Plastic Waste Management
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Lecture - 39
Plastics and Circular Economy - Case Studies

So, welcome back. This is now we are on the fourth video for week 8. So, this is the and we will continue our discussion what we had earlier in this particular week. We are looking at Plastic and Circular Economy, I introduce you the concept of circular economy before that we also looked at the plastic resource recovery options that was that is the kind of content for this particular week.

So, continue with that discussion, if you remember from that last video towards the end, we were talking about some case studies and that case study will continue here. We will look at we will started looking at the Unilever, what are the initiative that Unilever is taking. Unilever's Indian armies Hindustan lever and I think in India also now it is called Unilever. So, we look at that case study in more detail today and then will try to cover some other aspect.

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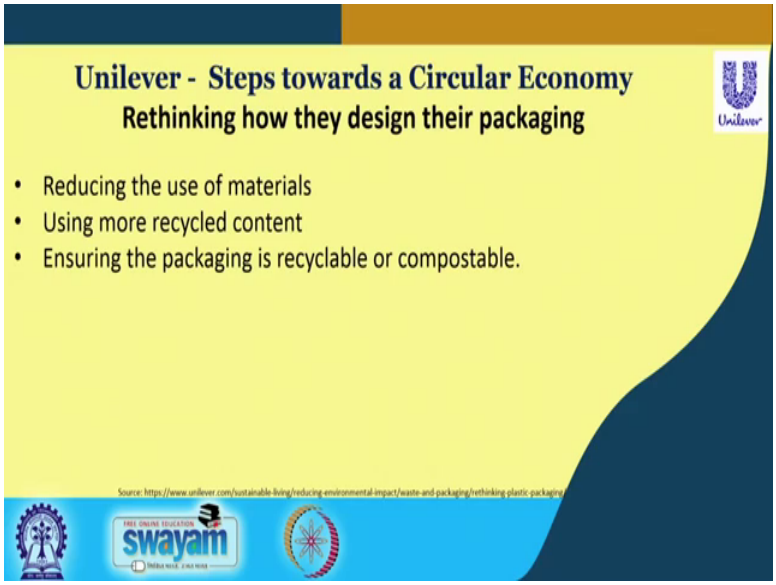

So, same the topic is plastic and circular economy case studies for this particular video. And to get started, this is say we are looking at the Unilever which is trying to go towards circular economy. As you know Unilever is a very big FMCG company, they

make variety of products you see their ads in on TV every, like every time you watch TV you will pretty much see one or two ads from that particular company of different products is starting from say whether its household products, detergents, soaps and n number of products that they make.

And as they make those product, the product is sipped in packaging different packaging methods are used. So, package they create lot of packaging waste. So, that is what they are looking at is how they design their packaging which is what they were emphasizing on in this particular case study that we are looking at. Say they have certain ideas of that they want to reduce the use of .material.

So, they want to have less material that is being used, so they are looking at reducing the use of material. They are using more recycle content if whatever the material they use; if they can increase the recycle content, so the recyclability of that goes up. And they are also looking at packaging; if they can go for certain packaging which is like a recyclable or compostable.

So, if it is a recyclable or compostable; so compostable means it is a biodegradable. So, it becomes easier to manage recyclable which is easy to recycle. See the problem with ah many of these packaging material is we many times we use multiple material together that is also called multi layer plastic one example is that. So, with this multi layer, separating those different layers becomes very cumbersome and that leads to lot of those packaging material just being thrown in a in a like of landfill or may go to waste to energy plant.

So, they are not recyclable although they are theoretically recyclable, but practically they are not recyclable because of all the processes that is required to separate those different multi layered stuff. So, to avoid that they are trying to go for packaging which is recyclable or compostable more recycling content and reducing their material.

If you remember for from the online shopping that you and I do, we end up buying ah even a small phone, like a mobile phone will come up with some packaging and then different layers of packaging. So, we end up using lots of packaging coming from online shopping and other ah plug even when you go for certain buying this stuff in a mall and other stuff.

So, their goal is to try to reduce that as much as possible of course, we need to make sure the product is safe and while being transported and while we are bringing it from the say malls and big shops to our home, but at the same time can we can we reduce it and how much can be reduced. So, that is what they are working on in terms of like packaging there.

