Business and Sustainable Development
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Lecture - 10
Cleaner Production Illustration

So, in the previous session, we have learnt about what is cleaner production options and what are the different barriers, whatever the motivators, what are the drivers, what typically influences the company to adopt the cleaner production options. Now, let us try to understand this cleaner productions options through taking different examples and this examples are being sourced from the UNEP document or UNEP manual.

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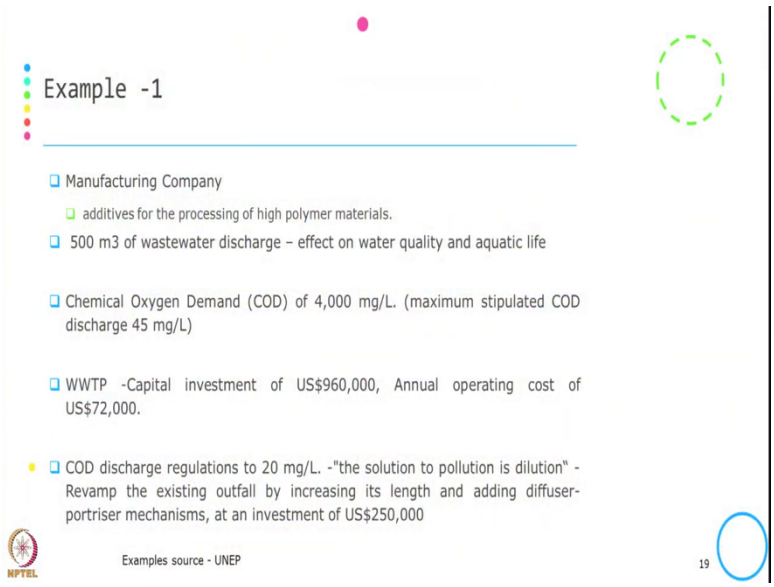

So, let us start with the first example. So, this example 1 is example from the manufacturing company and they are in the businesses; business of producing additives for processing high polymer materials. Looking at the nature of business, the waste product for this business is wastewater discharge and this is what the total amount of wastewater discharge they are discharging into the nearest local water bodies.

What is the effect? The effect of this wastewater discharge was on the water quality and also, the aquatic life typically, killing the fish in the water bodies. Because there is a chemical associated with the wastewater, part of this wastewater.

Now, in any wastewater so, mostly there are three prominent you will find that pollutants, water pollutant that is BOD, COD and TSS. So, here, the maximum stipulated CO2 discharge at that point of time was fixed at 45 mg per litre of the wastewater, but whatever wastewater they were discharging, The content of the CO 2 COD in their wastewater is way ahead or the far higher than whatever is being permitted, or whatever is the maximum stipulated discharge that should happen. What they did? They got into a wastewater treatment plant with a very high capital investment and the annual operating cost is also 72000 US dollar.

Now, further so, they got into the wastewater treatment plant and through that they could achieve whatever the maximum stipulated CO COD discharge happened in case of the; should happen in case of the wastewater. Now, the regulation changed, and that COD discharge regulation now limited to 20 mg per litre. And the solution to pollution is dilution over here.

What they did? They revamped the existing out outfall by increasing its length and editing diffuser port riser mechanism at an investment of 250,000 US dollar. So, because there is a change in the regulation which limits the CO 2 COD discharge again, detect the changes in their process.

