Teach yourself how to build a Business Case for any industry including mining

1m Hands On Modelling – Taxes

(Income tax can be made fast, easy & appropriate)

Howraman Village in western Iran on the border with Iraq

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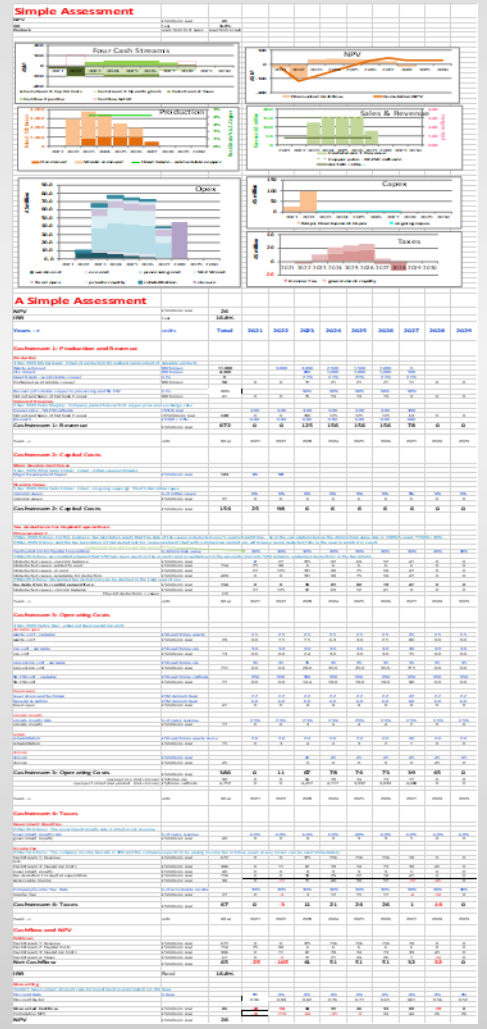
Spend only a few seconds on each page

This website may contain errors so always check your own work and have it audited by a competent person.

This module has personal opinions!

Hamadan, Western Iran

Wet rice farming near Rashdt, Caspian Sea, north western Iran



#1: Revenue

#2: Capex

#3: Opex

Cashflow
(incl NPV)

The purpose of this module is to show that it can be easy to model **Cashstream #4: Taxes**

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling

Contents

Modelling taxes can be fast, easy & appropriate

What taxes are included where?

i. Income tax

ii. Minimum Tax and Turnover Tax

iii. Indirect taxes
VAT and GST

iv. Royalties


highway northern Iran

This module is about taxes in cash as defined by tax legislation in the country.
Accounting will use the same legislation, get the same taxes over time but may reconfigure costs on a year-by-year basis.

That’s not fair!

I recall attending lectures for a business post-grad, when the tax expert said in humorous solemnity:
“Never ever complain to me ‘that tax is not fair!’ or tell me ‘that tax is not logical!’”

north west Iran

Modelling taxes can be fast, easy & appropriate …

Because: -

1. **Of the four cashstreams, "Taxes" should be the least important.**
   Mathematically, income tax is a percentage of what is left of the revenue cashstream after deducting opex, capex (as tax depreciation) and royalties.
   Tax is a 'follower' and not a 'leader' of value.

2. **Your economic model is not used to compute your company's tax return**
   You should not be trying to reproduce the detail of your company's tax return

3. **Get taxes into perspective.**
   Writing hundreds of rows to get tax calculations or deductions for capex to exactly follow the tax law is likely to be wasting yours and everyone's time. Think about the accuracy of forecasts of the key parameters of sales volumes, product life, price, opex, capex, etc compared with tiny precisions in tax.
   Getting income tax extremely precise can be grossly unbalanced modelling.

4. **Match the accuracy of the tax computations to the task.**
   Possibly only the final evaluation model needs to be precise.
   Modelling income tax in real terms works in almost all cases if tax deductions for capex are eroded for inflation.

Sealed border between Iran and Azerbajian, near Astara

What taxes are included where?

A business model will include a mix taxes.

Just as you can decide if a particular **cost** is included in capex or in operating costs, you can decide where each of the taxes is included in your business model. (Follow your industry's convention and compute so others can more easily follow your model)

i. Income tax

Probably is best in Cashstream #4: Taxes

ii. Turnover and Minimum income taxes

Probably best in Cashstream #4: Taxes

iii. Indirect taxes

i. Value Added Tax **(VAT)** and Goods and Services Tax **(GST)** usually are best calculated where they are imposed in the revenue and where they are refunded in the capex and opex. Then compute the net VAT/GST in the Taxes worksheet.

ii. **import duties, tariffs, excise, payroll tax, fuel taxes, rates … etc** usually are already included in the capex and opex as it is estimated by the experts in each area. Occasionally you may need to have a separate computation.

iv. Government Royalties

i. It probably is best to include government royalties in the cashstream that is conventional for that industry. In some mining/metallurgy industries the government royalties are computed as a deduction from revenue, in other industries they are included in the operating costs whereas a few compute them separately in the Taxes worksheet.