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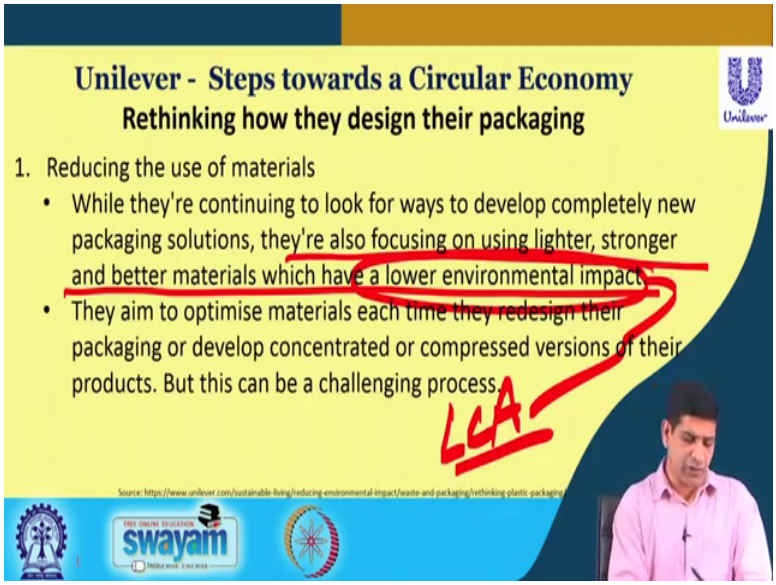

So, in terms of reducing the use of material while they are continuing to look for ways to develop new packaging solutions, they are also focusing on using lighter, is stronger and better material which have lower environmental impact.

So, it is a lighter material which is and then stronger and better material which have lower environmental impacts, so that is important here. Having a lower environmental impact is something which you can quantify using a tools using like LCA which we talked about a little bit in the previous video I think in the last week, where you can use that in terms of lifecycle assessment to find out whether it is really environmental impact has been reduced or not.

So, they aim is to optimize you can optimize each material each time while they redesign their product, developed compressed version of their product concentrated and compressed .version. So, rather than having say 1 kg of detergent which you comes in a particular container, where we have to use say two spoon of the detergent can we reduce it to half a spoon of detergent and then the it is more concentrated.

So, we can use the and even if we needed you can add some water at your home. So, those things are also being looked into so concentrated version compressed version of product. But again as you know this is challenging process. It is challenging not from only from a process point of view, it is also challenging from human behavior point of view.

So, when so if Unilever comes with a detergent where they say that you only have to use half of what you were using earlier and of course, it would be costly. So, people will think that is it really we are getting the same where are we going to get the same benefit, whether it the workability will be the same or is it a just a marketing gimmick to extract more money from us.

So, there is there will be challenge. It is not easy whenever you go for any change of course, there is a challenging process, but people that ah we the companies are already thinking about that, they are looking at potential solution in terms of look of coming up with steps towards circular economy and coming up with a better packaging.

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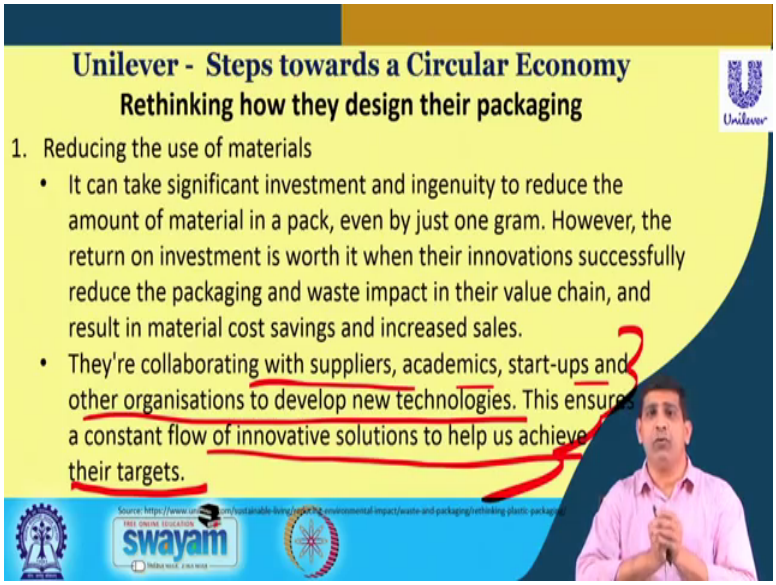

Reducing the use of material: again require significant investment and ingenuity to reduce the amount of material even by just 1 gram. So, even if they reduce it by 1 gram, there is a return of investment the ROI is worth it. When their innovation successfully reduced the packaging and the waste impact in their value chain and that increases that reduces the cost and also helps increase in sales.

So, they are collaborating with suppliers, academics, startups, other organization to develop new technologies. This ensures constant flow of innovative solution to help us achieve their target. So, if you are a budding ah student looking for areas to do research in plastic management or plastic waste management on preventive side rather than on reactive side, rather looking at the managing the waste how to reduce the amount of waste being produced.

