships, housing, built up infrastructure and construction development projects) stood at US\$ 25.66 billion during April 2000 to March 2020, according to Department for Promotion of Industry and Internal Trade (DPIIT). The logistics sector in India is growing at a CAGR of 10.5% annually and is expected to reach US\$ 215 billion in 2020.



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

<https://www.dpiit.org/industry/infrastucture-sector-india.aspx>

Dr. Shiva A.
IIT Hyderabad, India



And one of the major drivers of this fast pace of growth and development in the infrastructure and other legal sectors is the FDI is Foreign, Foreign Direct Investments. So, these are the investments which are made by civil companies, individuals and organizations from across the world. Multinational companies who invest by seeing the prospects of the Indian economy, how it is going to perform in recent future. So, this is one of the indicators also we can see attracting these many FDI is the huge amount of Foreign Direct Investment in the infrastructure sector is one of the indicators of the good health of this particular sector.

(Refer Slide Time: 02:31)



Investments

India requires investment worth Rs 50 trillion (US\$ 777.73 billion) in infrastructure by 2022 to have sustainable development in the country. India is witnessing significant interest from international investors in the infrastructure space. Some of the key investments made in the sector are listed below:



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

<http://www.iiit.org/industry/infrasturcture-sector-india.aspx>

Dr. Shiva S.
IIT Hyderabad, India

And the under investment part if you see India requires investment worth 50 a trillion rupees that is in the US dollars, if you 777.73 billion US dollars. So, in infrastructure by year 2022, so, to have sustainable development in the country. So, India in the recent times is witnessing a significant interest from international investors, international lenders in when international agencies such as the World Bank and IMF, etc., also to invest in civil infrastructure development projects in India.

(Refer Slide Time: 03:10)



- Large investment in infrastructure has seen momentum as overall PE (private equity)/VC (venture capital) investment touched an all-time high of US\$ 14.5 billion in 2019.
- The largest deal was done by Abu Dhabi Investment Authority, Public Sector Pension Investment Board and National Investment and Infrastructure Fund as they made investment worth US\$ 1.1 billion in GVK Airport Holdings Ltd.
- In FY20, the cumulative growth of eight core industries stood at 0.6%.
- As on 31 March 2019, 26.02 million households got electricity connection under the Saubhagya Scheme.
- In 2019, infrastructure sector witnessed seven merger and acquisition (M&A) deals worth US\$ 1,461 million.
- In September 2020, Ministry of Petroleum & Natural Gas announced that it aims to operate 50% of fuel stations, which are owned by public sector oil companies, using solar power within five years—under the government's green energy drive.



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

Dr. Shiva S.
IIT Hyderabad, India

There are some figures given over here, which gives us some idea in the numbers how the Indian economy is performing in the recent times. So, there is a large investment in infrastructure has seen momentum as the overall private equity and venture capital investments. At an all time high of US dollar was 14.5 billion in year of 2019. So, that is a huge figure if we compare to the there are several countries who do not have such a this amount of an investment or they are not receiving such a scale of investment in their country.

The largest deal was done by the Abu Dhabi Investment Authority, public sector pension scheme, board and national investment and infrastructure fund, as they made investment worth US dollar 1.1 billion in GVK Airport Holdings Limited. In financial year 2020 the cumulative growth of 8 core industries stood at 0.6 percent. As of March 31, 2019, from the last year 26.02 million households got electricity connection under the Saubhagya Scheme.

In 2019, infrastructure sector witnessed 7 merger and acquisitions deal worth US dollar 1461 million dollars. In September 2020 in ministry of petroleum and natural gas announced that it aims to operate 50 percent of fuel stations which are owned by public sector oil companies using solar power within 5 years. So, under the government, government's Green Energy Initiative scheme.

So, this, this initiative is taking is going to start very soon. So, when we see the fast pace of growth and development which is happening and India is also government is also putting in, it is efforts to keep the keep it sustainable. So, there is a lot of push happening in the renewable source energy solar generation also. So, there is a push from government side to create largest solar farms to create windmill farms also and keep creating the forces on that creating an independent power generation, kind of units for the of buildings and enterprises.

So, under this scheme if all of the if half of at least half of the petrol pumps are going to a fuel stations are going to have to generate their own power requirements so, that is a huge feat. So, that will further fuel similar kind of developments from the latest similar kind of requirements from the other sectors also.

(Refer Slide Time: 05:53)



Achievements

Following are the achievements of the Government in the past four years:

- In 2019, the sector witnessed seven merger and acquisition (M&A) deals worth US\$ 1,461 million.
- In March 2020, NHAI accomplished the highest ever highway construction of 3,979 km of national highways in FY20.
- Freight earnings in FY20 (till February 2020) stood at Rs 119,216.11 crore (US\$ 17.06 billion), while its gross revenue stood at Rs 163,092.74 crore (US\$ 26.20 billion) during the same period.
- Cargo traffic handled stood at 707.4 million tonnes (MT) in FY20.
- Electricity production in India reached 1,252.61 BU in FY20.
- The largest PE investment witnessed was the acquisition of Pipeline Infrastructure India by Canadian asset management firm Brookfield's for US\$ 1.9 billion in Q12019.
- India's rank jumped to 22 in 2019 from 137 in 2014 on World Bank's Ease of doing business - "Getting Electricity" ranking.
- Energy deficit reduced to 0.7% in FY20 from 4.2% in FY14.