- Petroleum royalties can be extremely complex and may need to be computed separately – often entirely in Nominal Terms to get correct deductions for the huge upfront investment.

ii. Private Royalties should be included in operating costs

Beautiful **Masuleh village with** its mountain pastures, north western Iran

i. Income Tax

As already explained, you can spend the rest of your life doing highly precise computations of income tax – especially if you love hiding away in an office doing complex Excel – or you can get sufficient accuracy for your business evaluation with a straight forward method.

→ Income Tax can be made fast, easy & appropriate.

Using one of the methods below you should be able to get sufficiently close to the income tax that would be calculated in your company's tax return to the Tax Office.

Same money but slightly different timings:

- From a helicopter view, your business model should be able to compute income tax over the life of the business that is very close to the income tax computed by Company Tax Returns. Over the life, both should have the same total revenue, the same total capital, the same operating expenses and the same other taxes. The difference will be that the timings of each will vary slightly on a year-by-year basis.

Calculations

- *Your company's tax return to the tax office will be in Nominal Terms.*
- **Your business model usually should calculate income tax in Real Terms,** especially if the 'Tax Deductions for Capital Expenditure' are computed in Nominal Terms then converted to Real Terms. But the totals over the life of the business should be very close by either method.

Different Countries

- The income tax of most counties can be modelled as described below but some have different philosophies and quite different procedures. You need to research the tax laws via the internet.

Income Tax is easy to grasp …

Tax laws in most countries allow the genuine costs of running a business to be deducted from the revenue when calculating income tax.
These costs usually are split into: -

- **Operating expenses** *(cost of goods sold)* = day-to-day expenses including admin, overheads, interest
- **Capital costs** = where the benefit lasts more than one year

In broad terms, most tax laws allow: -

- **operating expenses** to be deducted immediately within the year of expenditure – which helps NPV
- but each **capital cost** must be deducted over some years (commonly its effective life) – which 'lowers' NPV

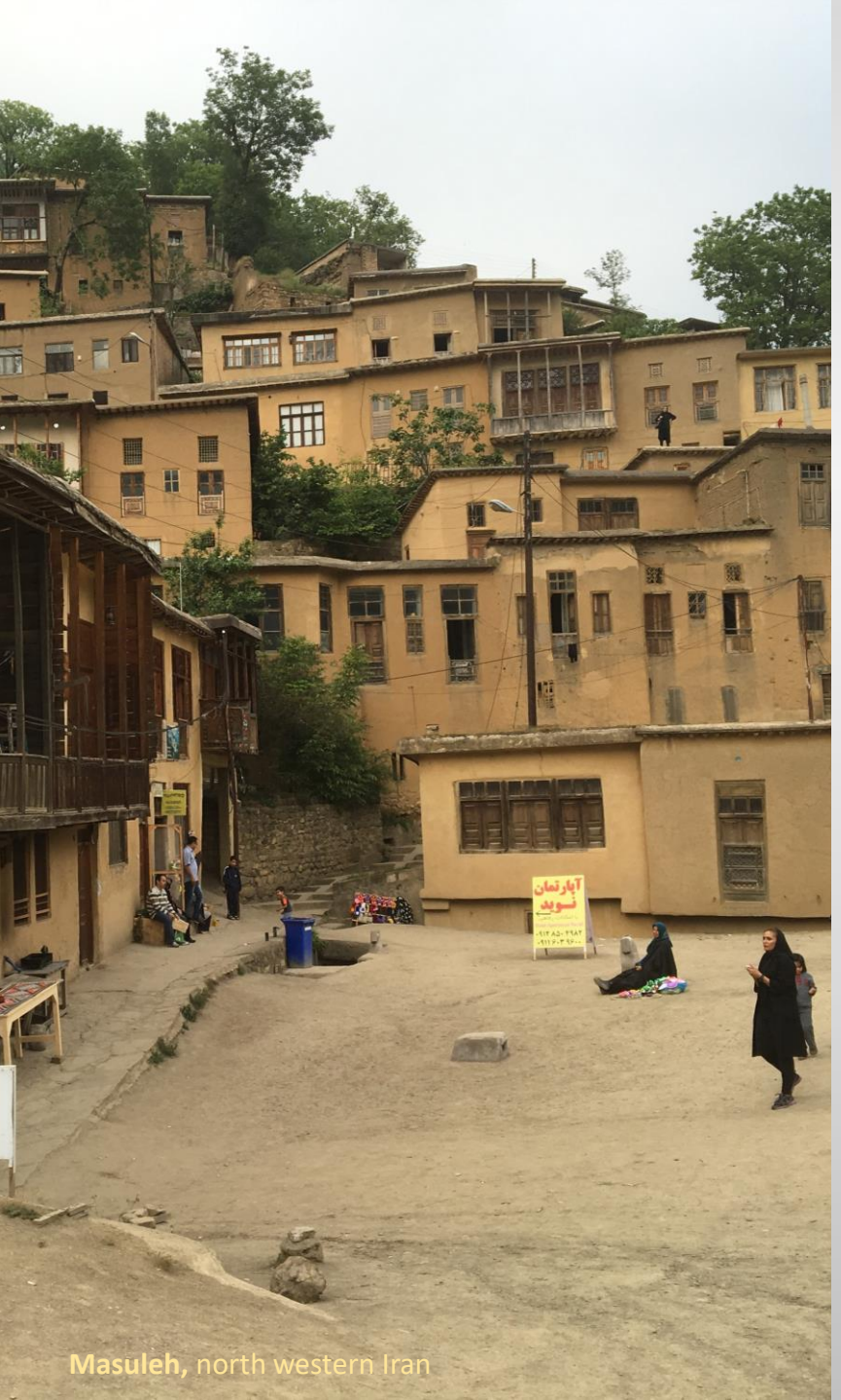
So in concept, the **income tax** for a year is simply: -