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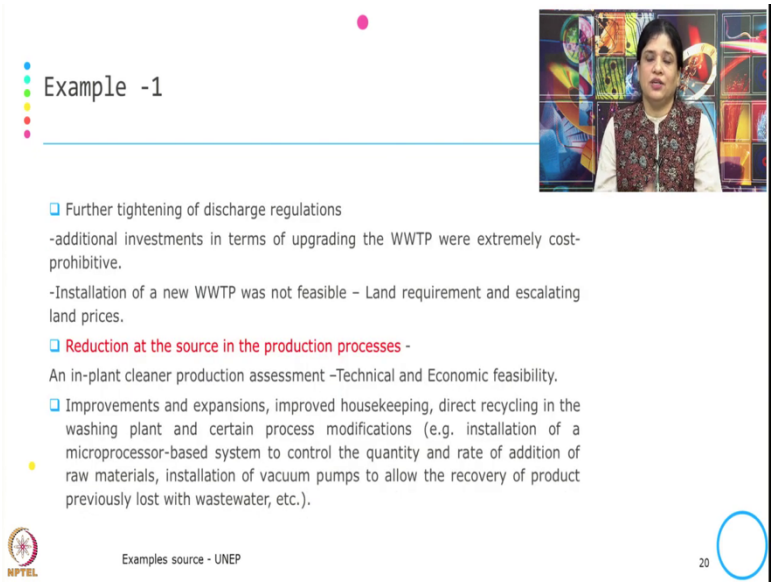

Further, the tightening of the discharge regulation happened. So, it is not 20 even less than that it was tightened further. Now, the options for the company is that they have to

do either additional investment to upgrade the wastewater treatment plant or getting into a new plant, a new wastewater treatment plant.

Additional investment in term of upgrading the WWTP is were extremely cost prohibitive because it was involving again a chunk of cost which was not feasible for the company and also, the new wastewater treatment plant also cannot be planned because the land price were escalating and also whatever the land requirement that was not available.

Now, what they decided is that rather than upgrading the existing wastewater treatment plant or getting into a new one, they thought of reduction of the source in the production process. So, what they did? They did a technical and economic feasibility of the cleaner production assessment of their company and by do by after this feasibility, what they did is that they improve expand and improve the housekeeping, direct recycling in the washing plant.

They did certain process modification like installation of a microprocessor-based system to control quantity and rate of addition of the raw material; they did the installation of vacuum pump to allow the recovery of product that is previously lost with the waste water. So, mostly they did improvement in their process and also, they did the expansion in their process which were more environmental friendly.

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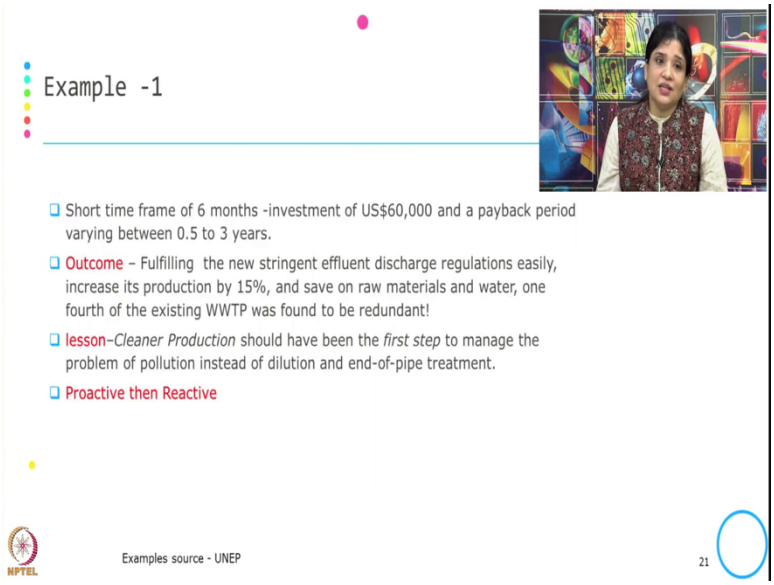

And whatever the changes they did within the short time frame of 6 month, they the payback period is between 0.5 to 3 months. So, although they did the investment, the payback period for that investment is between 0.5 to 3 years.

Now, what is the outcome? The outcome of this cleaner productions options or the change in the process, they could fulfil the new stringent effluent discharge regulation easily that could increase their production by 15 percent, they could save the raw materials water, one-fourth of the existing wastewater treatment plant was found to be not to be used again, because they have made the changes in the process itself.

And the lesson from this example is that cleaner production should have been the first step to manage the problem pollution instead of dilution and end of pipe treatment. So, rather than getting into a wastewater treatment plant from the beginning, they could have just changed the improvement in the process.

