Infrastructure Finance
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Lecture - 12
Analysis of Project Viability Capital Budgeting Guidelines

Hi, welcome back to this course on Infrastructure Finance, this is lecture 2, where we will continue our discussion on Analyzing Projects Viability. In this lecture, we will specifically focus on the Capital Budgeting Guidelines. If you look at in the previous lecture, we have broadly looked at various capital budgeting techniques. Specifically we looked at techniques like the payback periods, the net present value, profitability index and the internal rate of return. And in this lecture, what will specifically do is, we will try and see, how do we actually calculate the cash flows, that is needed on which we can actually deployed this capital budgeting techniques at we learned about in the previous lecture.

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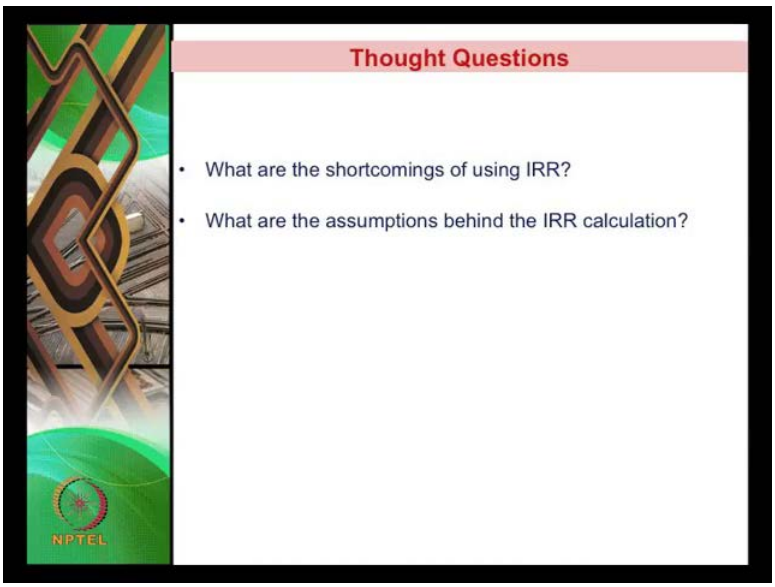

But, before we get to the lecture of today, we will quickly discuss the thought question that we actually put forward in the previous lecture. The question number 1 was, what are the shortcoming of using IRR. Specifically we look at it, IRR is very, very intuitive and is a very appealing way to many financial decision makers. Simply, because fact that, it actually gives the project return in a very nice simple percentage.

Though it is very difficult to calculate IRR in a manual way, today we have a lot of computing power that is available with us, which will help us to quickly calculate the IRR of a particular investment. Now, if you actually have the IRR in terms of percentage, people usually find it appealing, because it actually conveys a sense of a meaning, much more simply as compared to let us say net present value. if you say that, net present value a project is 10000, it actually does not convey much, because a net present value does not consider the fact that, how much of investment does it actually get into the project.

For example, we do not know for getting a net present value of 10000, are we actually investing 1 lakh or are we investing another 10000. But, if you look at IRR, the IRR simply says, the project returns in terms of the percentage, it could be 15 percent. So, if somebody communicates that, IRR from projects is 15 percent, it gives a lot more clarity. In terms of, how much return is a project able to give, as compared to a very abstract net present value that we will get from other techniques such as, a net present value or the profitable index.

But, in despite the fact that, there are several intuitive way, in which IRR appeals, there are some shortcoming of IRR that we should recognize. Specifically, we should be aware of one particular shortcoming, which is the fact that, there are situation where the IRR simply might not exists, so what are those situations. So, if you take an example, let us consider a project with the following characteristics.

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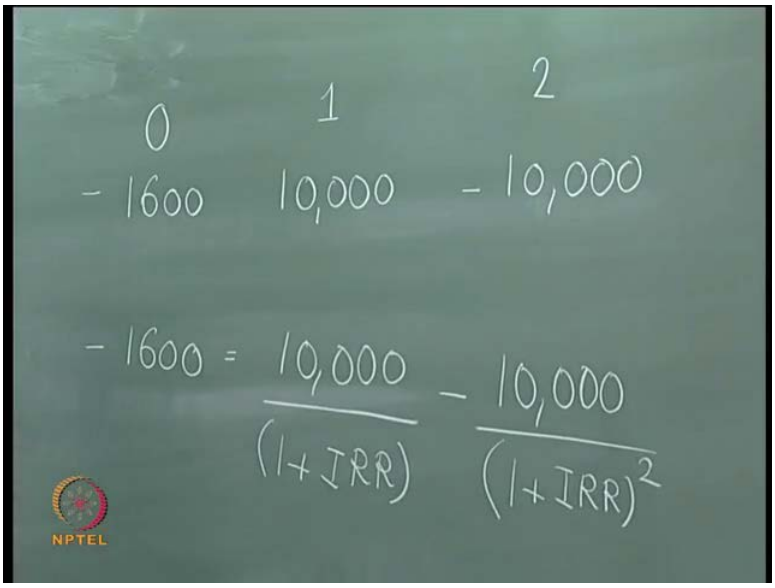

So, you have an initial outlay in year 0 of 1600 and in year 1, you have a project flow of 10000 and year 2, you have project cash flow of minus 10000. Now, under what circumstance can this kind of a cash flow pattern occur, here one we are very clear that, the negative cash flow is because of the initial investment and year 1 is positive cash flow that accrued from the project.

In year 2, again we are seeing the negative cash flow, the negative cash flow could be because there might be an additional investment that is needed for a particular project, there could be renovation, there could be expansion and so on. So, the negative cash flows that occurs in between is not a very, very uncommon feature, there are several area where we can actually find situation, where we project needs additional investment even after begins operation.

Now, if you have a project that has a characteristics something like this, when you actually try and calculate the IRR, so the IRR what we are going to calculate is the initial investments will be 1600. And this will be equal to 10000 and we divided by the discount rate, in this cases it will be the internal graph return and minus 10000 is cash flow in year 2 and since the year 2, 1 plus IRR.

So, if you try and solve it for IRR, is what you may actually get is, you may actually get an IRR which actually gives more than one value. So, if you want to see it as an equation

and this is the quartered equation of the second order and when you try and solve it, you may actually get two values, for which the equation would satisfied.