And if you have little bit of industrial kind of engineering or mechanical or ah those kind of background, you can easily look for these kind of courses. And these kind of ah masters or PhD areas where you can try to come up with innovative ah design and for the packaging which can reduce the cause we reduce the plastic waste being produced on the first time, so that will be a good ah thing to work on. And that is those are those are the areas where we really need to do research on to come up with better solutions.

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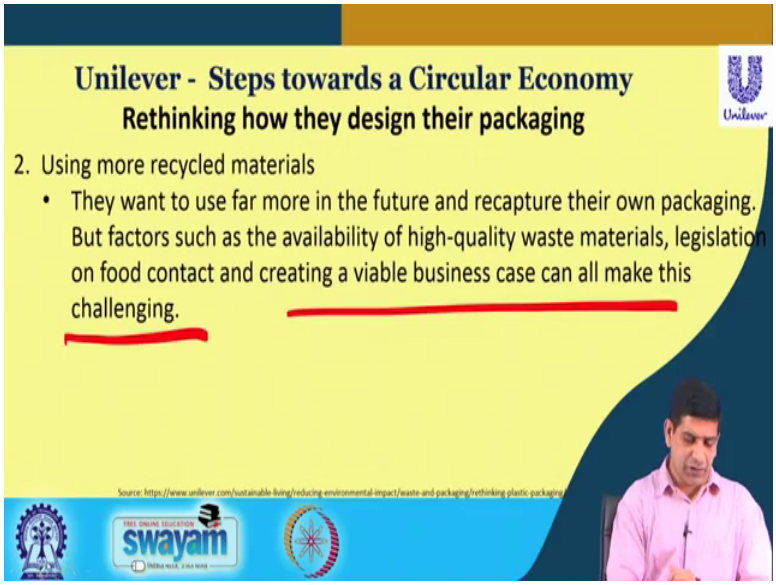

And I would like strongly encourage you those of you are going for more higher studies in this area to look for those kind of projects. So, we can use more recycled material, that they want to use far more in future and recapture their own packaging, so can we try to get out the packaging back and that is kind of tie in to the big picture extended producer responsibility as well. So, if they can take those packaging material back and reuse it by themselves.

So, again its factors such as availability of high quality waste material, legislation for on food contact can because in India still recycled plastics or recycled material are not allowed on food contact. Some other countries, it is allowed because their recycling processes are much advanced now and ah, so that is better any you have to is not allowed yet.

So, hopefully once our recycling industry picks up when the government has confidence that recycle material is it is a cleaner material. It is a sterilized material; it will not create ah food safety issue. It will be allowed in India as well, it may be in few years you may be a decade from now.

But it that is what right now it is not, so legislation on food contact is which its prohibits use of recycle material on food contact. And also when you are trying to recapture your own material and you have to collect it, we bring it back. So, you have to look at your viable business case that is makes it challenging as well, so again these are the way these are the areas where lot of work needs to be done.

So, as I said in the very I am and have been saying many times in this over the last 8 weeks that the one of the primary goal of this course is to start the discussion on plastic waste management in India. This is not say with this course, you will not learn the entire plastic waste management because it is just the beginning because this is I think this is the first course of this kind being offered in India.

So, it is just the beginning because there are lot of things that are happening every day new things are coming up where we are saying that just recently I there was an article where we found 40 kg of plastics in a whales stomach, the whale has died. Because it was not getting any, it was not feeling hungry because and there was a stomach was always full, but there was no nutrients coming to his body because that all those plastic was there in whales body.

Today itself I saw it again another article which talks about that even at the deeper layer of ocean at 10 different locations in the world, researchers have sampled from the Newcastle university researchers of sample the fish, in 10 different locations in the world at the deeper layer; some places several thousand feet below the surface of the water and they found microplastics being present there in most of the fish. More than 70 percent of the fish was tested to be positive for microplastic.

And all 10 locations, the fish were there which were positive for microplastic. So, that is these are so plastic waste is a huge concern and so that is so this is just. So, there are all of us those who are interested to work in this area. There are lot of avenues are there, where people can do research on people can come up with newer solutions and these are some of the one which companies like Unilever has taking up ah challenge. And of course, this will be any young person looking for innovative ideas to do that these are the ways where you can come up you can contribute.

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Using more recycled material: They must be again innovative and collaborative you need to have making,you have to design the product in such a way, so that it is easy to recycle after use. So, that is very important.

One of the thing which many of these new packaging are coming up where you will see a plastic bottle which is all wrapped around with plastic. Now that taking that plastic off, it becomes a huge problem so and they are not they usually they will be like 5 percent or even less than 5 percent to 1, 2 or 3 percent of the total plastic load. So, to you do not it does not really make sense to have a extra set of a process line to take that plastic off from that PET bottle or SDP bottle.