<http://www.iit.org/industry/infrastucture-sector-india.aspx>

Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

Dr. Shiva B.
IIT Hyderabad, India



So, in the in the recent times the Government of India has taken several initiatives, we will discuss a few of these over here. In April 2020 the government set a target of constructing roads worth 15 lakh crore Indian rupees US dollar 212.80 billion in the next 2 years. In May 2020 border road organization, BRO achieved major milestone by digging up a 440 meter long tunnel below the busy Chumba town on the Rishikesh-Dharasu road highway.

Indian energy sector is expected to offer investment opportunities worth US dollar 300 billion over the next 10 years and it will be available to generate revenue of 1 lakh crore that is 14.31 billion US dollar from toll and wayside amenities over the next 5 years. In the Union budget of 2021 government has given a massive push to the infrastructure sector by allocating 1 lakh 69,637 crores that is a US dollar 24.27 billion dollars to develop the transport infrastructure.

Communication sector has also been located at 38,637.46 crore rupees that is US dollar 5.36 million to develop post and telecommunication department. Indian Railways have received an allocation of rupees 72,216 crores under the union budget of 2021. Ministry of Housing and Urban Affairs received an allocation of 50,040 crores under the union budget of 2021.

So, these are all if you see these are these figures are not just the figures these are our forces which is going to take shape in the later coming years on ground whether it is transportation sector whether it is power generation sector whether it is post and even communication sector,

whether it is highways network of the highways, whether it is border road organization which plays a critical role in creating these road networks in the border areas.

So, these are all kind of, catalytic, catalytic agents which are going to spur the growth and development the pace of the growth and development in urban isolated rural areas as well as the remote areas also. So, in the next if you see what are the kind of achievements, which we can be proud of the following are the achievements of the government in the last 4 years if you see in the 2019 the sector witnessed seven modular acquisition really worth 1461 million dollars and a similarly you can see these number.

So, they all depict a kind of a picture, which talks about the growth and development which is happening in the Indian economy in the recent years. So, this is quite optimistic and is quite promising. And this is the region investors from across the world and agencies and organizations from across the world, they feel optimistic to invest money in the Indian market.

(Refer Slide Time: 08:53)



Road Ahead

The infrastructure sector has become the biggest focus area for the Government of India. India plans to spend US\$ 1.4 trillion on infrastructure during 2019-23 to have a sustainable development of the country. The Government has suggested investment of Rs 5,000,000 crore (US\$ 750 billion) for railways infrastructure between 2018-2030.

India and Japan have joined hands for infrastructure development in India's Northeast states and are also setting up an India-Japan Coordination Forum for Development of Northeast to undertake strategic infrastructure projects for the region.

Note: Conversion rate used in April 2020, Rs 1 = US\$ 0.013123

<https://www.iit.org/industry/infrastucture-sector-india.aspx>



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

Dr. Shiva Ji
IIT Hyderabad, India

So, what is the road ahead for, an India for us as citizen of this country, so the infrastructure sector has become the biggest focus area of the government. And India plans to spend US dollar 1.4 trillion on infrastructure during our 2019 to 23. To have a sustainable development of the country, the government has suggested investment of 5 million crores US dollars 750 billion for railways infrastructure between 2018 to 2030.

India and Japan has joined hands for infrastructure development in India's northeast states and are also setting up an Indian Japan coordination forum for development of the northeast particularly to undertake strategic infrastructure projects for the region. So, if you see, these are the optimistic scenarios, several governments are also investing into major push for the infrastructure sector and the focus of the government if we see why this is important?

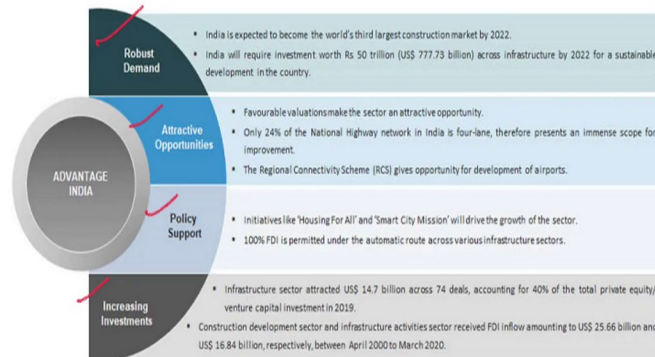
Why this data is important over here to bring there is some intent there is some a reflection of the of the intent of the government to push these all of these infrastructure projects with the help of this sustainable model. So, this is very important part because relatively if you see the northeastern states of our India, they have been conventionally they do not have very heavy infrastructure and other projects in those states.