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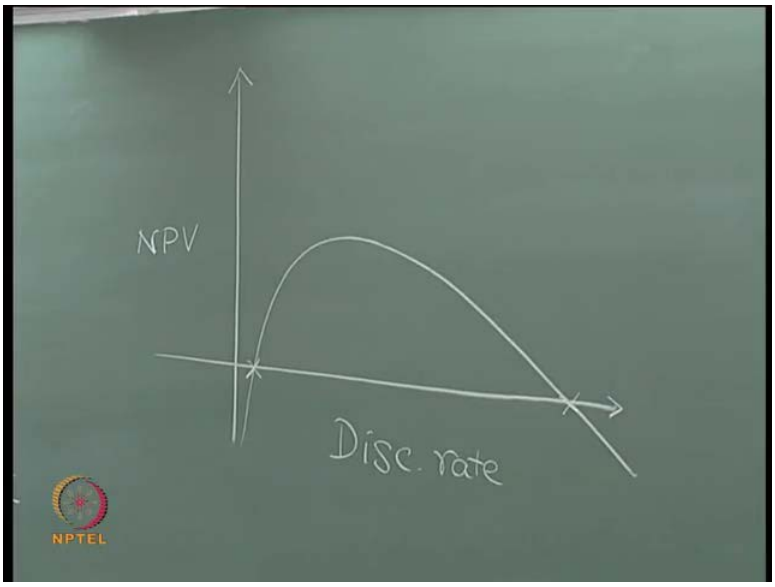

Essentially, if you want of draw it as a graph, when you plot the curve, it may actually turn to be index, so there are two discount rates, for which the net present value is 0. So, how do you define IRR, we define IRR as that discount rate, where the net present value become 0. Now, when you are having a situation, where the net present value is 0 for two discount rates, which discount rate should be actually take. So, IRR in this case does not exist, so therefore, we should aware of situations, where IRR simply do not exists.

Now, under what circumstances, do we have actually have a situation, where IRR would not exists; we will actually have situation of IRR not existing, when there are, what is called as multiple sign changes in the cash flows. Now, if you look at it, there is a sign changes from negative to positive, so there is one sign change in cash flow and then subsequently there is a another sign change, sign changes from positive to negative. So, there is one sign change from here 0 to 1 and then there is a other sign change from year 1 to year 2. So, when you have more than one sign changes in the cash flows then IRR does not exists. So, we will have to be very clear about the pattern of cash flows, before we decide actually go head and deploy the IRR method for capital budgeting decisions.

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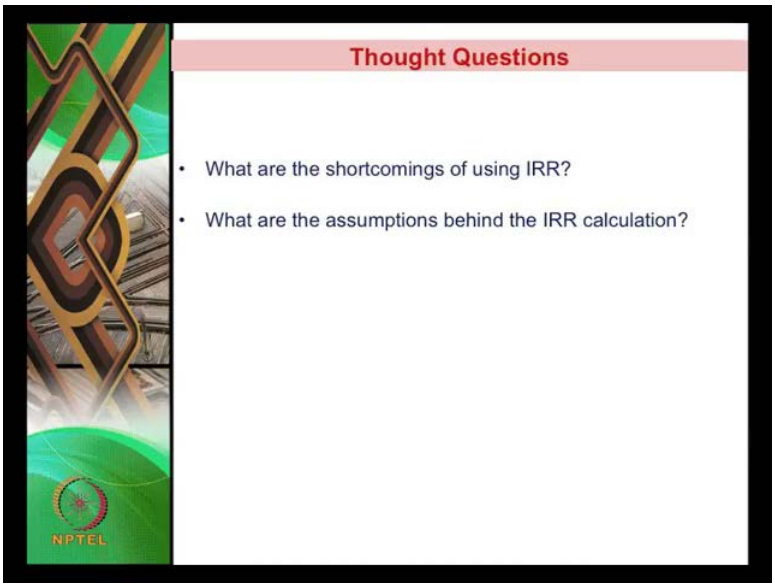

So, next thought question that we put for it was, what are the assumption behind the IRR calculation; remember it is very important, when we try and deploy methods, when we try and use a method, we have to really understand the assumption behind it. And we will also have to understand clearly the assumption behind the IRR calculations, so let us go back to the example that we will looked at, in case of IRR calculation.

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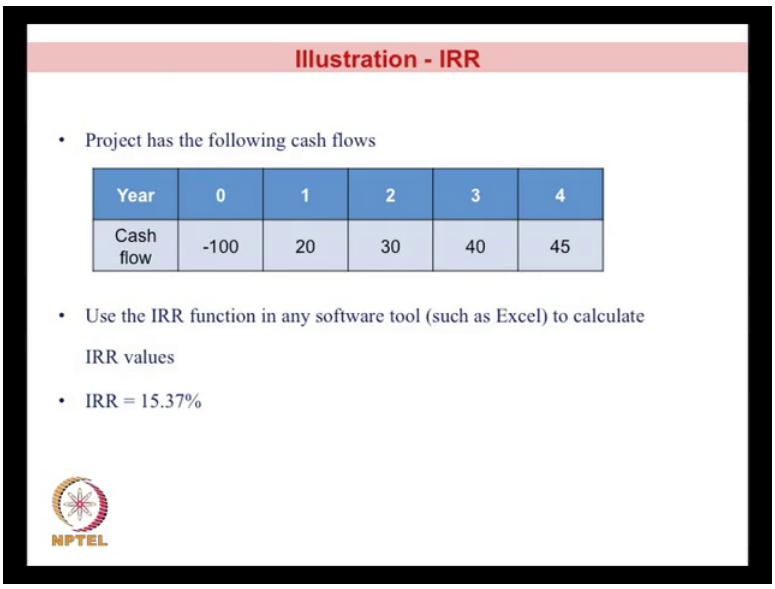

So, we will looked at the project that have the following cash flows, and we can actually determine the IRR using any software tools, such as Microsoft excel or Lotus to calculate

the IRR values of this project. And if you remember, we determine the IRR for this project to be 15.37. Now, important assumption behind this IRR calculation is that, all the intermediate cash flows that occur in the project life is again reinvested at the IRR rate of return.

So, for example, if you look at, this project gives a cash flow of 20 in year 1, 30 in year 2, 40 in year 3 and 45 in year 4. Now, the assumption when we actually use IRR is that, we actually reinvest the 20 that we get a year 1 at the IRR rate of return. So, that is, we are able to reinvest 20 in a year 1 at rate of 15.37 percent for remaining of the project life. Now, it is very important that, we have to realize, it is not always possible to find alternate investment opportunities that can give fairly high returns.

