

United Nations Sustainable Development Goals(UN SDGs)
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SDG 9_ Industry, Innovation and Infrastructure Part 1

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UN SDGs
: 17 goals to transform our world

Module 16
• SDG9: Industry, Innovation and Infrastructure

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SDG9 Industry, Innovation and Infrastructure

Hello everyone, I welcome you to this module 16 of SDG 9 industry innovation and infrastructure under the course of UN SDGs on NPTEL. So, moving on in the line, if you see the first few they were about individual's individuality and their wellbeing, then we are coming down to the basic necessities and then little like about livelihood, clean energy.

And how those things can be insured it is through industry innovation and infrastructure because, employability, innovation, jobs, manufacturing, demand and supply all of those

mechanics and all like how all of these things actually become part of like this system, like, the economics in a whole if you see, so there are demands or things and there are people who are working towards fulfilling those demands and then in turn, they are making their living. And similarly, in a way or so if you see all of us are even like a part of this whole ecosystem, this whole economics and we are related through this SDG 9 that talks about industry specifically, innovations, and infrastructure.

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So, we will see in detail some glimpses just 54 percent of the global population use the internet. In the least developed countries only 19 percent has online access, low developing countries least developing countries there are only 19 percent like one fifth approx of their population has access to internet. And globally well, this percentage is more, it is a little over half 54 percent to be precise and that means in the like developed countries and all this percentage is going to be like even higher because if this is the global one and this is 19 percent only in the LDCs.

So, this penetration if you see, well, why do we need internet and all I think one can ask. Internet has its own abilities to put you in connection with the rest of the world, well we cannot go and talk physically and meet everyone and you can go and get some information, I think a lot of those things are happening over internet now, internet is helping in almost every possible way.

So, beginning from like a satellite connections to weather related information, climate change studies, like education related stuff, we are communicating, we are using even this medium

of, like this online education system of NPTEL connecting various IITs and the best of the best professors, from these institutions. To connect, the students from any other place in the whole country, whether you come from a city town or a village, it does not matter if you as long as you have access to like these devices and internet, you can get through like these lessons and courses and you can benefit.

So, that is a like a tool and a very effective tool, which is helping us all have similar in multiple ways like or in relations people used to go physically and book tickets, book their like reservations, but now it is all possible through like, just simple like a taps on your phone or like in your computer. So, all of this is possible, if you see, like through internet even sharing data as what is happening in south pole you can using internet you can directly broadcast over here, you did not go to south pole and see what is happening all there. So, in multiple ways, each and every possible way I think that depending upon your field, from where you come from, you can see the uses of internet, and other things.

So, overall through this SDG what is the goal? To build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. So three components, resilient infrastructure, so that there is not like some degree of like a safety to prevail over any abrupt changes any abrupt like a sudden changes which might like occur. And yes include your sustainable industrializations, so this is this problem level industrialization has been with us for quite some time perhaps roughly around two century but that was just plain infrastructure which has ruined this whole planet. But now in the place of just infrastructure we need like a sustainable development sustainable industrialization and faster innovation.

Innovation also is a like a phenomena where you go for some very unique like a very efficient or very like a special kind of like derivation or like a problem solving or mechanism solving or any like a new like a positive or fast like a piece like a change from the existing one that qualifies innovation, innovation comes in a variety of definitions and variety of applications and things. And for innovation one need not be formally trained also as a one on one of the unique like a features.

For innovation, one may not be trained from school or like a college or university or one need not be a professional only who can do like some work like an engineer, doctor, etc. So, innovation actually is above all of these limitations, all of these (6:23). Even a farmer who is like, it just has been involved in the whole of his life in the farming activity can do some, like a most amazing innovation and can solve like a unique problems in a unique ways.

So, innovation has like that capability and by mentioning foster innovation, it means giving patronage to such efforts, wherever they were happening irrespective of like a person's like a position or education or qualification or like a social strata and economy conditions etc. etc. So, to foster that, because those things actually come out of context and that they are solving actually these other problems and situations in a very special way. So, that carries a potential, to get implemented and solve the whole issue in a much efficient way and that is why we need to foster innovation, so that is why it is essential.