Revenue	*$1 000*
less:	
Operating expenses (cost of goods sold, overheads)	*-$500*
Tax deductions for previous capital costs	*-$100*
= Assessable Income	*$400*
** income tax rate*	** 25%*
= Income tax	***$100***

So in concept, the **net cashflow** for that year is simply: -

Revenue –received in cash that year	*$1 000*	*(Cashstream #1)*
less:		
Operating expenses spent as cash that year	*-$500*	*(Cashstream #3)*
100% of capital costs spent as cash that year	*- $30*	*(Cashstream #2)*
income tax as paid in cash	*- $100*	*(Cashstream #4)*
= Net cashflow	***$370***	

Yes, this is simplified and conceptual – For example, the 'revenue' and 'operating expenses' for cashflow are likely to be slightly out-of-step with the revenue and operating expenses in the tax calculation.
Yes, *income tax will be in Nominal Terms* while cashflow usually will be in Real Terms (More later!)



Masuleh, north western Iran

Income Tax: A fast and easy check you should always do …

This means that if you are evaluating a stand-alone project/business then you should be able to do a very fast check of totals **over the project's life.**

To illustrate: a company is to invest $35 million in capex to build a project that will last 5 years. Sales will average $25 million per year. Operating costs will be $12 million per year. The income tax rate is 25%.

Over the five years the income tax should aggregate to: -

Revenue	*5 years * 25 =$125M*
less	
Opex	*5 years * 12 = -$60M*
Capex (will be deducted in full over the 5 yrs)	*-$35M*
= Assessable Income	***$30M***

income tax *over the project life should be somewhere around $30M*25% =* ***$7.5M***

Do this check to give yourself confidence in your model.

This illustration is in Nominal Terms so the numbers are in italics.

Income Tax in a Preliminary Evaluation or Concept Study may need just one worksheet:-

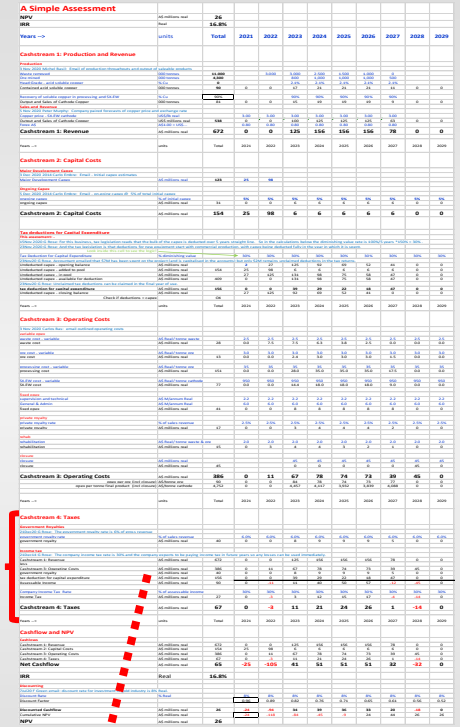
Cashstream#1: Operations Sales & Revenue →

