

FINPLAN

Hands-on 2: FINPLAN Interface

Learning outcomes

By the end of this exercise, you will be able to:

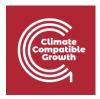
- 1) Understand the FINPLAN interface.
- 2) Explain various streams/items of the FINPLAN interface.
- 3) Learn how to introduce data for a case study in FINPLAN.
- 4) Learn how to build a case study in FINPLAN.

Activity 1

Initial Data on a Coal Power Project

In this section, we will present the FINPLAN interface by building a case study for a power plant. This power plant is based on imported coal to be built in Malaysia. First, we describe the data related to the power plant.

Exchange rate	Ringgit/US\$	3.2		Phasing of the investment	Foreign (%)	Local (%
Plant size	MW	500		2013	10	30
Plant life	Year	30		2014	30	30
Capital cost	\$/kW	1500				
Total investment	Million US\$	750		2015	40	20
Local currency share	%	20		2016	20	20
Foreign currency share	%	80		Phasing of the investment	Foreign (Million	Local
Local component of investment	Million US\$	150	480 million Ringgit	i namb or the intestment	• •	
Foreign component of investme	ent Million US\$	600			US\$)	(Millior
				2013	60	144
Base year	Year	2012		2014	180	144
Construction period	Year	4		2015	240	96
Start year	Year	2013		2016	120	96
Finish year	Year	2016		Total	600	480



The size of the power plant is 500 MW. Total investment requirement is 750 million US dollars. Plant machineries will be imported from the US, for which the payment will be made in US dollars. Financial analysis is carried out in the year 2012; therefore, the base year of the study is 2012.

Malaysian currency is the ringgit. The exchange rate in the base year is 3.2 Malaysian ringgit per dollar. 20% of the investment cost is a local component to be paid in local currency, whereas 80% of the cost is a foreign component. Therefore, the local component is 150 million US dollars, or 480 million Malaysian ringgits, which will be used to pay for land, civil works, utilities, connecting the power plant with the grid, etc. The foreign component is 600 million US dollars.

It will take four years to build the plant. Construction starts in 2013 and finishes in 2016. The plant goes online in 2017. The life of a plant is 30 years. Therefore, the plant operates till the year 2046.

Disbursement of investments, during the construction period, are displayed for both local and foreign components, in percentage terms as well as in absolute values.

As seen in the table below, the plant's capacity factor is 85%; thus, the plant generates 3,723 GWh. The plant's own consumption is 6% and net electricity available for sales is 3,499 GWh. Operating and maintenance cost is 10 dollar per MWh. As the plant generates 3,723 GWh annually, therefore, the annual operating and maintenance cost is 37.23 million US dollars, or in local currency, 119.13 million ringgits.

Operating and Maintenance	e Costs	
Unit size	MW	500
Capacity factor	%	85
Power generation	GWh	3723
Plant's own consumption	Fraction	0.06
Sales	GWh	3499.62
O&M cost	\$/MWh	10
Annual O & M cost	Million US\$	37.23
Annual O & M cost	Million Ringit	119.136

Regarding the fuel costs, the plant will import coal at a price of 110 US dollars per tonne. The calorific value of coal is 25.1 GJ/tonne. Thermal efficiency of the plant is 0.37. Therefore, heat rate is calculated as 9.73 MJ/kWh. Considering the calorific value of coal, coal consumption per kWh is 0.39 kg. As the plant generates 3,723 GWh/year, annual coal consumption in the plant is 1.4 million tonnes. Therefore, annual fuel cost is 158.7 million US dollars. This will remain in dollars as the plant has to make the payment in foreign currency.



Fuelcosts data and cald	ulations	
Coal price	US\$/tonne	110
GC∨ of coal	GJ/Tonne	25.12
GC∨ of coal	MJ/kg	25.12
Plant size	MW	500
Capacity factor	%	85
Electricity generation	GWh/year	3723
Thermal efficiency	fraction	0.37
Heat rate	MJ/kWh	9.73
Coal consumption	kg/kWh	0.39
Total coal consumption	Million tonnes/year	1.442
Fuel cost	Million US\$/year	158.7

Create a New Case Study in FINPLAN

We assume you have FINPLAN software working on your computer. Once you click the FINPLAN icon, this screen appears. Please click the start button.