Economy growth, social development, and climate action are heavily dependent on investments in infrastructure, sustainable industrial development and technological progress. So, all of these things can improve if you see like an investment in infrastructure like a plane infrastructure like roads, like water supply, like bridges all of these things like railways and aviation they are all infrastructure, part of the infrastructure. So, you can go for like innovative like a ways to deal with like a prevalent maybe problems and issues and come up with some like efficient solutions that can be an innovative this thing.

Well, there is a regular improvement like you are improving for example, companies are improving efficiency of their engines. So, that is a regular improvement in like every one year, every two years, every few years, you keep seeing some more efficient engine which gives improve mileage from the previous one and gradually it increasing. But if that rate of improvement or rate of change is abrupt, sudden and largely positive in magnitude that can be called as an innovation, because that is a huge jump a several steps ahead, if you jump directly to this one, so that is an innovative this thing it carries in a huge potential compared to the present like this.

If I can take this as a level plus minus zero as a base case from here and if you jump directly many steps above that can be an innovative solution which has a disruptive capability. Like artificial intelligence, if you see is like a kind of carries this potential to chase the way we learn, the way we teach, the way we do like a stuff or search or like a conduct any activities, in a much advanced in a way. So and yes, so that can be an innovative solution if it gets implemented for various applications. So that is also above point attached over here.

In the face of rapidly changing global economic landscape and increasing inequalities, sustained growth must include industrialization that first of all makes opportunities accessible to all people and second is supported by innovation and resilient infrastructure. So, there are a lot of challenges occurring at the same time. So, by changing global economic landscape like

in the previous one we were talking about, recessions and depressions in the market which in turn impacts a job opportunities, 1000s of people are being laid off and all of those situations, they become jobless or it is hard to find job earning and all of that.

So, in those scenarios, how to deal and another point increasing inequalities. So, if you see this is an alarming situation as a human we must have respect for the other fellow humans and not just humans, all other fellow species of this planet. Because if you see in this planet is home to not just humans, but all of those other species as well, where else they will go if we destroy this planet of their habitat. So, this whole world for us is a one living entity and this entity must be preserved at any cost.

So, the problem is key here is talking about increasing inequity. So, this respect of other species and other fellow human beings from different countries, different communities, different languages, different from maybe colour, skin tone or a bodily dimensions, different cultures, there is this gap it sees it is increasing, there is a disrespect happening to the other follow humans and community that should not happen actually. So, how to drive this all industrial and infrastructure development in the phase where you are seeing is such inequalities are rising on, that is a very great situation.

So, it must work to foster that also and bridge that gap. Yeah, and this industrialization that first of all makes the opportunity accessible for all people only when this becomes some inclusive. We have been discussing earlier also, if the growth is inclusive, which includes everyone, every last person of the society and community in the country, then you may call it as an inclusive growth and development. So, this thing must be inclusive, we cannot just keep on taking things in forward direction without appreciating any benefit to other people, other fellow humans, fellow Indians, fellow world citizens so that is the thing. And second, so, whatever innovation and resilient infrastructure. So, we have discussed.

In 2019, some 87 percent of people in developed countries use the internet. Developed countries compared with just 19 percent in the least developed countries. We saw this also previously how many people are having connection of internet, so in the developed country, this is close to 87 percent only 13 percent people are left behind whereas, in the developing or least developed countries this is just at 19 percent. So, this is the gap, these numbers are so, close these are the people who are the targets and here are the only people 19 percent who have achieved this level. So much of disparity between developed countries and developing ones.

How much progress have you made? Investment and research in development globally as well as financial for economic infrastructure developing countries has increased. And impressive progress has been made in mobile connectivity with almost the entire world population 97 percent living within reach of a mobile cellular signal. So, infrastructure wise, if you see, the facility is now extended to up to 97 percent, people living within the reach of a mobile cellular signal, that means, if they, if needed they can go for it, and if easily accessible to them, they can avail this as a facility at their place.