So, in the recent times the push from the central government for the growth and development of these states and creating all weather accessible roads, creating factories, creating manufacturing units, going for other infrastructure investments. So, this region particularly is going to also see tremendous, changes in the times to come and we are all aware northeastern states are combinedly they belong to 1.

Now, very sensitive biodiversity regions of the world, and they have a several number of numerous numbers of species from the flora and fauna, which are very, very unique and local to the northern and northeastern states. So, it is very important for us to take corrective steps to take, such steps which will not harm the ecological balance of these states in this region.

So, it is very important for the government to take up mega projects in a very responsible manner is not just the creating the opportunity or creating the infrastructure, it is about sustaining the resources, it is about sustaining the ecological, social and financial ecosystem of that particular place or rather all of the India.

(Refer Slide Time: 11:32)



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological Interventions into Building Design

Dr. Shiva A.
IIT Hyderabad, India

So, if you see, the advantages, what are the advantages which India has in the recent times in the recent decades, so, there is a huge robust demand from the from this country, it is the India is expected to become world's third largest construction market by year 2022. India will require investment worth 50 trillion rupees to cross infrastructure by 2022 for sustainable development in the country.

So, as we can see, the demand is huge. And if we go by the demographics of India, a huge percentage of Indians today are still in the youth they are going to grow up tomorrow and this sector this a group of, people are themselves are a big market for any product which is going to be produced in the local Indian market. An attractive opportunities will favorable local well valuations make the sector an attractive opportunity, only 24 percent of the national highway network in India is for land.

Therefore, presents an immense possibility for further improvement in the infrastructure sector. The regional connectivity schemes give opportunity for development of the airports in the remote areas in the in the areas where there is still no airports there is no aviation connectivity and all that. So, this all of these lacking from the past have become opportunity for the today's and tomorrow's India.

And there is policy support also from the government from the central government, state governments. So, initiatives housing for all Smart City Mission, so, these are some of the initiatives from the record government, which we have discussed earlier also, we are fueling to this whole growth and development in the country. And even more recently, 100 percent of FDI is also permitted under the automatic equity route across various infrastructure sectors.

And in we are seeing we are witnessing increasing in investment. So, infrastructure sector attracted US dollar 14.7 billion across 74 deals, counting of 40 percent of the total private equity venture capital investment in 2019. Construction development sector and infrastructure activities sector received FDI inflow amounting to a US dollar 25.66 billion and US dollars 16.84 million, respectively between April 2000, April 2000 to march 2020. So, in a span of 20 years, a huge investment is made in the local Indian infrastructure sector and if you see, so, this trend is being supported by the various agencies and arbitration from companies from across the world.

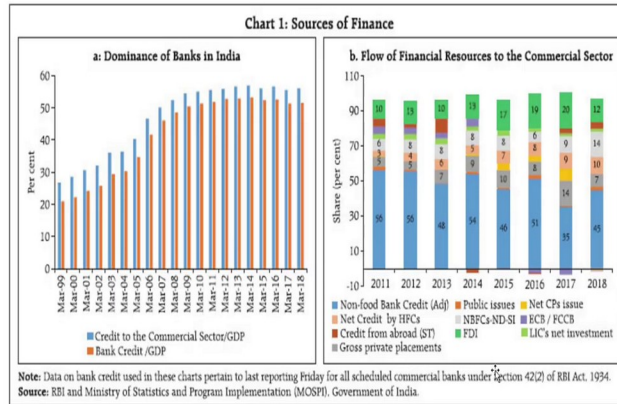
(Refer Slide Time: 14:17)



So, there are some more data and there are some more indicators of the government schemes in the recent time. So, you can see over here this Ujjwala Discoms Assurance Yojna there is urban housing PMAY Yojna, for a scheme for providing housing for everyone, there is the Smart City project and similarly, there are several initiatives from the government side itself, which is giving boost to the infrastructure sector and companies from government sector companies from the private sector. Both are actively participating in such initiatives, the key trends you can see how

the India has registered growth into other electricity generation capacity in terms of distribution of power and so on.

(Refer Slide Time: 15:10)



Week 1: Definitions and Perspectives on Sustainability in Industrial Design and Built Environments
Lecture 4: Technological interventions into building design

Dr. Shiva A.
IIT Hyderabad, India

In this table you can see the the sources of the finance from where this financing being received. So, it is clearly given over here in these 2 charts, the dominance of banks in India if you see, so, the credit to the commercial sector and bank credit so, these are all the difference between these two is going almost consistently.

So, we can see, there is sense of support, sense of strength from the banking sector also to cater to the lender needs to cater to the luxury demand of funding for the required for the such a scale of growth and development which is which has begun in the country of India. And the second table says about the flow of financial resources to the commercial sector in this you can see the the category where it is distributed with the non food bank credit non credit by HFC's credit from abroad.

So, there are several FDI is are indicated by this green figure over here. So, you can see, there are several sources for financing which is being given to the companies who are involving in this growth of the Indian infrastructure sector. So, with this I would to end this session. Thank you all