They could have done the expansion in the process to control at the source rather getting into end of pipe treatment because there is two; there are two implication; end of pipe treatment is again capacity based so, with the change in the regulation you need to change the end of pipe treatment again.

And second, every time changing regulation and changing the capacity of this end of pipe treatment would not have been feasible. So, the lesson from this example is that it is always better to be; better to be proactive rather than reactive and what the company has realized by doing that.

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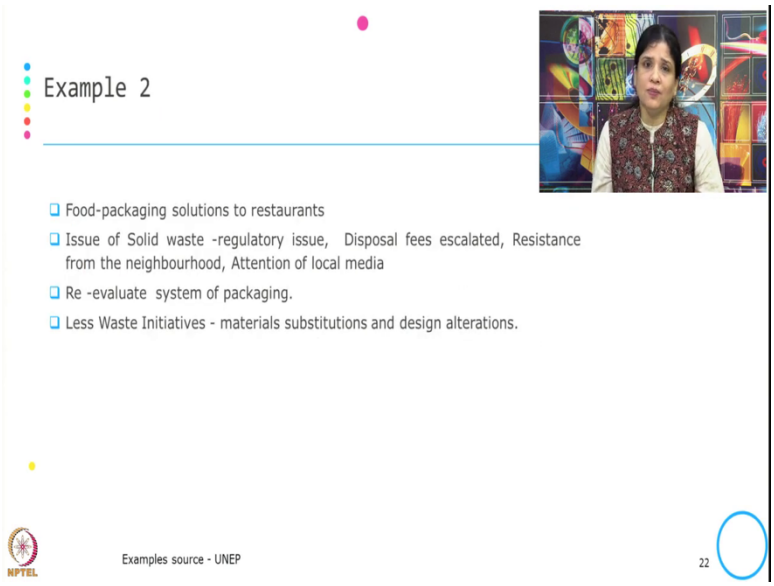

Now, going further let us get into the 2nd example. This is the example from a company which provides the food packaging solution to the restaurant. Now, since it is in the business of packaging, the impact associated with this is solid waste. Now, what are the issues associated with this issue of solid waste? There are regulatory issues with respect to solid waste disposal.

There is a disposal fee escalated, resistance from the neighbourhood and also the attention from the local media that they are creating the solid waste. Now, what the company they did? They re-evaluated the system of the packaging and they improve their packaging in such a way that it will give us; give them the less waste. So, they took a initiative as the less waste initiative, where they did the less waste initiative through material substitution and design alteration.

So, they did some substitution of the materials they used for packaging and also, they did some design alteration in order to address the concern or in order to address the environmental concern.

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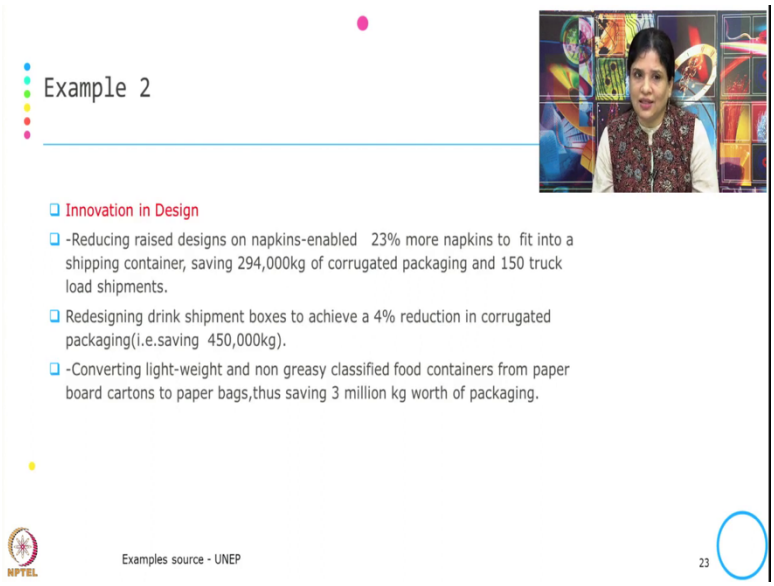

Now, what are the innovation they did in the design? So, they reduce the raised design in the napkin. So, typically if you will find that the napkin, few of the napkin they have the raised design, they reduce the raised design on the napkin which enable 23 percent more napkins to fit into the shipping container which saved 294,000 kg of corrugated packaging and 150 truck load of shipment.