So, what happens? That bottle ends up in a dump side because it cannot be recycled or if they have a waste to energy plant, it will end up in though it could potentially end up in their waste to energy plant or if not collected properly by those rag pickers or the

informal recyclers because they did not able to sell that it will just go into the surface water and finally, to the ocean.

So, when you design something as a marketing MBA many times they like to make things look really cool that is we think should look better, there should be attractive because that is the part of the business, but at the same time it is very very important and very. And these days, people are taking it very seriously that we need to design things in such a way, so that it becomes easy to recycle after use and that is that is there.

Other aspect for when you try to go for recycle material you have to look at the collection, you have to look at the sorting facilities and you have to look at the technical and commercial viability of reprocessing them at a scale, so that is that is also very important. So, those are the things that needs to be addressed in terms of when you go for hard like redesign your packaging part.

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And in terms of ensuring that the plastic packaging is recyclable or compostable in 2017 Unilever made a commitment to ensure that 100 percent of their plastic packaging will be designed to be fully reusable, recyclable or compostable by 2025. So, they have a target for 8 years, in 8 years that 100 percent of their plastic packaging will be fully reusable or recyclable or compostable by 20025.

In Chile for example, they moved from a non recyclable folding carbon carton across three detergent brands. So, there are three detergent brands they have and they form a non from a non recyclable folding carton, to a 100 percent polyethylene HDEP bag which is recyclable.

So, earlier they had non-recyclable folding cartons which was used for these three brands Omo, Drive and Rinso and this brands are being sold in Chile, Unilever as you know it's they have presents pretty much in all parts of the world and in different countries they have different name of the brands, in India do not think we get these brands, but similar things can be done in Indian context too, but in Chile they went from these non recyclable holding cartons for these brands to a recyclable HDEP polythene bag and that saved 1,634tons of ah like folding carton material here.

So, and then in that they also looked at plant based material for tea bags. So, tea bags that we use when our dip tea look at that tea bags very carefully. Many times those tea bags are also has layers of plastic just to keep things fresh inside and they have and when you dip it into the hot water just to keep that intact. Otherwise if it is just pure paper, it will it basically as soon as you put it in the paper, it will as soon as you put it into the hot water it will get soggy and those tea leaves can come outside it will go into your cup.

So, to keep it intact there is there are other material in there and one of them is a fine layer of plastic and with this fine layer of plastic every time you dip your teabag you are getting a mic tiny amount of micro plastic getting into your teabags getting into your tea and we consume that tea. So if you take like 340 a day, you like that you are taking a little bit of micro plastic every day. So, that is also a issue.

So, there is there is a concern of that throughout the throughout the world, so Unilever is working on looking at finding a plant based material for teabags derived from renewable sources like, corn starch which can be industrially composted. So, those tea bags can be composted in an industrial scale the composter, so that is those are the some of the things they are working on.

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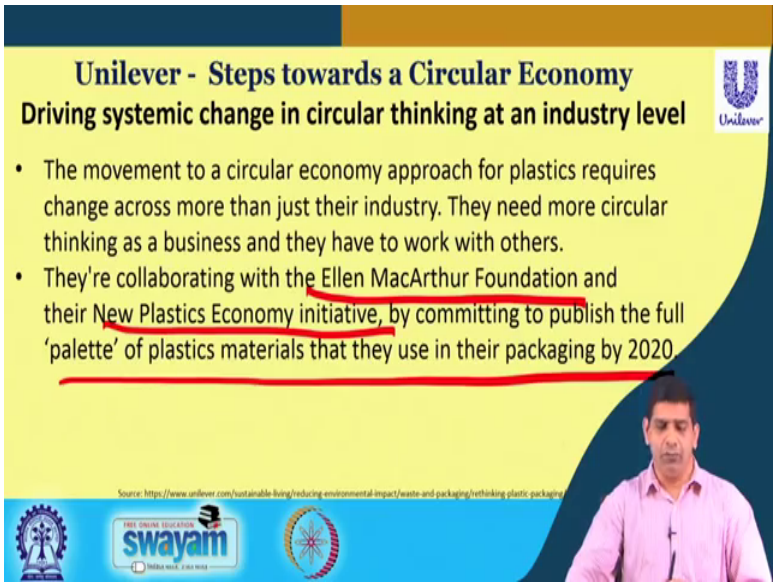

There some industrial level changes are also happening in terms of movement to a circular economy approach for plastics, they are looking at changes across more than just their industry because most of the industries have to work with others. So, they need more circular thinking as a business, they have to work with other companies to like their partners their suppliers.