Cashstream#2: Capital costs →

Cashstream#3: Operating costs →

Cashstream#4: Tax →

➢ Net cashflow (NPV & IRR etc) →



The work-block for **income tax** might be as simple as this: -

Years →	Units	Total	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9
Cashstream 4: Taxes											
Income tax											
Cashstream 1: Revenue	A$ millions real	672	0	0	125	156	156	156	78	0	0
less											
Cashstream 3: Operating Costs	A$ millions real	386	0	11	67	78	74	73	39	45	0
government royalty	A$ millions real	40	0	0	8	9	9	9	5	0	0
tax deduction for capital expenditure	A$ millions real	156	0	0	39	29	22	18	47	0	0
Assessable Income	A$ millions real	90	0	-11	11	40	50	57	-12	-45	0
7Jul20 National Taxation Office website: Income Tax for companies is 30%											
Company Income Tax Rate	% of assessable income		30%	30%	30%	30%	30%	30%	30%	30%	30%
Income Tax	A$ millions real	27	0	-3	3	12	15	17	-4	-14	0

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Looking more closely at income tax: -

- **Income tax can be computed in Real Terms** rather than in Nominal Terms – unless the country has progressive tax rates that increase with assessable income in Nominal Terms.
  This is a major advantage because the rest of the business model is likely to be in Real Terms. Most importantly, in all but preliminary business models, the 'tax deductions for capex' will be computed in Nominal Terms and then converted into Real Terms for use in the income tax calculation.

- **Revenue:** Income tax is computed from the ***Revenue before debtors*** (before accounts receivable). In preliminary business models the debtors are unlikely to be computed and so 'Cashstream#1: Revenue' will be the correct revenue for income tax. In more advanced business models there usually will be this sub-total; before debtors are introduced.

- **'Cost of Goods Sold':** Income tax deducts the 'cost of goods sold' (rather than the cash spent on operating costs that year). This requires the careful **'matching'** of revenue to the cost of producing the exact items and/or services that were sold that year. It often requires lots of detailed recording and computing of items in working stocks and product stocks at the beginning of the tax year and at the end of the tax year. For example the first sales of the year might have been produced last year at a different cost to the rest of the items sold and produced in this tax year. Over the years there should be very little difference between the cost-of-goods-sold and the cash spent on operating costs. Instead most of the differences will be the timings from year-to-year. I regularly have used **Cashstream#3 Operating Costs** to compute income tax. In the early years as production ramps up, 'Cashstream#3: Operating Costs' will include the creation of working stocks so will be higher. In the middle years they are likely to be similar. This will reverse in the final years. Computing the exactly matched "Cost of Goods Sold" will take many, many additional rows of stockpiles and opening/closing balances. So before embarking on this precision in your business model check that it is justified and not a mental challenge in Excel.

- **Tax deductions for capital expenditure** have been described in a previous module.

- **Assessable Income** will not be the same as 'Accounting Profit', except in a very few countries that adopt Accounting practices for Income Tax. (Usually Accounting has different timings for 'depreciation' of capex)

- **Company Income Tax Rate: <u>All these differences are shrunk in importance to level of the income tax rate</u>** – down to 25% or 30% in many countries
-

Conclusion: Use your judgement as to how much these differences will impact the cashflows and the value of the business. You may decide they are relatively minor compared with the unknowns of the market and of operations OR you may decide to refine parts of the work-block of income tax computations.

Income Tax Losses

The business model will need the ability to handle tax losses as explained in this example:

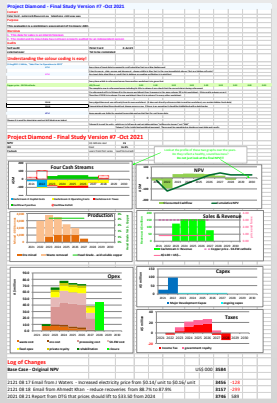
- The assessable income in Year 1 is a large negative amount (-$276 000). There would be no income tax liability and your research reveals that tax losses can be carried forward for up to five years.
- In addition the company has incurred $52 000 in expenses on studies in past years that are yet to be deducted for tax
- This means the assessable income is -$328 000 at the end of the first year.
- In the second year the assessable income is +$127 000 which reduces the closing balance to -$201 000
- The third year generates +$134 000 of assessable income so the closing balance is -$67 000
- Finally, in the fourth year the assessable income of +$231 000 less the opening balance of -$67 000 means the assessable income for the year is a positive $164 000. So income tax will be $164 000 * 25% = $41 000

There are a couple of ways of modelling this logic. The worked examples on this Website will reveal the algorithms used. Unfortunately they needs to be a bit more complex.