So, the project might actually give a return of 15.37 percent, but we may be finding it difficult to get alternating investment opportunities, where if you make a investment, we will get a return of 15.37 percent. So, unless until we are in a position to invest all the intermediate cash flow also at 15.37 percent, the project IRR would not be 15.37 percent, it will be substantial lesser.

So, if a project has an attractive IRR, let us say 15 percent, 18 percent, 20 percent, we should not really take it at face value. Because, we will be able to realize the IRR of 15 percent, 18 percent, 20 percent, only when we are able to reinvest the intermediate cash flows at the IRR rate of return.

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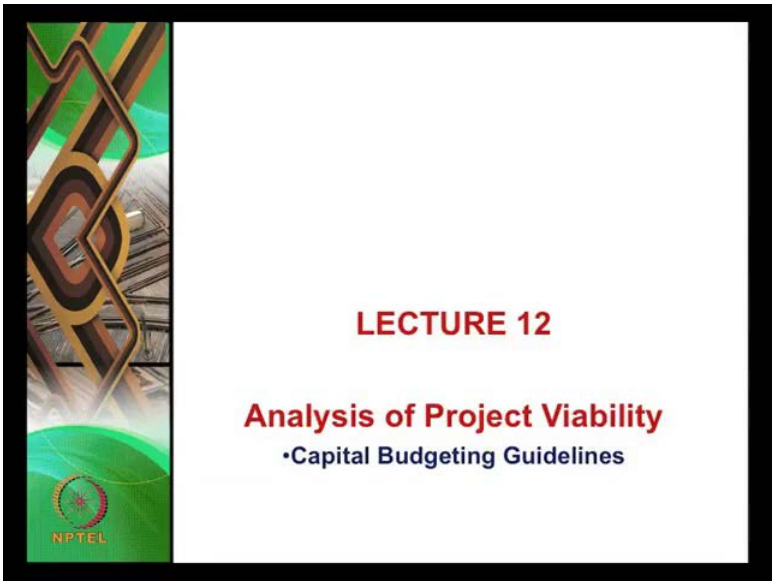

So, with this few observation on internal rate of return, let us go to the topic of the day, which is on talking about, how do you actually identify the cash flows. In essence, what will talk today is about capital budgeting guidelines.

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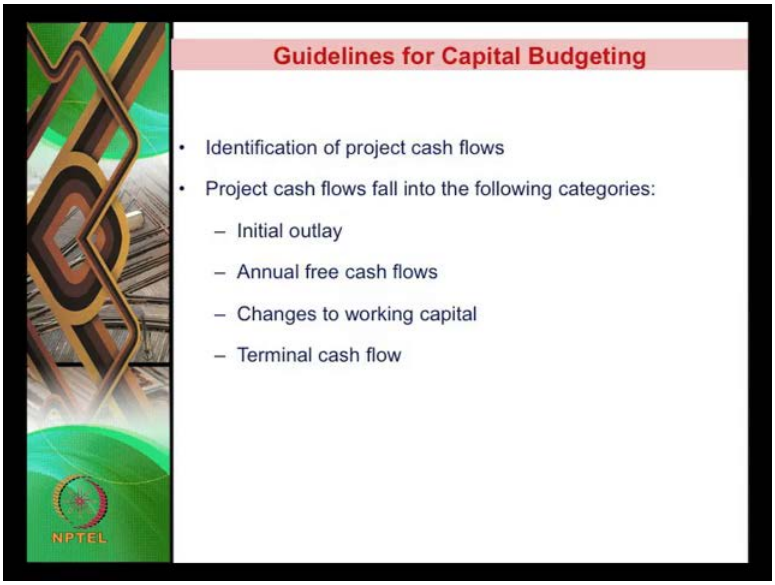

So, the first task that begins in a capital budgeting exercise is to identify the project cash flows remember, when we actually trying to do a capital budgeting exercise, we actually identify the cash flows and then we discount the cash flows at rate of return. And then we use any of the technique, let us say NPV or profitability index to determine, whether we should implement the project or not.

So, the first task rest with identifying the project cash flows, only when the project cash flows has been identified in different time periods, we will be able to use any of the discounting technique to find out the projects value. So, if you look at projects cash flows, they can be broadly classified into four categories, the initial outlay, the annual free cash flows, changes to the working capital and then the terminal cash flow. So, when we try and do capital budgeting excise, it is very important that we identify the cash flows for each of these four components.

Remember, it is important that, all the four components are clearly identified and calculated less. We actually miss out some of the cash flows, in which case we may not get the a proper decision on the project. So, let us look at each of these cash flows and

then discuses how do we determine each of these cash flows, let us start with the initial outlay.

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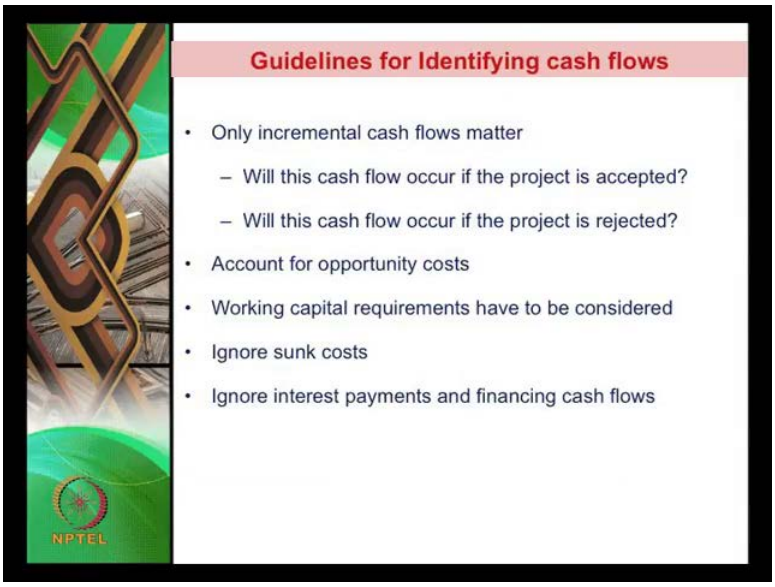

But, before that, let us also identify some important guidelines, in terms of calculating the cash flows. The first point that you need to be noted is, only incremental cash flows matter, when we trying to identify the project cash flows, we have to consider only those cash flows that are incremental, that cannot be attributed to the existing project. How do you actually identify, whether the cash flow is incremental or not, so there are two questions that will help us to determine, whether cash flows incremental or not.