So, they are collaborating with several organizations Ellen MacArthur foundation which we talked about in I think the first video or the second video of this week, that is kind of one of the pioneering agency for a circular economy thinking around the world. So, if you have interest on circular economy there is there are some courses on EDX cours era which is offered on circular economy, but at the same time I would strongly encourage you to go to this Ellen MacArthur foundation website and they have wonderful reports on different aspects of circular economy.

So, you should be able to read those reports and learn a lot from there it's a lot of nice infographic, easily explained and it's better like it is a good learning material for circular economy concepts and that is important if this is a if you if you are interested in that area. So, Ellen MacArthur foundation is Unilever is working with them and they are and they are looking at the new plastics initiative economy initiative, but committing to publish the full pallets of plastic material that they use in their packaging by 2020.

So, having the total disclosure of what kind of material is used and the how they are planning to cut it down over the years? Because again these things everything takes time which we talked about earlier as well it's that when we were we are looking at the band, even if you look at the china band they worked on it for quite some years before they really banned. So, things do take time before you can implement that.

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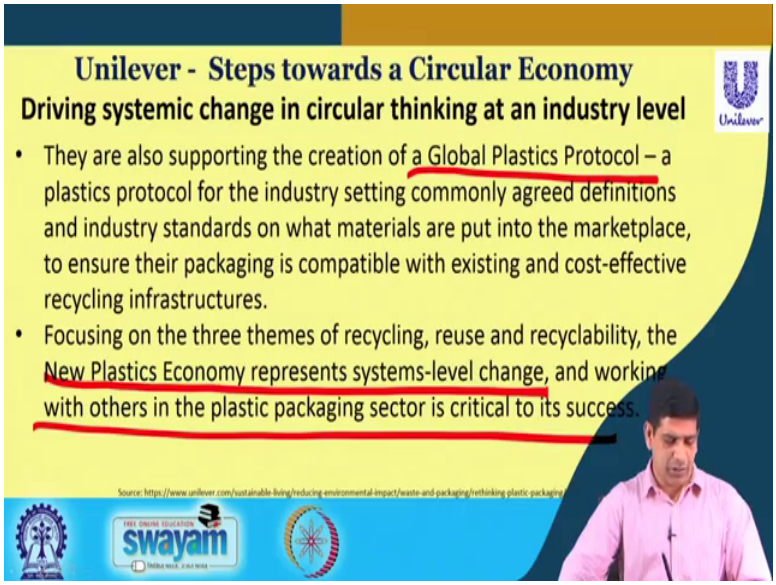

And other thing they are also supporting creation of global plastic protocol which is which is a plastic protocol for the industry setting common agreed definitions and industry standards. So, what materials to use? But ensure that packaging is compatible with existing and cost effective recycling infrastructure.

So, for example, if they come up with a newer packaging material, but those packaging materials our recycling industry is not ready to work with those plastic material those new packaging material, then it is a loss is not it at we are losing along the system. So, the whole system has to get together that is why every stakeholder and that is very very important I say that many times in the solid waste management course as well.

And same thing over here that you need to have take every stakeholder on both well because they are all went from the generation of plastic all the way to disposal and it's different users along the way different stakeholders are there. And based on what they do with that plastic material that impacts the recycling people that impacts the potential waste to energy people for example, plastic to energy people. So, we need to have all the

stakeholders on board and have a clear conversation transparent conversation transparency is kind of the key of what is happening.

So, that the people on the next in line in that ah you can say that global chain of plastic movement is aware of what kind of changes they will expect in few years from now. So, that they can get ready, otherwise whatever changes you make at the beginning. If it is not followed through in the process, you actually lose whatever progress you made in the beginning. Because it's and it may be ending up in again in a landfill or a dump site because the because we do not have the follow up systems in place yet.

And that happens many times in when we go for a waste management infrastructure in a country like India because we try to make some progress, but we do not really do our homework properly we do not take the systems approach we just go in a silos approach we is a personality driven system rather than a systems driven and that creates a lot of problem.

So, in terms of their three themes of recycling reuse recyclability, the new plastic economy which represents system level change, so and working with others in the plastic packaging sector is critical to it's success. So, you have to work together as a team. The different stakeholders has to come together as a team to really make it work.

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Developing a market at a post consumer recycled material, greater manufacture demand for recycled material will produce increasingly attractive business for reprocessing service and also act as a catalyst to increase the collection and reprocessing of material. So, if there is a demand for recycled plastic you will if they if people can make money have recycled plastic of course, the industries will come and then they will set it up the collection and processing of the material.

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Other things in partnering with industryso they with flexible packaging on rethinking their flexible packaging. So, 2016 Unilever join an initiative called CEFLEX, a consortium of around 60 European companies, organization and association across the entire value chain for flexible packaging.