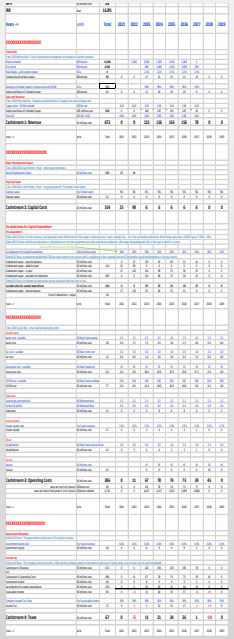
Years →	Units	Total	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
4d. Company Income Tax								
6 Aug 2020 P Carter: The following computation of income tax is in real terms. Any tiny errors from year to year, caused by not computing in nominal terms should be insignifica								
Total Revenue	US$ 000 Real (incl VAT)	31,273	1,500	1,926	2,086	2,446	2,998	3,653
6 Aug 2020 P Carter: The timing of the 'cost of sales' is not exactly matched to revenue but should be reasonable as the over/under costs in one year should be offset by under/o								
3c. Total Operating 'Expenses'	US$ 000 Real	25,435	1,722	1,691	1,826	2,097	2,469	2,924
4a. Withholding Tax ("WHT")	US$ 000 Real	52	5	5	5	5	5	5
4b. VAT - net paid/(net refunded)	US$ 000 Real	198	-24	-12	-2	13	21	32
Tax deductions ('tax depreciation')	US$ 000 Real	966	72	115	122	100	84	72
Assessable income	US$ 000 Real	4,272	-276	127	134	231	419	619
2020 07 12. A Khan Accountants website: Tax Booklet 3 Tax losses can be carried forward five years.								
2020 08 19 P Carter: The Company has spent $52 000 on studies that have not been deducted for tax.								
Opening balance - assessable income losses	US$ 000 Real		-52	-328	-201	-67	0	0
Assessable income after any carried losses	US$ 000 Real		-328	-201	-67	164	419	619
Assessable income (if positive)	US$ 000 Real	4,220	0	0	0	164	419	619
Closing balance - assessable income losses to be carr	US$ 000 Real		-328	-201	-67	0	0	0
2020 07 12. A Khan Accountants website: Tax Booklet 3 Rates of income tax - Standard rate 25%								
Company income tax rate	% of assessable income		25%	25%	25%	25%	25%	25%
4d. Income tax	**US$ 000 Real**	**1,055**	**0.0**	**0.0**	0.0	41.0	104.7	154.8

Income tax in a long, detailed and complex model - for M&A's, Final Feasibility, Major Evaluations

'The worksheet for 'Cashstream#4: Taxes' in a long, detailed and complex business model may not be any bigger than for preliminary and middle level models! There is unlikely to be any reason to compute income tax in Nominal Terms – unless the country has some unusual set of progressive tax rates at increasing levels of assessable income.

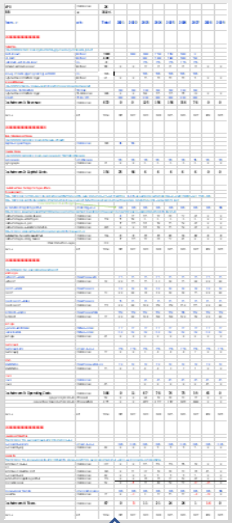


Intro&Audit, results & log of changes

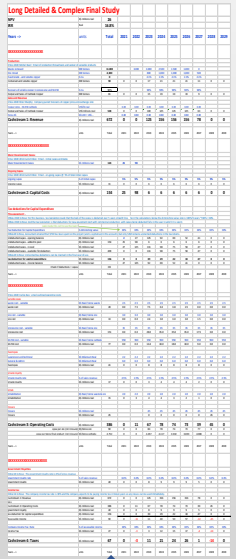


Operations, Sales, Revenue Cashstream#1

Capex Cashstream#2



Operating **costs - material flows**

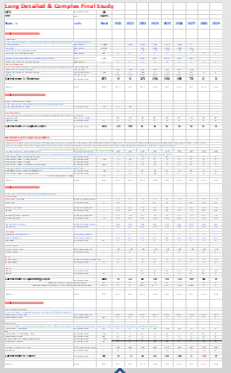


Operating costs - variable

Fixed costs, Creditors, Cashstream#3 : Opex

Taxes Cashstream #4

Cash flow NPV, IRR, etc



accounting

financing


Qal'eh Rudkhan Fortress , Fuman, north Iran

Income Tax: More on 'Cost of Goods Sold' and 'Operating Costs'

These are two different concepts:
'Operating costs' is the cash spent producing the goods and services
'Cost of Goods Sold' cost of the goods and services that were sold to get the revenue.

There is a concept of **'matching**' costs to sales.
Each year your business is likely to sell slightly more or slightly less than the numbers produced with the difference being in stocks of product. Also in the production sequence there will be slight movements in the intermediate stocks all along the way.