The first question is, will this cash flow occur if the project is accepted, the second question is, will this cash flows occur if the project is rejected. So, the response that we get to this two questions will help us to determine, whether the cash flow is incremental or not. Now, what do we actually mean by an incremental cash flow, let us say we already have an existing power plant and we are trying to increase a capacity of the power plant.

So, the operating power plant results in some cash flows, results in some kind of revenues, now if you actually increase the capacity of the power plant, it will bring us additional revenues. Now, when we trying to do this capital budgeting decision, we should only consider those cash flows that are incremental that is, only those cash flows

that can be attributed to the increase in capacity. We should not consider the cash flows that are existing, that can be attributed to the plant with existing capacity.

So now, let us look at these two questions, will this cash flow occur if the project is accepted, so will the incremental cash flow occur if the expansion is undertaken yes, the answer is yes. Because, if the expansion is undertaken, we will have additional capacity and we will have additional cash flows occurring from the increasing capacity. Second question, will this cash flow occur if the project is rejected, now the project is rejected that means, we are not undertaken capacity expansion program.

And if the capacity is not expanded, we are not going to get the additional cash flows, that we would not get if the capacities increased, so the answer to the second question would be no, if the project is rejected. So, whenever we are getting an yes to the first question and no to the second question then we assume that, they all incremental cash flows.

Now, let us consider fact that, if we consider the complete cash flows of the expanded capacity of power plant. So, let us say, the capacity of power plant initially is 200 Megawatt, we are trying to expand to 400 Megawatt and if we consider the cash flows from the entire project capacity then will this questions give the correct answers. Now, will the cash flow occur if the project is accepted, yes the cash flow will occur if the project is accepted.

The answer to the second question is, will the cash flow occur if the project is rejected, the answer will be yes, because even if we reject the project, there is existing capacity, which will continue to generate revenues and resulting cash flows. So, if the answer is yes to both the questions then it is not an incremental cash flow, only if the answer is yes to the first question and no to the second question, it will be consider as an incremental cash flow.

So, when we determining the cash flows, it is remember it very clearly, consider only those cash flows that are incremental in nature, please do not consider the existing cash flows in your capital budgeting decisions. Second is, you have to account for opportunity cost, so what is opportunity cost, let us say for example, you have a particular piece of land, and you have leased out the land for a certain amount of money. And now, you are considering possibility of building a project in the empty land.

Now, when you build the project on the empty land or the vacant land then you cannot lease out the land for other purposes. So, essentially, you will not be able to get the lease revenue that your getting currently, so by trying to construct a building on the vacant land space, we are losing out the existing lease revenue from the empty land. So, the opportunity cost of building a constructed space is losing out on the lease income from the land.

So, whenever we are trying to make a capital budgeting decision, we will have to account for fact that, the increased in revenue will be because of constructing a new building. But, at the same time, you will not be getting the lease rental on the vacant land, so that should be considered as a cost, that should be considered as a outflow. And if you do not account for the opportunity cost then we will not able to make the proper decision.

And guideline number 3 is, you will have to account for working capital requirements, remember working capital requirements is a very, very important aspect of business. For a business to operates fairly unhindered manner, there has to be adequate amount of working capital, what are the components of working capital, components working capital is, inventory, accounts receivable and a certain amount of cash to meet the business exchanges.

Now, the inventory is needed to ensure that, there are description in the operation of a business, so it is an essential investment that is needed for the routine business operations. Similarly, customers should expect credit and if the credit is not given then it will be very difficult to actually engage with the customers and therefore, it might actually affect the revenues as well. So, we will have to consider for the fact that, there might be an addition working capital requirement that are needed with the implementation of the project.

And this increased in the investment in working capital needs to be considered, when we are identifying the cash flows. The fourth guideline is, we will have to ignore sunk cost, now what is the sunk cost, sunk costs are those costs that are incurred before starting the project. Before we actually considering the evolution of the project, cost that incurred in the past should not be accounted for in a future decision making. So, how do we actually

account for sunk cost, so sunk cost could be actually accounted by trying to answer the two questions that we posed earlier, will this cash flow occurs if the project is accepted.

Sunk cost is a cost that is already been incurred, it is not going to be incurred again, so if the project is accepted or not, does not really matter, this cash flow will not occur if the project is accepted. Look at the second question, will the cash flow occur if the project is rejected, again the answer is no, because this is a cash flow that was occur in the past. So therefore, the answer to both the questions is no then it is a sunk cost, it is not a incremental cash flow that will continue to incurred if the project is accepted.

So, whenever we are not very sure, whether it is an increment cash flow or whether it is sunk cost, it is better to post ourselves these two questions. And the responses to these two questions will help us to the determine, whether it is incremental cash flow or whether sunk cost. If it is sunk cost then we have to ignore sunk cost and if it is incremental cash flow, we include only those incremental cash flows. I hope now, you have broad clarity in terms of, what are the basic principle that we actually have to use in identifying the cash flows.

Another important component is, any cash flow that are pertaining to financing cash flows should not be consider. So, what are the financing cash flows, it could be the interest payments, it could be a principal repayments, it could be borrowing and so on and so forth. Now, these are all cash flows, these are all really cash flows, but this should not be considered when you are actually making your capital budgeting decision. Because, when a looking at interest payments, interest payments are essentially in the nature of cost of capital and we already include the cost of capital in the discount rate.

Remember, we actually have a cash flow occurring several years in the future and when we actually want to bring it to the present then we discounted at the cost of capital. Now, if you consider interest payment again as an expanse then we will actually be double counting the interest cost, double counting the cost of capital and again this will lead to errors. So, we should ignore the interest payment and cash flows related to financing and we should ensure that, all this five guidelines are I have just mentioned of to clearly adhere to. And if we need to be making an error free calculation on capital budgeting then we should not ignore or overlook any of these important guidelines.