Once you click the Start button, the following screen appears. On the left side, the menu offers several options like "Open/Create Case Study", "Copy Case Study", etc. Let us concentrate on the "Create Case Study" option, as we want to build a new case study. Another screen appears, which must be filled up.



FINE A Model for Financial Analy	bis of Electric Sector Expans	Planning & Eco
HOME CASE STUDIES		
Menu	Open/Create Case Study	
Open/Create Case Study		
Copy Case Study	Select an exist	ing Case Study from below:
Delete Case Study	Charles an exist	and a second
Backup Case Study		•
	or you can Create a New	r Case Study
A Model for Financial Analy HOME CASE STUDIES Menu	PLAT vsis of Electric Sector Expan New Case Study	Planning & Eco sion Plans D
Open/Create Case Study		
Copy Case Study	Full Name of Study:	
Delete Case Study Backup Case Study Restore Case Study	Note about this Study:	
	Starting Year:	
	Ending Year:	
	Study Type:	Single Plant ·
	Local Currency:	Local Currency
		Please Select Foreign Currencies

Describe the New Case Study in FINPLAN

In the box, "Full Name of Study", write the name of the case study, let's say "Democase 1". A short description about the study can be written in the box called "Note about the study". Here we have written "Demonstration of FINPLAN interface with a coal-based power plant project".

Then you need to choose the first year of the study, that is the year of the analysis, which is also the base year. We chose here 2012. The base year should preferably be a normal year, free from any major macro-economic and financial events. You need to define the study horizon by choosing the last year of the study that covers the analysis period. We chose here 2046 as the last year of the plant life.

The next item regards study type, you can choose between "Single Plant" or "Utility". With FINPLAN, one can analyse the project financing, as well as corporate financing or balance sheet financing option, for financing a new project. These two types of financing mechanisms are



described in the lectures. Selecting "Single Plant", you choose a project financing option. By selecting "Utility", you choose the corporate financing option for financing a new project.

al Analysi	s of Electric Sector Expans	J Ion Plans., Case Study: Democase 1	Planning & Economic Department
	Full Name of Study:	Democase 1	
	Note About This Study:	Demonstration of FINFLAN interface with a coal based power plant project	
nation	Starting Year:	2012	
	Ending Year:	2046	
	Study Type:	Single Plant •	
10000	Local Currency:	Malaysian Ringgit -	
		Please Select Foreign Currencies	
t	Local Currency Afghanistan Afghani Albanian Lek Algerian Dinar Andorran Franc Andorran Peseta Angolan New Kwanza Angolan New Kwanza Argentine Peso	Add >> Remove << Remove All	

As FINPLAN carries out all computations in domestic currency, please choose your domestic currency. For the demonstration purpose, we chose here Malaysian Ringgit.

If you scroll down the same screen, you will see the option "Please Select Foreign Currencies". Most of the developing countries import major components of the power plant and need foreign currency to pay for that. Foreign currencies are obtained from the foreign sources through loans or by other means, and they also need to be repaid in foreign currency.

		close benes broue	
ites	Note About This Study:		-
formation	Starting Year:	2012	
	Ending Year:	2045	
t&	Study Type:	Single Plant	(A) Include Sec.
	Local Currency:	Malaysian Ringgit	
		Please Select Foreign Currencies	
t ta	Turkmenistan Manat Turkmenistan New Manat Uganda Shilling Ukraine Hryvnia Uruguayan Peso	Add >> Remove <<	
er Income	Utd. Arab Emir. Dirham Uzbekistan Som US Dollar	Remove All	
er meome	Vanuatu Vatu Venezuelan Bolivar	*	
		Save & Proceed	
5			

FINPLAN has provisions for foreign sources of financing. By clicking the currency and then the "Add" button, you can choose the foreign currency you want. We chose the foreign currency as "US Dollar". It is possible to select multiple foreign currencies. Afterwards, click the button "Save and Proceed" to save the data on the screen and move to the next screen. Do not forget to click the save button, otherwise you will lose your data.