So, what they did? Just reduce the raised design on the napkin, they could save the space in their container, they could save the corrugated packaging and also, they could optimize their load shipment which is equal to the 150-truck load shipment.

Then, they redesigned their drink shipment box to achieve 4 percent reduction in the corrugated packaging, saving almost this much kg and they convert the lightweight and non-greasy classified food container from paper board carton to paper bag and that also save this million worth kg worth of the packaging.

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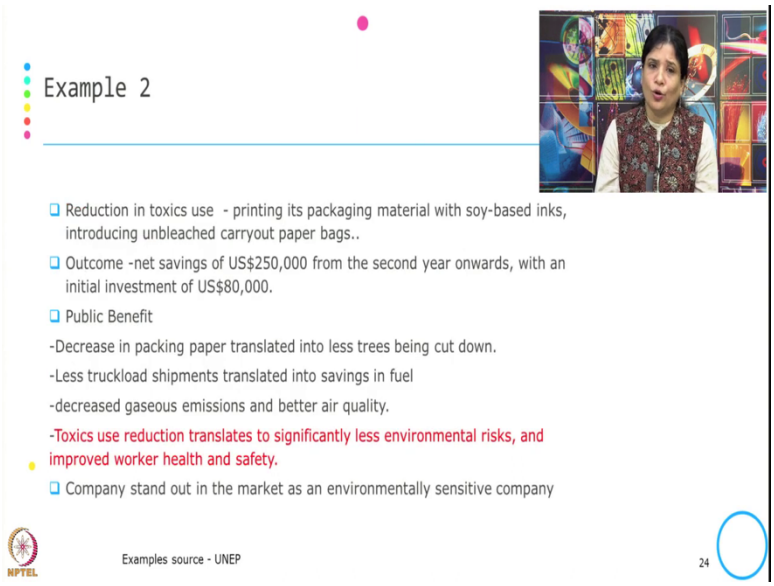

Now, there is a reduction in the toxic use because they use the soy-based ink for printing the packaging material, introducing also the unbleached carryout paper bag. So, they use the soy-based ink for printing and also use the unbleached carryout paper bag and the outcome from this is the saving from the second year onwards, with the initial investment of 80,000 US dollar. This is the private benefit whatever the saving they did in term of their change in the design in term of the financial benefit what they got.

But what is the public benefit by this cleaner production's options? The public benefit is that there is a decrease in the packing paper translated into less trees being cut down, there is less truck load shipment translated to saving into the fuel. There is a decrease in the gaseous emission and better air quality, because of less waste disposal and the toxic use reduction translate significantly into the less environmental risk and improves the worker's health and safety. And apart from the financial benefit, the company, the intangible benefit what the company receive is that they are known as the environmental sensitive company in the market that increase their brand value in the market.

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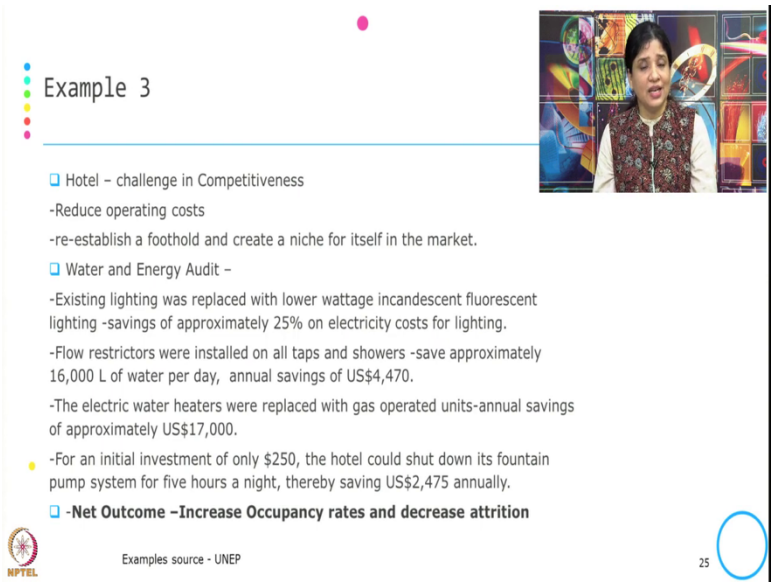