Income Tax Returns: Tax Specialists and Accountants DO need to compute all these little variations in stocks to get an accurate cost of goods sold when they prepare the income tax return and the company accounts. Mostly, they are dealing with the past and so they are dealing with actuals quantities and actual costs.

In **business models** I rarely compute the 'cost of goods sold' but instead use the "Cashstream 3: Opex". I feel the difference is minor and largely self cancelling over the years. When I was inexperienced I would have been tempted to add in all this detail to show my model was exactly following all the procedures! Wow! I could have added hundreds of rows and spent the rest of my life modelling all this with great precision. This normally would waste everyone's time because my business model was neither the accounts nor the tax return! I would have been using a whole series of best estimates of future activities and costs to be very, very precise in one small part of the model with minor impact. - The differences caused by stockpile movements from year to year should largely cancel each other out and they are likely to be insignificant when compared with the accuracy and importance of the estimates of future prices, sales, opex and capex.

So until I really need a highly accurate 'cost of goods sold' in the income tax computation (rarely), I will continue to use "Cashstream 3: Operating Costs".

Blue Mosque , Tabriz, north western Iran

Income Tax in M&A, Ring Fencing, Group Losses, Closure …

Again ,this section is about income tax and not about accounting.

Expert Advice: When working through any of the topics below, you must get the hands-on advice of the company's tax expert. **Some of these are quite tricky so get that section of your business model audited by that person.** I have known senior executives to mis-use or misunderstand some concepts.

Ring-fencing: In a few countries projects/businesses are **'ring fenced'** for income tax. The project is stand-alone so that any tax losses cannot be offset against any other businesses inside that country and outside that country.

Group Losses: In most countries a loss in one subsidiary can be offset against assessable income in other subsidiaries inside that company within that country. There are likely to be strict conditions. When computing cashflows and NPV you must identify how much value comes from using up the tax losses from elsewhere in the company and how much value is generated inside the project/business on a stand-alone business. If the tax losses could be used up elsewhere inside the company then this value is not really attributable to the project/business.

M&A: Revaluation

In some countries assets can be revalued by the acquiring company during an M&A. This allows extra tax deductions to be taken. It needs careful research, discussion and teamwork with the tax specialists. The extra value/NPV is not within the project/business but only attributable to the acquiring entity. It can however be shared between both parties during an M&A.

Closure Costs

When a business ceases it may incur considerable closure costs. You must carefully research its tax deductibility! In a number of countries these costs cannot be deducted before the cash is spent and so these closure costs become stranded and cannot be deducted from revenue – because there is none - unless the law allows it to be deducted at another legitimate business continuing in the country.

Income Tax in Company Structures, Local & International Taxes …

Multiple Owners: A project or business in one country might be owned by a mix of local and overseas entities. For example, 60% local and 40% overseas.

Multiple Structures: A project or business in one country may be set up as a **company** or as a **joint venture** or as another structure. For example …
As a Company: The two owners will have 60% and 40% of the shares in Company ABC that owns the project or business. Typically the overseas entity will hold its 40% of the shares through an intermediary local, 'holding company'. The Company ABC will pay income tax. Its directors will be able to return cash to the owners as dividends - with the local entity getting 60% and the overseas entity getting 40% into its local holding company.
As a Joint Venture: The local entity will establish a subsidiary company to directly hold a 60% slice of the project/business. This will be a self-contained company that makes 60% of the sales, pays 60% of the costs and submits its own income tax return. That subsidiary company will be able to return cash to the local entity as dividends. The overseas entity will similarly hold its 40% slice via a subsidiary company that is resident inside the host country – sell 40% of output and pay 40% of costs. It will do it own tax returns on its 40% and pay income tax to the host country. This subsidiary will be able to return cash to the overseas entity as company dividends. It may pay withholding tax on the dividends leaving the host country. The big attraction of a joint venture is that the local entity and the overseas entity may be in very different "tax worlds". For example the local owner may have other businesses within the country against which any tax losses can be immediately offset, whereas the overseas owner has none. They need to be separate entities to work effectively but honestly within the laws.

International Taxes: For any owners residing overseas there may be extra layers of tax if they want to take any of their subsidiary company's dividends out of the host country. 10% to 15% **withholding taxes** on dividends taken out of a country are common.


Finding accommodation, Tabriz, north western Iran

Three Levels of Valuation:

This means that there will be several levels of cashflow and of NPV:

1. **Project/Business Stand-Alone valuation in country before ownership and before funding.** This is the evaluation of the underlying project/business within the host country without regard to ownership. This is the core valuation of your business model.
   SELF-DELUSION: If the underlying business is not healthy then being half-smart and creating an ownership structure that makes it look good for your company will probably lead to self destruction or acrimony because the other party is likely to renege or 'fall over' under its unfavourable deal.
2. **Project/Business valuations inside the host country for each owner**
3. **Project/Business valuations for any owners in an overseas country - after international taxes**

Income Tax: Funding -Do not deduct interest!!!