Introduce Case Data - Inflation

Now, if you look at the screen's left side, data inputs in FINPLAN are organized under three headings: "Case Data", "Plant Data", and "FinManager". Once you complete your data input, press the button "Calculate", this area will be explored further in later hands-on exercises. The results of the calculations can be seen under the heading "Results".

	PLAN	Ion Plans Case Study: Democase 1	Planni
HOME CASE STUDIES	General Information		
Case Data	General Information		
Plant Data			
FinManager	Full Name of Study:	Democase 1 Demonstration of FINPLAN interface with a coal	
Calculate		based power plant project	
Intermediate Results	Note About This Study:		
Results			
	Starting Year:	2012	
	Ending Year:	2046	
	Study Type:	Single Plant -	
	Local Currency:	Malaysian Ringgit 🔹	
		Please Select Foreign Currencies	
	Local Currency Afghanistan Afghani Albanian Lek Algerian Dinar Andorran Franc Andorran Peseta Angolan Kwanza Angolan New Kwanza Argolan New Kwanza	Add >> Remove << Remove All	*

Since we have defined the case study, now we must fill in the other data. Under the "Case Data" menu, click the button "Inflation Information", where you need to provide current and future inflation information for domestic currency and all foreign currencies you have included for the analysis. Here, we have only one foreign currency, the US dollar, which has appeared side by side with the domestic currency. It should be noted that FINPLAN makes all calculations in domestic currency and current prices using inflation data.



HOME CASE STUDIES			
Case Data	Inflation Information	on	
General Data	Year	US Dollar	Malaysian Ringgit
General Information	2012(1st Year)	2.2 %	5.5 %
Inflation Information	Join(ist rear)		
Currency Exchange Rates		Steady Rate 3 % per year	Steady Rate 4 % per
Taxation Data		C Yearly Inflation Rate (%)	C Yearly Inflation Rate (%)
Tax & Depreciation Information	2013		
Royalty Payment	2014		
Initial Balance Sheet & History	2015		
Initial Balance Sheet	2016		
Old Commercial Loans	2017		
Old Bonds			
Committed Investment	2018		
Sales & Purchase Data	2019		
Consumers Contribution &	2020		
Deposits	2021		
Fixed Revenues & Other Income Sales Data	2022		
Purchase Data			
Plant Data	2023		
	2024		
FinManager	2025		
Calculate	2026		
Intermediate Results			
Results	2027		9

Inflation rate in percentage per year for the base year, which is 2012 in this case, needs to be filled up first, for both currencies. We have put respectively 2.2 and 5.5, which were the respective inflation rates in 2012 in the USA and Malaysia.

For future inflation rate, there are two options. Choose the "Steady Rate" option if future inflation rate remains constant per year over the study period. If the future inflation rate varies every year over the study period, then select "Yearly Inflation Rate" option. Once you click the "Yearly Inflation Rate" option, you can fill the future annual data on inflation rate in the empty boxes. Here we have chosen the "Steady Rate" option. Future inflation rate of the US dollar will remain constant at 3% per annum for the entire study period and for the domestic currency the figure is 4% per annum. Then click the button "Save and Proceed".

Activity 5

Introduce Case Data – Currency Exchange Rate

Next, by clicking the button "Currency Exchange Rates", the following window appears. FINPLAN makes all calculations for domestic currency using this exchange rate data. Here we have used only one foreign currency, US dollar; therefore, the exchange rate information for the US dollar in terms of the domestic currency, Malaysian ringgit, needs to be provided for the base year, as well as for future years. Exchange rate for the base year 2012 is 3.2.