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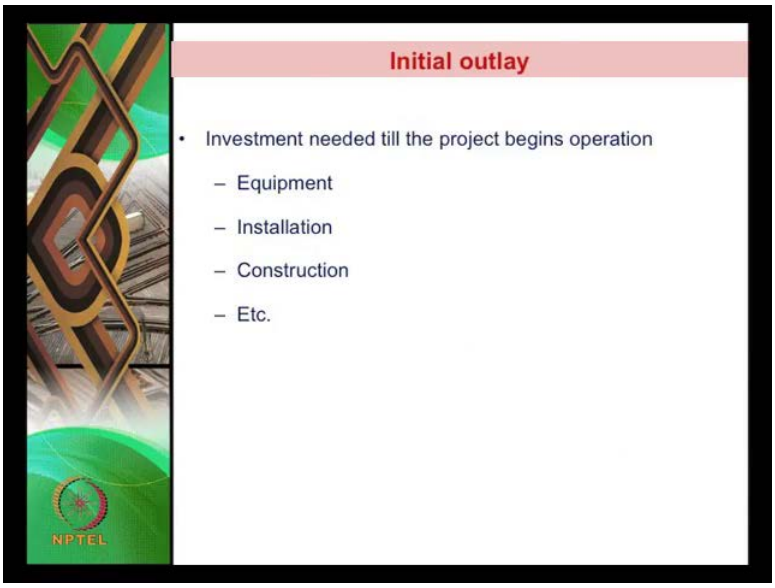

Next we will look at, trying to identify the cash flows, the four different cash flow component that we talked about while ago. Initial outlay, so what is the initial outlay, initial outlay is the investment that is needed till the project a begins operation. So, you may actually need the initial outlay for variety of purposes, so for example, you may actually want to buy a equipment, it could also be in terms of installing the equipment. So, many times you actually have to incur substantial amount of investment in installing equipment at the site.

Let us say for example, in the case of power generation plant, we actually get the equipment such as turbines, from the equipment manufacture. But then it has to be installed at the site and there is a lot of investment that is needed in terms of installing and testing the equipment at the site. So, this installation is also considered as a part of your initial outlay.

And then you have let us say for example, project which involves substantial amount of construction, it could be let us say, road project or an air port project, where in addition to all of this, there is a lot of construction related activities and investment needed. So, that is also considered as a part of your initial outlay, so essentially we have to understand the initial investment reader actually till the project begins operations is something that, we will have to account for as your initial outlay.

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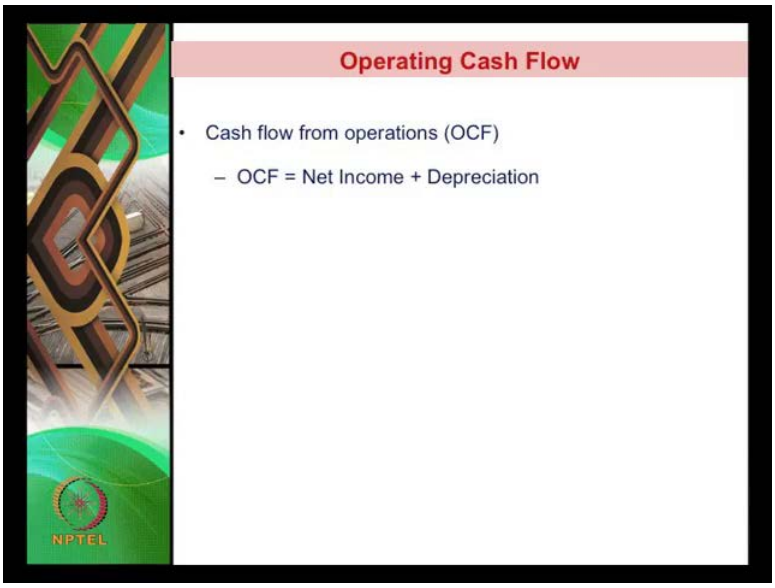

So, the next component is identifying the operating cash flow, so cash flow from operations begins from the time the project start producing a start offering services. So, how do you actually calculate the operating cash flow, so operating cash flows is nothing but net income plus depreciation. Now cash flow, it is very important for us understand that, cash flow is not revenues, revenues is actually the sale made by the company from it is product and services.

Now, the company will have to meet it is various operating expenses from the revenues, so in essence, there is actually a certain amount of cash inflows and revenues and there is certain amount of cash outflow in terms of expenses. So therefore, the cash flow that we actually get should be net of all of these expenses, only those cash flows are available for the investors. Revenues after meeting all the expenses, is what we actually have recourse to as investors.

So therefore, operating cash flow is not really revenues, but essentially it is net income that is, profit after tax and then we add back the depreciation. Now, why do we have to add back the depreciation, because depreciation is not really cash expense, it is not a really cash outflow and therefore, we will have to add the depreciation back to the net income. I will give you simple example so that, you can understand, how do we actually determine the cash flow from operation, from let us say our financial statement or a financial projection.

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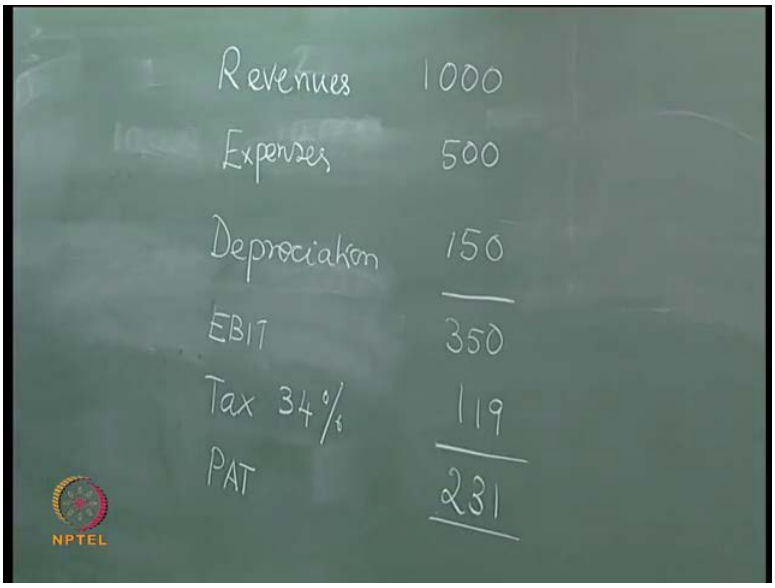

Let us say, there is a company, which has revenues of 1000, the company incurred several expenses, so the tune of about 500. And then the companies depreciation is 150, so therefore the earnings before interest and tax would be 350. Now, if the company actually has taken certain amount of loan then the company would need to pay interest on this earnings before interest and tax. So, in a normal profit and loss account, what you would find is, there are payments towards interest payment.