Now, get let us get into example 3. This is the example of a service typically the hotel and the situation what this hotel was facing is that there is a challenge; there is a challenge with respect to their competitiveness, it was going down. So, what they thought of doing is that reducing the operating cost and also, re-establish their foothold and create a niche for themself in the market.

The first thing what they did is that, they did a water and energy audit, what typically how much is their consumption in case of water, how much is their consumption with respect to energy and how much they can save by doing by doing the change in the process or making some change in the design.

So, they did a water energy edit audit and by doing that, they after doing the auditing they did the; they did the few changes and what are these changes? Existing lighting was replaced with lower weightage; lower weightage lighting and which saved almost 25 percent electric cost of lighting because the lighting was replaced with energy saving lightings.

Then, they use the flow restrictors on all taps and showers in their hotel which save almost 16000 litre of water per day and in term of financial benefit, this is what the annual saving they got by using the restrictor in the day. Then, they replace the electric water heater with gas operated unit which is having annual saving of 17000 US dollar, and they did a initial investment of 250 dollar, they could shut down its fountain;

fountain pump system for 5 hours in the night and thereby saving 2475 US dollar annually.

The net outcome for the hotel is that it increase the occupancy rate, decrease attrition from the employee and the bigger achievement or bigger performance, what they got which is intangible is that they are known as the environmental friendly hotel or the eco-friendly hotel.

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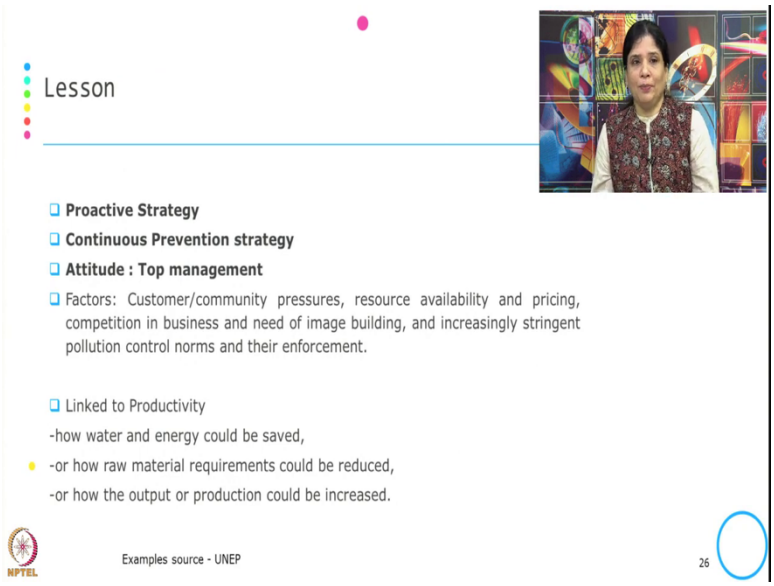

So, the from these three examples, the lesson what can be learnt over here is that rather than reactive, the proactive strategy always helps, there is a continuous preventive strategy prevention strategy that helps rather than the end of pipe treatment and attitude of top management is very important when you are getting into the cleaner production options.

And the other factors which are responsible for adoption of cleaner product option is that customer and community pressure or in a bigger scale, the stakeholder pressure, resource availability and pricing, competition in business and there is a need for the image building and increasingly, stringent pollution control norm and their enforcement is linked to the adoption of the cleaner production.

And also, it gives immediate benefit to the company those who are adopting the cleaner production option because this is linked to productivity that how water and energy can be

saved, how raw material equipment could be reduced and how the output or production could be increase.

Thank you.