		N T	
FINP			
A Model for Financial Analys			udu: Democrat
A model for Financial Analys	is of Electric Sector	expansion Plans Case sc	udy: Democasei
HOME CASE STUDIES			
Case Data	Exchange Rate Data	1	
General Data			
General Information	Year	Malaysian Ringgit (Per	US Dollar)
Inflation Information	2011	(For Init	ial BalanceSheet)
Currency Exchange Rates	2012 (1st Year)	3.2	
Taxation Data		C Steady Change	% Per Year
Tax & Depreciation Information		• Exchange Rate Refle	ects Inflation Rates
Royalty Payment		Yearly Exchange Rat	
Initial Balance Sheet & History	2013		
Initial Balance Sheet	2014		
Old Commercial Loans	2015		
Old Bonds			
Committed Investment	2016		
Sales & Purchase Data	2017		
Consumers Contribution &	2018		
Deposits Fixed Revenues & Other Income	2019		

For data on future exchange rate, there are three options:

- **1.** "Steady Change" in percentage per year, which means the foreign currency exchange rate will change at a constant percentage rate per year.
- 2. "Exchange Rate Reflects Inflation Rates" which implies exchange rate will appreciate or depreciate at the rate of difference between the inflation rates of foreign currency and domestic currency. In this case, future inflation rates for the dollar and ringgit are assumed as respectively constant at 3% and 4% per annum. Therefore, domestic currency will depreciate at the rate of 4 minus 3, that is 1% per year.
- **3.** The third option is the "Yearly Exchange Rate". In case the user has a projection for the exchange rate for all future years, he/she can use this option.

Here, we chose the second option, that is "Future Exchange Rate Reflects the Inflation Rates".

Activity 6

Introduce Case Data – Tax and Depreciation

The next set of data regards taxation. If you click the "Tax & Depreciation Information" button, the following screen appears. In case of balance sheet financing, the existing company has a balance sheet; therefore, data on the yearly depreciation rate of existing assets are required. However, for project financing, this is not needed as the company is new and there are no existing assets.



FIND FINANCIAL ANALYS			: Democase1	
HOME CASE STUDIES				
🖬 Case Data	Tax Information			
General Data General Information Inflation Information	Yearly Depreciation Rat	e for Existing Assets Value Addeo Tax) *)	
Currency Exchange Rates	VAT on Investment	-	~	
Taxation Date	VAT Rate for Investment %	% of Investment		
Tax & Depreciation Information		Income Tax		
Royalty Payment	Tax Loss should	Low III Start-Year	(Hillion Halovsian Ri	negit)
Initial Balance Sheet & History	be carried forward Tax Rate	(Yearly Input)	Steady Rate (%)	
Initial Balance Sheet				
Old Commercial Loans				
Old Bonds	Year	Tax Rate (%)		
Committed Investment	2012			
Sales & Purchase Data				
Consumers Contribution B	2013			
Deposits	2014			
Fixed Revenues & Other Income	2015			
Sales Data				
Purchase Data	2016			
Plant Data	2017			

Most countries impose value added tax on purchase of equipment, materials, etc., which are the components of the investment of the construction of new power plants. If VAT is applicable, then please tick the box "VAT on Investment". Also provide the data on VAT rate. We assumed 10% as the VAT rate for Malaysia.

It is possible that VAT is not applicable to the entire investment amount. For example, some components can be exempted from VAT by the country's tax policy. In that case, please mention the percentage amount of investment under VAT. Here we assumed VAT is applicable to the 80% of the total investment expenses.