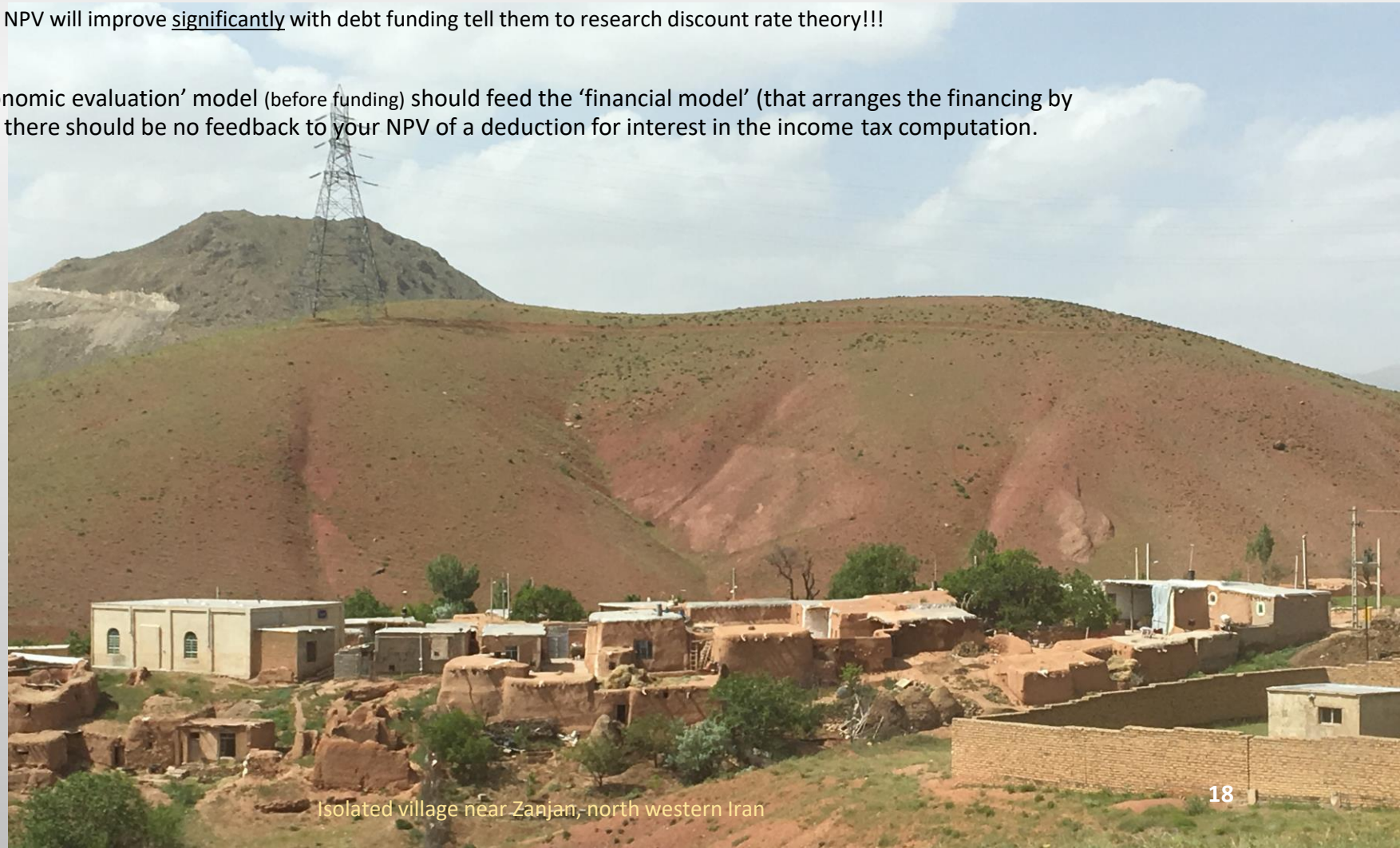
Your primary **'economic evaluation'** is an assessment of the underlying health of the project/business **before funding and before ownership**.

- The cashflow is discounted at a rate ('discount rate') that already takes into account the financing of the project/business.

Therefore **interest** is not deducted from revenue when computing the income tax

- Equally, as noted in the module on Capital Costs do not include 'interest on funds during construction' as part of the estimate of capex.
- If someone contends that the IRR or NPV will improve significantly with debt funding tell them to research discount rate theory!!!