By 2020 develop robust designed for circular economy guidelines for both flexible packaging and end of cycle infrastructure to collect, sort and recycle. By 2025, it aims to develop a collection, shorting and reprocessing infrastructure for post consumer flexible packaging across zero, so that is ah their aim to do that.

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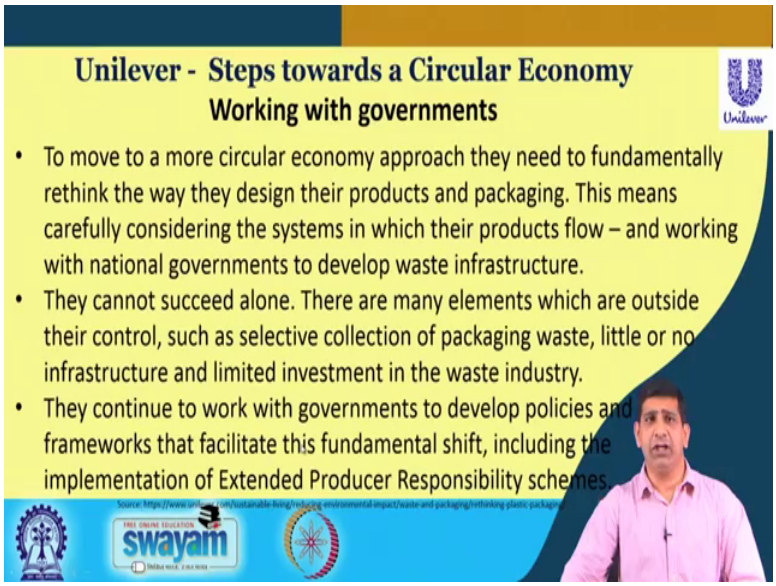

So, lot of work is working in that area and they are working with governments fundamentally rethink the design the product. They are working with government in terms of national government to develop waste infrastructure again things cannot work in isolation.

So, they are have to work with many; many countries have pretty much little or no infrastructure and limited investment in the waste industry. So, they work with government to develop policies, framework, facilitate shift including implementation of EPR which is the Extended Producer Responsibility.

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They are working with consumers to increase the consumers therefore, have a vital role, the aim is to promote recycling among consumers, raise awareness, are NGO level, help workers economically, number of a projects to encourage consumer to recycle more and recycling making a lifelong habit.

In incentivizing behaviour change, so if you can some somehow incentivize recycling. So, consumers are offered discount benefits to bring their waste packaging to government recycling points. So, if you bring your waste recyclable to a designated centers; so once you put a certain amount you get a discount coupon for example, and you can use that discount coupon when you buy next time Unilever product, so those things are there.

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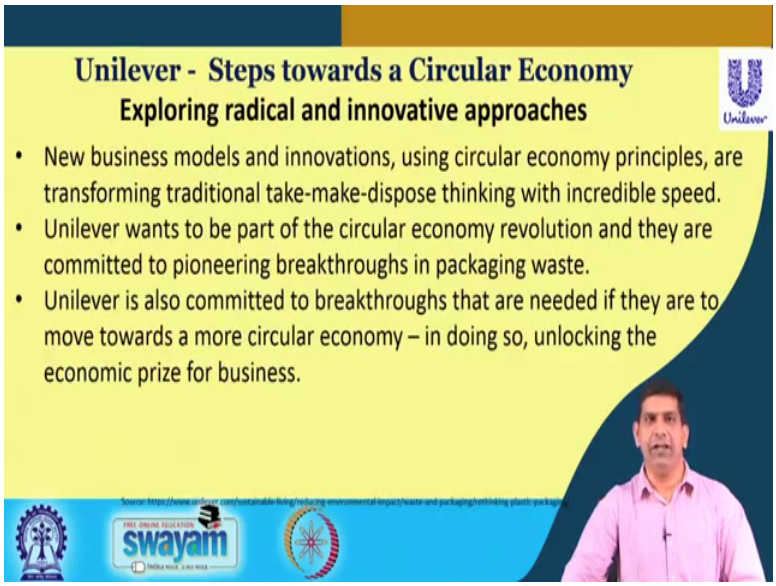

They are also looking at some radical and out of box approaches. So, new business model like take rather than having take make and dispose approach, they want to have a circular economy principle which is not take make disposes the linear economy that we were talking about. They want to part of circular economy revolution. So they are looking at looking, they trying to lead the effort in the packaging waste.

Also committed to breakthroughs they are needed there have to move towards more circular economy, unlocking the economic price for business. As you saw earlier if all the companies is start looking at the circular economy aspect and start implementing them will actually economically will have more GDP, will have more activity economic activity happening across the globe.