FINAL FINAL ANALY		nsion Plans Case Study: Democase1
HOME CASE STUDIES	Tax Information	
Case Data	Tax mormation	
General Data	Yearly Depreciation Rate	e for Existing Assets (%)
Inflation Information		Value Added Tax
Currency Exchange Rates	VAT on Investment	
Taxation Data	VAT Rate for Investment 10 %	% of Investment 80
Tax & Depreciation Information		Income Tax
Royalty Paymont	Tax Loss should be carried forward	Loss in Start Year (Million Malaysian Ringgit)
History	Tax Rate	Yearly Input [®] Steady Rate 25 (%)
Initial Balance Sheet		
Old Commercial Loans		
Old Bonds Committed Investment	Year	Tax Rate (%)
	2012	
Sales & Purchase Data	2013	
Consumers Contribution & Deposits	2014	

Tick "Tax loss should be carried forward" if your country allows this. What is tax loss to be carried forward will be explained later, while interpreting the results.

FINPLAN provides two options for the input of data on income tax or corporate tax: "Yearly Input", when tax rate varies from one year to another, and "Steady Rate", when tax rate remains the same



for all the years. If you click the "Yearly Input", then it allows you to fill the year-wise tax rate data. We chose the "Steady Rate" option and set the corporate tax rate as 25%, which is the current corporate tax rate in Malaysia.

Activity 7

Introduce Case Data – Royalty Payment

If you click on "Royalty Payment", this screen appears. Royalties are usage-based payments made by one party, the "licensee", to another, the "licensor", for the right to ongoing use of an asset. This could be an intellectual property, patent, trademark, copyrights, or even resource. Royalties are typically agreed upon as a percentage of gross or net revenues, derived from the use of an asset or a fixed price per unit sold of an item of such an asset, but there are also other modes and metrics of compensation.

FINPLAN allows two modes for royalty calculation. When only "Royalty Rate" is used, FINPLAN calculates royalty using royalty rate as percentage of total revenue.

🗖 Case Data	Royalty P	ayment	
General Data			
General Information	Year	Malaysian Ringgit	
Inflation Information		Royalty Rate(%)	% of Cost
Currency Exchange Rates	2012		1
Taxation Data	2013		
Tax & Depreciation Information			
Royalty Payment	2014		
Initial Balance Sheet &	2015		
History	2016		
Initial Balance Sheet	2017		
Old Commercial Loans			
Old Bonds	2018		
Committed Investment	2019		
Sales & Purchase Data	2020		
Consumers Contribution & Deposits	2021		
Fixed Revenues & Other Income	2022		
Sales Data	2023		
Purchase Data			
Plant Data	2024		
FinManager	2025		
Calculate	2026		
Intermediate Results	2027		
Results	2028		

FINPLAN also can subtract a certain percentage of total operating cost from the revenue to calculate net revenue, and then royalty rate is applied to the net revenue to calculate the royalty. In that case, in addition to royalty rate, data on percentage cost are required. For this power plant, we assume royalty is not applicable.



Introduce Case Data – Initial Balance Sheet and History

The next set of data regards the "Initial Balance Sheet and History". Since we are currently developing a project financing case, this is a new company and does not have an existing balance sheet. So, we skip this step.

FINAL A Model for Financial Analy	Data of P			ins Cas	e Study:	Democase 1
General Data General Information Inflation Information Currency Exchange Rates Taxation Data Tax & Depreciation Information Royalty Daymont Initial Balance Sheet & History Initial Balance Sheet Old Commercial Loans Old Bonds Committed Investment Sales & Purchase Data Consumers Contribution & Deposits Fixed Revenues & Other Incomi Sales Data Purchase Data	No Recor	Туре	Status	Action		

Activity 9

Introduce Case Data – Sales and Purchase Data

The next item is data related to "Sales & Purchase". Under this heading, the first component is "Consumers Contribution & Deposits". In some countries, consumers make a contribution to the cost of plant construction. Existing utilities can also have a large amount of consumers' deposit as security of connection. FINPLAN models consumers' contribution and deposits, and data are provided under "Consumers Contribution & and Deposits". However, since the current plant is built under a new project company like Independent Power Producer (IPP) and does not sell electricity directly to the consumers, the consumers' contribution is ignored. Plants may have sources of revenue other than from the electricity sales which could be included. However, in this case we ignore that. Next, we click on "Sales Data", and the following window appears.