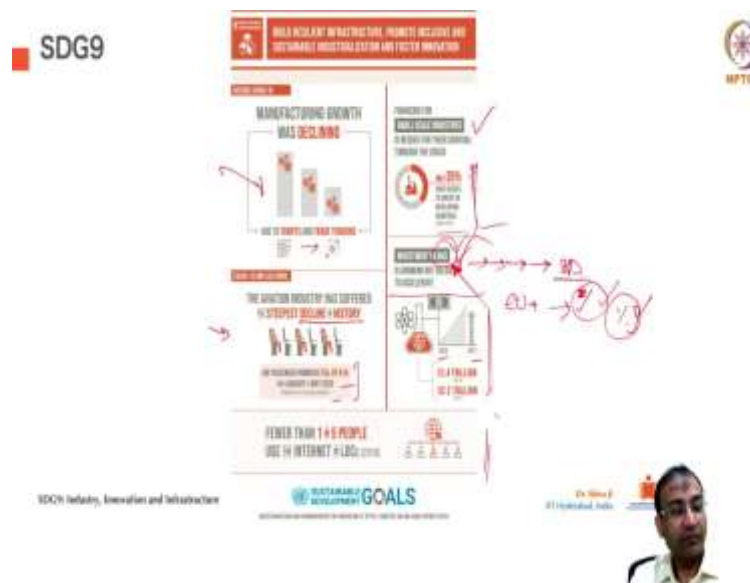
So, 97 percent people are living in the reach of a telecom signals, like cellular signal, mobile phone connectivity. That is a very good, impressive growth only 3 percent people are beyond the reach of cellular towers, I am sure industries are expanding even to those regions. So, why should I care? Inclusive and sustainable industrialization, together with innovation and infrastructure can unleash dynamic and competitive economic forces that generate employment and income. They play a key role in introducing and promoting new technologies, facilitating international trade and enabling the efficient use of resources, so multiple benefits.

The growth of new industries means improvement in the standards of living for many of us. If a industries pursue sustainability, this approach will have a positive effect on the environment, of course. Why is the price of what is the price of inaction? If we do not do anything the price is steep, ending poverty will be more difficult if there are no more than a job opportunities, how are you going to give livelihood means to these people. Given the industry's role as a core driver of the global development agenda to eradicate poverty and advanced sustainable development.

Additionally, failing to improve infrastructure and promote technological innovation could translate into poor health care, inadequate sanitation and limited access to education. What

can be done about it, how can we help? Establish standards and promote regulations that ensure company projects and initiatives are sustainably managed, so this is the key word over here sustainably managed. Collaborate with NGOs and the public sector to help promote sustainable growth within the developing countries. Think about how industry impacts on your life and well-being and use social media to push for policymakers to prioritize the SDGs.

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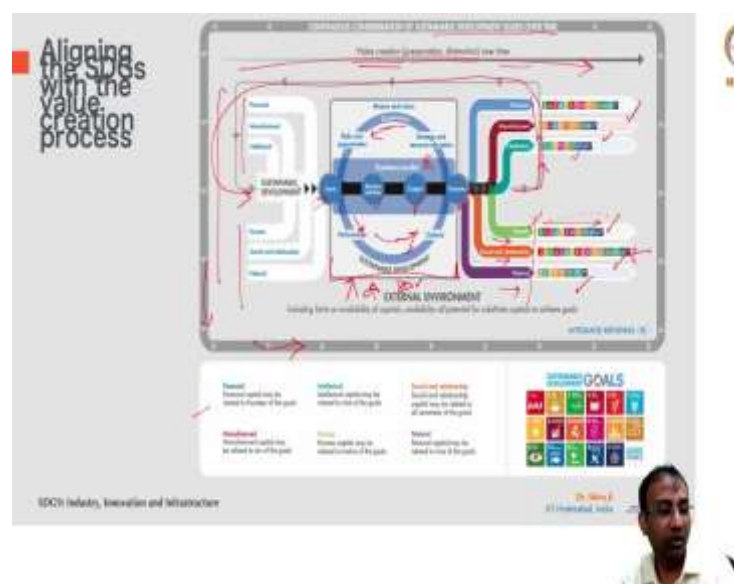
Some facts and figures. Before COVID-19 manufacturing growth was declining due to tariffs and trade tensions, we saw this number before. And then COVID-19 implications, the aviation industry has suffered the steepest decline, air passenger number fell by 51 percent from January to May 2022 compared to the same period previously. Financing for small scale industries is needed for their survival through the crisis. Because well, this actually MSME sector constitutes the largest percentage of industries which are there in our country and this employs the largest number of employees also, so volume wise if you see this is the huge one. So, and since there are more and more number of people dependent on a such units, we should take care of these units in turn will be taken care of those all kind people. Only 35 percent have access to credit in developing countries, this is the year 2006 to 18.