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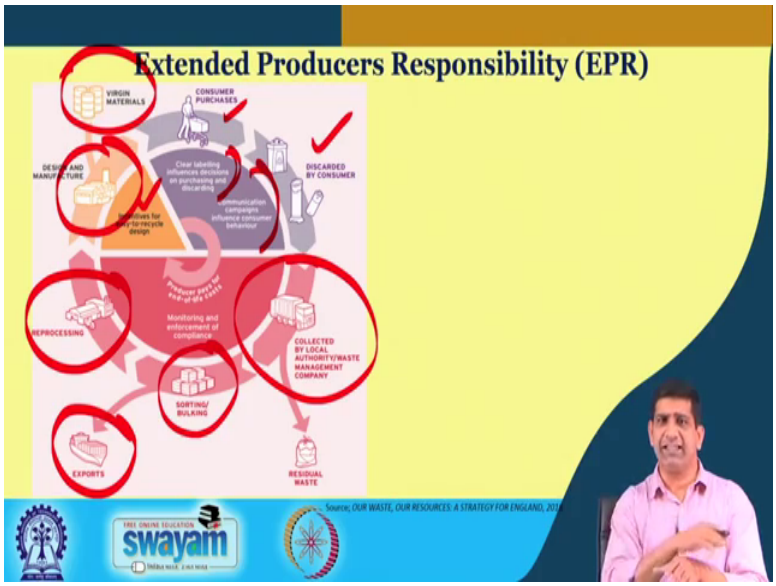

So, one of the aspect of ah circular economy kind of concept is also extended producer responsibility. Now what does that mean? Extended producer responsibility means that say you have, you start with the design and manufacture used to design and manufacture that you get the virgin material to do that. So, then you go for and when you do that you incentivize for easy to recycle design. So, you try to come up with easy to recycle design, then once the product is design the consumer purchases that, then clear leveling which influences decision on purchase and discarding.

Then there is a communication campaign which effects consumer behavior. Now once it discarded by consumer it is collected by the local waste management company or local waste management either that either the government based company or the private companies. Then it goes to sorting part of it could be exported as well, it waste could be exported or it could be reprocessing and then it finally, comes back into the circle.

So, it as so this is what the in terms of extended producer responsibility the company which is producing that particular material for example, Unilever making that detergent, the detergent container, detergent bottle that Unilever has given you with the product, as if extended producer responsibility is implemented in India Unilever will be responsible for managing that plastic container. So, that is what it all about.

Now, see that they can do it by themselves, so they can have a system in place where they fund that program and the government gets some waste management company to do

that, then this the later part is more preferable from a western world that is what they found to be work working because Unilever is good in making detergent making their product, but they are not they do not have expertise in waste management.

So, for the waste management if there is a company on which has a some expertise on waste management which has a expertise on working with plastic wastes, it is better for them to come in business and they get funding for their for their business through that extended producer responsibility.

So, ah FMCG companies give money through some like government created fund and these waste management companies get part of that funding to support their business, at least in their initial run might because any of the this kind of business especially in a country like India where things are still evolving in terms of waste management they need some hand holding which are keeps on telling probably every other video.

That we need to handhold some of these companies for few years to really get them started it is like they are babies, we have to as if as a government being the parent they have to make sure that the babies are good enough, strong enough to stand on their own and then we can take back and let them enjoy the benefit and do their own business.

But initially they do require some support and which may some of some may not agree with me, but that is what based on like looking at waste management in several countries as well as looking at the history of waste management in Western Europe or Canada or Australia, New Zealand and those kind of countries, where there is some good waste management practices happening that is how it I was done. So, it's it requires whether we like it we do not like it, but that is kind of the reality.

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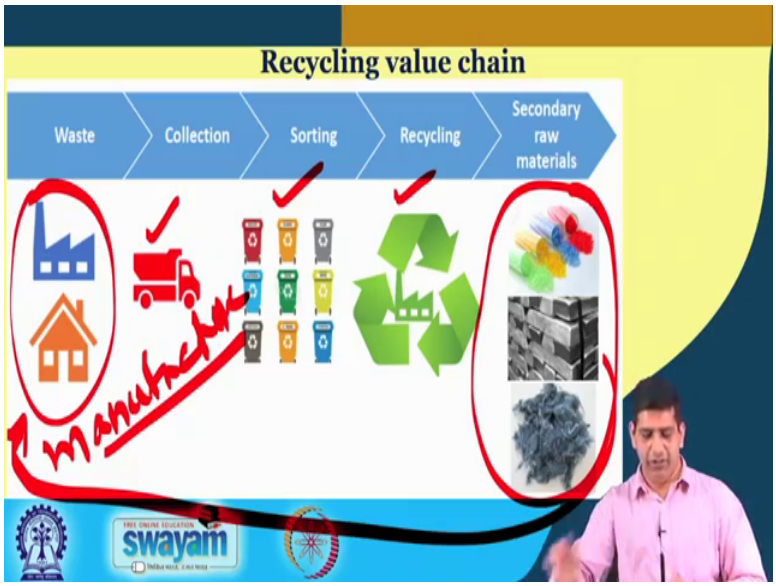