But, in a capital budgeting decision, we have discussed earlier that, we should not consider interest payments or financing cash flows. So therefore, we straight away determine the tax payments that needs to be made on this income. So, if you assumed that, the tax rate on this income is 34 percent, the tax rate is 34 percent then we pay a tax of 119 and the profit after tax, it becomes 231. Now, we will have to calculate the operating cash flow using this information that we have just indicate.

Remember, please do not consider interest expenses, we will striate away have to account for the tax at EBIT level and then determine your profit after tax. Even if the project is going to borrow, which will leads to some amount interest payments, we should not treat interest as an expanse, because of the fact that, we are considering this under the cost of capital when we discount the cash flows. So now, the operating cash flow is going to be profit after tax plus your depreciation.

So, profit after tax is nothing but net income that is, income net of all expenses, so the operating cash flow for example, that we have stated is 231, which is profit after tax and then the depreciation of 150. So, the operating cash flow is 381, so operating cash flow is not revenues, operating cash flow is not profits, operating cash flow is simply, sum of net income plus depreciation, which is 381. So, when we actually calculating our estimating of operating cash flows, this is the way, which it need to be estimated.

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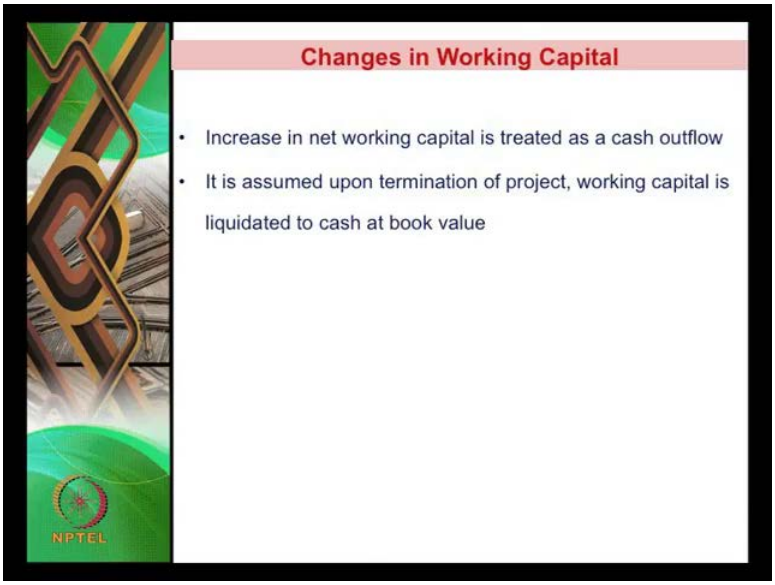

Next we consider the changes in working capital, so working capital changes is treated as changes to cash flow. For example, if you actually increase in working capital, specifically if in a increase networking capital, it is treated as our cash outflow, because the investment that is actually made in working capital is not available for any other purpose. Unless until the working capital is liquidated, the investment is stuck and the cash that is used for the purpose of making working capital investment is not available for any other purpose.

So therefore, any increase in working capital is treated as a cash outflow, let us say for example, the company is increasing it is inventory levels. When the company is increasing the inventory levels, the current assets increase and obviously, when the company stocking up increase inventory, it needs to pay more for accumulating that inventory. So, in essence, though the cash does not leave the company, when the cash

leave the company but then it is transformed in some form of current assets, in this case it is transformed as an inventory.

So, these cash is not available for use for any other purpose, so therefore, we consider any increase in networking capital as a cash outflow. Now, by the same token, any decrease in networking capital is also treated as a cash inflow. Let us say for example, if there is an increase in accounts payable that means, current liability is increasing then the networking capital will reduced. Networking capital is nothing but current assets minus current liabilities, now current liabilities is increased then the networking capital will reduce.

So, this increase in current liabilities or reduction network capital is treated as a cash inflow, because when we are delay in making payments to our suppliers, the cash is available for use for some other purpose might, therefore it is treated as a cash inflow. Another important points that need to be noted is upon termination of project, upon the project reaching it is in life, the working capital is assemble liquidated to cash at the book value.

So, whatever investment that has been made in working capital, is assumed to be liquidator at book value, because at end of the project life, we no longer need those investments in current assets. Why do you actually need to invest in inventory, we no longer need suppliers, who need to supply material to us, so therefore there is no investment needed in working capital at the end of project. So, we assume that, we going to liquidator all the working capital investments and treated as a cash inflow on termination of the project. Now, if you not able to or if you miss accounting for this liquidation working capital upon project termination then we are missing an important part of our project cash flows and there could be errors in our decision making.

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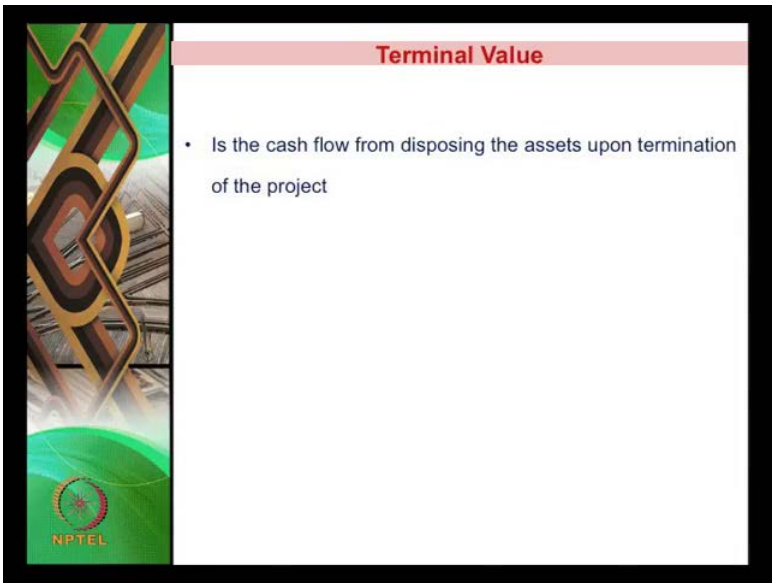

And the final aspect of cash flow is your terminal value, so the terminal value is nothing but the cash flow from disposing the assets upon termination of the project. So, let us say project has a life of 5 years, at the end of 5 years, the assets that we have initially constructed, the initial outlay that we have initially made has no other use. So therefore, we can liquidate all the initial investment, we can liquidate all the assets and treated it as a cash inflow.