Investment in R and D is growing but needs to accelerate. R and D a very amazing format and a very amazing a thing in itself. And this has all the potential to drive the economy to drive the growth of human beings and drive this whole planet into a sustainable developing future. So, R and D is very essential for growth and development of any country or any field. You may be aware, when Europeans started spreading across the world capturing lands, they

had this tool of R and D and latest technologies in their hands through which they were able to establish or rule over on those new faraway places.

So, R and D, well, that was not so useful and advisable use, but if you are using it R and D, for normal purposes, definitely you are helping the whole humanity. So that kind of humans potential actually it carries, so that is why R and D must be promoted and in every setting. And yes, so you see, this is the figure 2010 to 17, 1.4 trillion to 2.2 trillion US dollars in 2017. Fewer than 1 in 5 people use the internet LDCs, 19 percent to 13 percent we saw that number.

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So, now we will see alignment, aligning the SDGs with the value creation process, how do we do all of this. So, in this chart, if you see this outer this chain line is the continuous concentration of social development issues over time. So, as the time progresses, this keeps on refining again, it comes back and it keeps on refining itself. Inside that we have components of a value creation, preservation, diminution, overtime. So, from here to here, it is like increasing.

So, initially if you putting efforts in financial, manufacturing, intellectual, human, social innovation and natural cycles. So that becomes as an input which drives business activities, which drives output and which drives final outcomes, those outcomes actually go and serve again these in a different sectors, these sectors are now, categorized under one of the 17 SDGs. So, for example, this first one human if you see, this has the potential to health SDG third, fourth, fifth, sixth, 7, 8, 10, 12, 13, 14, 16 and 17. Similarly, if you see this one a social

and relationship this almost covers all of the SDGs, so wonderful. The natural these ones intellectual, these one manufacturing, and financial. Financial also if you see it touches most of them.

And then again, if you see there is an arrow and there is an output outcome which is getting out and again, going back as an input in this whole process, and in between if you see this square, this is the circle of business model how you can develop a business model, around these four stages of inputs, business activities, outputs and outcomes. So, by including outlook, strategy and reduce allocation, by the help of governance, then risk and opportunities, performance, you can have your own a chain of a cyclic this process of business model and which comprises, to the sustainable development. Some details you can see here at the bottom.

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So, what are the targets and goals over here? Build resilient infrastructure, promote inclusive and sustainable industrialization, foster innovation. Develop quality, reliable, sustainable and resilient infrastructure. Increase the access of small scale industries and other enterprises or financial services. Enhance scientific research and technology, particularly in developing countries and by 2030 encourage innovation, by 2030, raise industry's share of employment and GDP.

Upgrade infrastructure in retrofit industries to make them sustainable. So technological applications and with the change in the technology, one must actually move and sync and definitely this sector or sector also no can help propagating those things to the needy, like

how these institutions can help. Facilitate sustainable and resilient infrastructure development in developing countries and small island developing states. Lastly support domestic technology development, research and innovation developing countries. Increase access to information communication technology to provide access to internet to everyone.