If you click "Add New Data", the following screen appears, which we fill with data. The first data requirement is on the product name. FINPLAN allows it to model power plants producing various types of products in addition to electricity, such as water, heat, etc. For each of these products, one data screen needs to be defined. We chose only electricity here.

HOME CASE STUDIES	Sales Data		
General Data General Information Inflation Information Currency Exchange Rates	Excellence of the second second second second	Sian Hi / Delete	
faxation Data	1		
Royalty Payment	Product Name & Units	Electricity (GWh)	
nitial Balance Sheet &	Client	MUC	
listory	Currency	Malaysian Ringot 💌	
Initial Balance Sheet	Quantity	* Yearly Data C Fixed	
Old Commercial Loans Old Bonds			
Committed Investment	Price for First Year	Per kWh	
Second Contractor Contractor	2	Prica	10
ales & Purchase Data		Yearly Current Price	
Consumers Contribution & Deposits	· ·	Yearly Price Change Relative to Inflation	
Fixed Revenues & Other Income		Standard Change Relative to Inflation (%)	
Sales Data			-
Purchase Data			
D FinManager	Year Quantity	Current Price / Price Change Relative to Inflation	
Calculate	2012		
Contract of the second s	2013		
Intermediate Results	2014		
E Results	2015		
	2016		
	2017		
	2018		

FINPLAN also allows Power plants to sell electricity to different customers at different quantities and prices; however, again for each customer, one data screen needs to be defined separately. We select one customer, the Malaysian Utility Company (MUC).



To reduce the exchange rate fluctuation risk, sometimes IPPs demand prices in foreign currency. Therefore, FINPLAN can represent electricity price in local as well as foreign currency. We chose the local currency ringgit.

The quantity of electricity to be sold can be presented as a fixed quantity or as yearly data when sales quantity varies from year to year. We suggest not to choose the fixed quantity as it creates some error. The fixed quantity can be dealt with through yearly data, just write the number for one year and FINPLAN recognises the quantity as the same for all years. Here we write the number for 2017, which is the first year of plant operation, and FINPLAN takes the same number for remaining years.

In the box "Price for First Year", input the price for the first year. When future price development is concerned, FINPLAN provides three options. The first option is "Yearly current price", when you have a projection for yearly future price. The second option is "Yearly price change relative to inflation". In this case, the price grows at the same rate as inflation. The third option is "Standard change relative to inflation". Normally electricity price increases at a lower rate than inflation. This can be captured by this option, allowing a difference in inflation rate between overall inflation and electricity price inflation to be defined.

General Data	Product N	ame Client	Action		
General Information	Electricit	у мис	Edit / Delete		
Inflation Information					
Currency Exchange Rates	Add New Dat	8			
Taxation Data					
Tax & Depreciation Information					
Royalty Payment	Product	t Name & Unit		Wh) 🗸	
Initial Balance Sheet &		Clien	t MUC		
History		Currency	Malaysian Ri	nggit +	
Initial Balance Sheet		Quantity	Yearly Data	a 🗇 Fixed	
Old Commercial Loans	Price	for First Yea	0.25	Per kWh	
Old Bonds Committed Investment				Price	
Committed investment	_			1. Contraction of the second	
Sales & Purchase Data		e			
Consumers Contribution & Deposits				Change Relative to Inflation	(%)
Fixed Revenues & Other Income			Standard Cha	inge Relative to Inflation	(40)
Sales Data	1.1		5000		
Purchase Data	Year	Quantity	Current Pr	rice / Price Change Relative t	o Inflation
Plant Data	2012				
FinManager	2013				
Calculate	2014				
Intermediate Results					
I Results	2015				
	2016				
	2017	3500			
	2018				

Finally, under the "Quantity" column, data on annual quantity of electricity to be sold need to be entered. Here, the base price of electricity is 0.25 ringgit per kWh, and the second option is chosen for future price development. Annual quantity of electricity to be sold is 3,500 GWh, entered in 2017 which is the first year of plant operation. Then press the button "Save and Proceed".