So, the terminal value would be either salvage value, if you disposing of the assets upon termination of the project. So, it is very important that, we also account for that, when if the project is not have any salvage value then the terminal value becomes 0. But, on other hand, if you are able to sell the asset in the market even at the scrapped value then we should be able to bring in that terminal value as the project inflow upon project termination.

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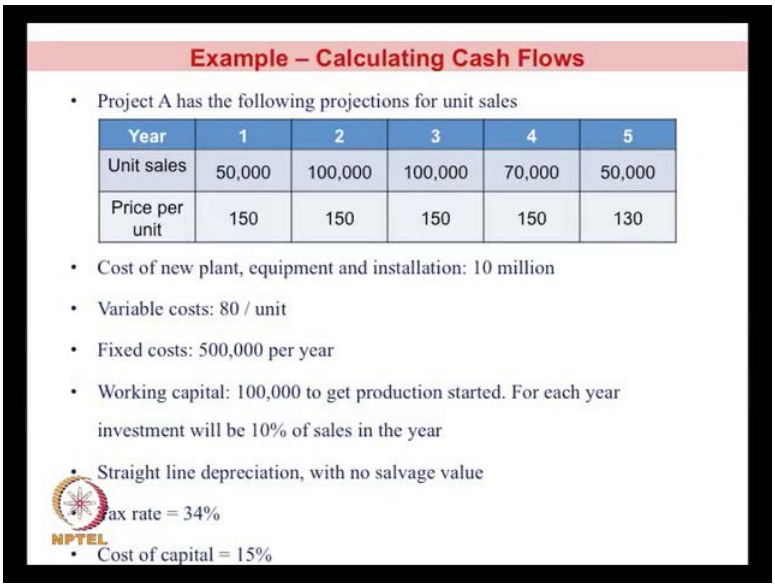

Now, let us look at simple example for calculating cash flows, so the example is a project which has 5 year life and in each of the years, it is making certain amount of sales. For example, in year 1, the project is able to sell 50000 units and the price per units is 150, there are some cause associated with setting of the project. So, the cost of the new plant equipment and installation is 10 million, so for running the project, for running a plant, there are some cause that are incurred on yearly basis.

For example, there are some fixed cost to the tune of about 500000 every year and then there are certain amount of variable cost, which depends upon the number of units that are produce in a given year. So, the variable costs are about 80 per unit, in addition to that, there are some investment needed in working capital. For example, to begin the project, there is a need for working capital investment of about 100000 and then subsequently every year, the investment in working capital will be to the tune of about 10 percent of sales of particular year.

So, it is a very standard assumption to make that, as a company increase in size, there would be additional investment needed in working capital and it is also usually approximated for ease of calculation that, working capital can be considered as a function of the firm sales. So, if the firm sales increases then people normally assume increase in working capital as a percentage of the sales value.

So, in this case, we assume that, the working capital investment for any particular year, when the project is in operation is 10 percent of the sales done for the particular year and the project will follow as straight line depreciation with no salvage value. So, that means, at the end of the project life, the assets do not have any value, even if dispose of the assets, we will not get any cash from the disposal. So, there is no salvage value, there is no terminal value in this particular project.

So, this is the just illustration, very rarely you will actually find a project with no salvage value. In most cases, there will be at least some scrapped value, which one can get by disposing of the assets and then we also assume that, the tax rate is 34 percent and then we can also assume that, the cost of capital for the project is 15 percent. Now, with this information, can we actually calculate the different type of project cash flow, so let us start with one by one.

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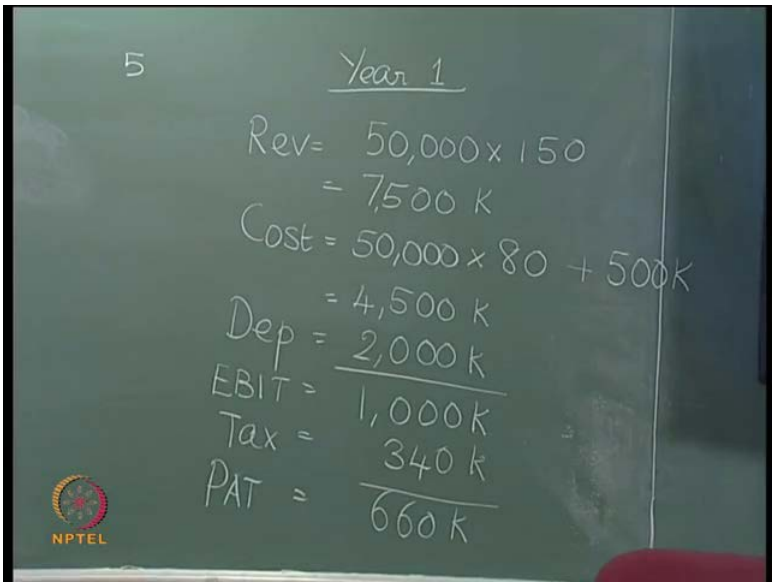

So, first is, we will start putting the different years and we will start with the different cash flow assumptions, we will start with the initial. So, the initial outlay, the initial investment needed the beginning of the project, so the initial outlay which happens in the year 0 will be 10 million. Let me state everything in terms of thousands, the initial outlay will be 10 million, so this completes identification of the first cash flow stream, which is your initial outlay.

Then, we will actually have to account for your operating cash flows, we will have to account for your operating cash flows. So, what are the operating cash flows, operating cash flows are nothing but the profit after tax plus your depreciation. So, for each of the years, we will have to determine the profit after tax and then your depreciation. So, what is the profit after tax for year 1, so I will give a illustration for year 1 and have you to determine the operating cash flows for the remaining years.

In year 1, revenues are nothing but the number of units sold multiplied by the selling price per unit. So, number of units sold is 50000 in year 1 multiplied by the selling price per unit, 150 and this will actually give you revenues of 7500, so 7.5 million. And then we will have to account for the cost, cost is nothing but the summation of the variable cost and the fixed cost. Variable cost is 50000 multiplied by a number of units that is produced 80, which is our variable cost per unit plus 500000 and the total cost will works out to be (Refer Slide Time: 40:30) then we have what is called as your depreciation.