So, you can go for whenever you go in terms of ah recycling you can create a recycling value chain. So, you start from the waste you collect, so we are looking at waste being colored waste being generated, it is collected, it is sorted out in different categories, it is recycle and from recycle you produce secondary raw material. So, that is the secondary raw material again kind of goes back to manufacturing first.

So, it will go to manufacture, so it will be manufactured and that after manufacturing the waste would be produced, so it will again the cycle can continue back. So, this is right now what you see here is actually from what it is not from the waste to raw material and from raw material to product and then use of the product and future waste generation. So, that is the whole cycle will whole cycle will complete that way. So, that is what will create a concept of circular economy.

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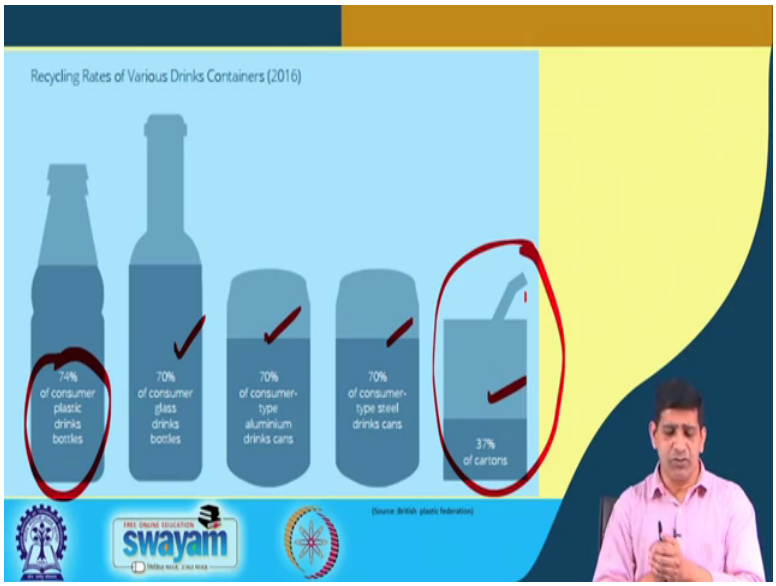

So, and then there are in terms of various some; some recycling rates off if you look at some of the recycling rates and with this will just stop in this particular video. So, if you in terms of the various drink containers in ah this data is from 2016, so around slightly more than 2 years old or 2 years old.

So, we have 70 percent of consumer plastic drink bottles it was recycled globally and 70 percent of consumer glass drink bottles, 70 percent of consumer aluminum can, 70 percent of consumers steel cans and 37 percent of cartoons this is those ah small like fruity and those that Amul lassy kind of container. So, those are with a straw you see that.

So, this is as you can see 74 percent there are approximately 70 percent of the drink bottles different drink bottles whether it is plastic, glass, aluminum cans or a steel cans that has been recycled and but 37 percent of cartoons was recycle and this is this data is coming from ah British ah plastic federation.

So, so rest more than around 30 percent is not being recycled for most part and if these tetra packs, this cartoon packs even close to more than 60 percent is not recycled, so it is being ending up in waste like landfills or waste to energy plants. So, let us stop here, so we will continue our discussion we talked about this circular economy aspect, the case study then this video the focus was on looking at a case study from Unilever which is one of the biggest ah fm FMCG company in the world, do you saw the example that how

that company is working on, trying to move from linear economy to circular economy in terms of the in terms of packaging.

And all the different aspects associated with that in terms of getting the different stakeholders involved and trying to come up with material which can be easy to recycle, try to design packaging in such a way. So, that it is easy to it we can bring it back and use it again in our ah value chain. So, so that is kind of kind of give you a that example of a circular economy approach of plastic management.

So, with that let us just stop here again I hope you are enjoying the course we are almost towards the end of the course which I hope you had a good time and keep the discussion board active. So, that we can answer a question that will be answering it through our of the all the way to the exam time. So, if you have any question feel free to describe or put it on discussion board and as you know our goal is to respond to you within 24 hours and we are trying to do that at our best so.

Thank you, see you again.