So, depreciation is a straight line depreciation with no salvage value so that means, we assume that, the initial outlay is depreciated equally for all five years. So, we made an initial outlay of 10 million and this 10 million is depreciated equally in all five years. So that means, for every year, the depreciation is 2000, so this leads to earnings before interest tax of 1 million or 1000 K. And we consider the tax to be 34 percent, will be 340 K and then your profit after tax be 660.

So, this is the projected profit after tax for year 1 and we will have to calculate the operating cash flows, see operating cash flows are nothing but the profit after tax plus depreciation. So, this will be 660 plus 2000 K and this will be 2660 K. So now, we can actually using the same procedure, calculate the operating cash flows for remaining years. So, we can calculate it for the remaining years and this turns out to be 4970 in year 2, 4970 in year 3, 3584 in year 4 and 2000 K in year 5.

So, you will have to find out the revenues and cost that we did it for year 1, for each of the five years and then add up the net income for the respective years with depreciation of that year to calculate the operating cash flows for each of the years. So, we have completed two cash flow streams, the third cash flow stream would be changes to working capital. So, changes to working capital are nothing but initially we will have to incurred a investment in working capital of 100000 and then for every subsequent year,

the working capital investment is 10 percent of sales. So, for year 1, if you look at it, the sales is 7.5 million and therefore, working capital investment in year 1 will be 750 K. So, like that, we will have to determine the working capital investment for each of the years, which will be 10 percent of revenues.

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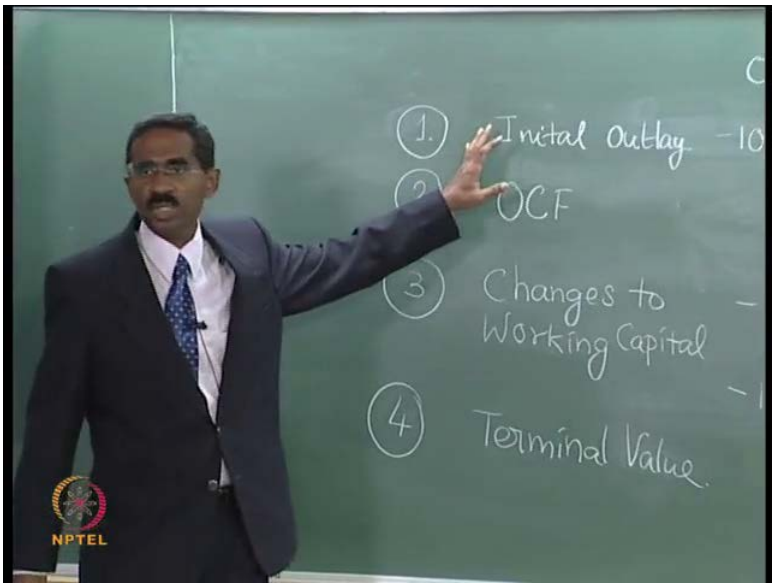

So, the changes to the working capital would actually be consider as having a implication on cash flow. If there is an increase in working capital so that means, there will be a reduction in cash flow, if there is a decrease, there is going to be an increase in cash flow. So, in year 0, we are making initial investment in working capital of 100 K, so therefore this is the cash outflow of 100 K. So, working capital increases from 100000 to 750000 to year 1 so that means, there is a difference, there is an increase of 650. So, the change in working capital is 650 in year 1 and since there is an increase, this is consider as a cash outflow, so therefore, we denote it by a negative sign.

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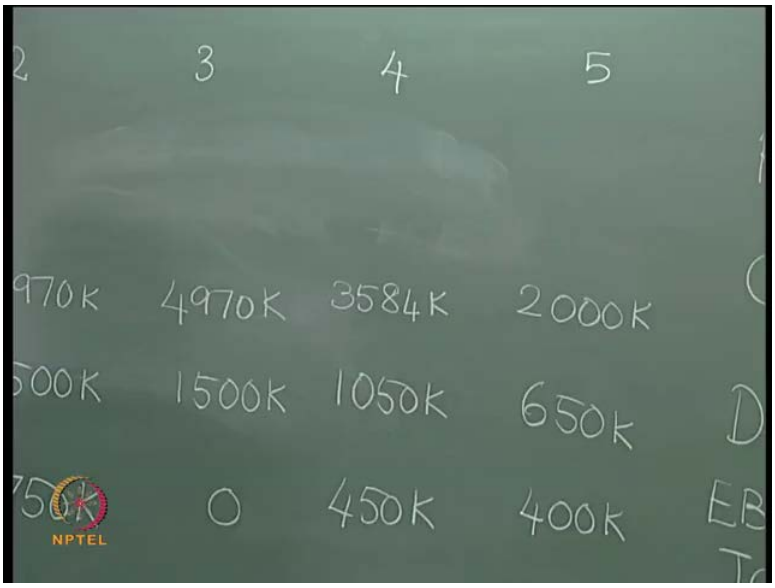

In year 2, it increases from 750 to 1500, there is an increase of 750, so there is an increase of 750 and since an increase is considered as a cash outflow, it denoted by a negative sign. There is no change from year 2 and 3, so there is no change in working capital, so it is 0 and from year 3 to 4, there is a actually reduction in working capital, that is considered could not to that of a cash inflow, there is an reduction by 450000. So, since this reduction till as the cash inflow, it is positive and in year 5, there is a reduction working capital, which is your 400 K.

And we also assume that, upon project termination, the enter working capital will be liquidated and then it will have to be treated as cash inflow upon project terminations. So therefore, in year 5, the changes in working capital will be 450000 plus 650 and this will be 105. So, this is the third component that is, the changes in working capital that affects your project cash flows. So, it is minus 100000 in year 0 and then subsequently we have for the respective years and then the fourth would be the terminal value.

So, that terminal value, we assume to be 0, because the assets do not have any salvage value. Upon disposal on project termination, we get nothing, so in this case, the project terminal value at the end of project life become 0. So, for a project that we have looked as an example, these are the cash flows for each of the different cash flows streams, for initial outlay, for operating cash flow, for changes to the working capital and then your

terminal value. Now, in next lecture, we will try and see, how we actually use this different cash flow streams to make a decision on to invest in this project or not.