'Financial modelling' Your primary 'economic evaluation' model (before funding) should feed the 'financial model' (that arranges the financing by debt & equity funding). Most importantly, there should be no feedback to your NPV of a deduction for interest in the income tax computation.



Isolated village near Zanjan, north western Iran

ii. Minimum Tax and Turnover Tax

Some countries become concerned that some businesses do not pay their fair share of income tax. They (correctly) believe that revenue and costs can be shunted around the world to take advantage of low tax countries. - the supersized business entities based in the internet are examples.
To combat this some countries have imposed 'minimum taxes' or 'turnover taxes' .

These taxes are straight forward and best explained with an example …
The minimum tax is 1% of turnover

In the first three years there is no income tax liability because of tax losses carried forward, so the company must pay the minimum tax.

From the fourth year the income tax exceeds the minimum tax so the income tax is paid.

Years →	Units	Total	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
Company Income Tax								
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Company income tax rate	% of assessable income		25%	25%	25%	25%	25%	25%
4d. Income tax	**US$ 000 Real**	**1,055**	**0.0**	**0.0**	**0.0**	**41.0**	**104.7**	**154.8**
Minimum Tax								
2020 07 12. A Khan Accountants website: Tax Booklet 3: "The Minimum Tax is an annual tax at 1% of annual turnover inclusive of all taxes including VAT"								
2020 07 12. A Khan Accountants website: "Minimum tax is separate from income tax and is payable regardless of whether the taxpayer is in profit or loss."								
Total Revenue	US$ 000 Real (incl VAT)	31,273	1,850	1,926	2,086	2,446	2,998	3,653
VAT paid on Revenues	US$ 000 Real	2,615	161	167	180	209	251	303
Company minimum tax	% of turnover		1%	1%	1%	1%	1%	1%
Minimum Tax	US$ 000 Real		16.9	17.6	19.1	22.4	27.5	33.5
Income Tax or Minimum Tax (before project funding)								
Income Tax or Minimum Tax (before project fundin	US$ 000 Real	1,108	16.9	17.6	19.1	41.0	104.7	154.8

iii. Indirect Taxes: -

Indirect taxes are likely to pervade all facets of the project/business in the form of value-added-tax (VAT), goods-and-services tax (GST), import duties, tariffs, excise, payroll tax, fuel taxes, rates, employee taxes, environmental fees, road taxes, … etc, etc

Some indirect taxes will be 'variable' whereas others, such as government taxes on property, will be 'fixed' for the year.

Mostly, indirect taxes should <u>not</u> be computed separately in the "Taxes" section. Instead, they should be incorporated in the estimates of capex and opex

Check with the experts supplying these estimates that the various indirect taxes have been included!!!

Takht-e-Soleiman, C3rd Zoroastrian Temple and Fortress, on a volcanic crater, near Takab, northern Iran – Unesco World Heritage

iii Indirect Taxes: Value Added Tax (VAT) & Goods and Services Tax (GST)

- **VAT or GST on sales:** A government might impose a VAT (or GST) of say 10% on the sale of goods & services. So 1/11th of the selling price will be VAT.
  - Lots of people have been tricked by a VAT of 10% being 1/11th = 9.1% of selling price and not 10%.

- **VAT in Inputs:** Usually the government will refund all the VAT that was paid by the company on goods and services that were purchased to produce the items sold. VAT may have been paid on purchases of raw materials, energy, services, consultants, hired equipment etc that were consumed to produce the goods and services.

- **Net VAT:** So the final VAT incurred by the company is the difference between the VAT on its sales and the VAT on its inputs – on the 'value added'.

- **Business Model Architecture:** You will need to decide where it is best to compute each of these VAT's within your model. As a starting point try calculating within the relevant Cashstream…
  - VAT on sales where they are imposed in 'Cashstream #1: Operations, Sales, Revenue'.
  - VAT on capex items where they have been paid on the inputs in the 'Cashstream #2: Capex', and
  - VAT on operating costs where they have been paid on the inputs in the 'Cashstream #3: Opex'.
  - Compute the net VAT inside 'Cashstream#4: Taxes'

The rules for VAT (and GST) can be very tricky:

1. There may be a maze of goods & services that are exempt
2. Get expert advice at the beginning and get these parts of your model audited before releasing results

Exports where VAT = 0: To encourage its economy, it is common for a country to make exports 'zero rated' for VAT. This means that the company pays no VAT on its export sales and gets a refund on all VAT it paid on inputs – often delayed. This means that VAT usually can be omitted from a business model of export projects/businesses unless the delay in refunds of VAT on inputs would cripple cash flow.

Worst of all is where VAT = 'exempt': Check with your expert adviser that if a project/business is 'exempt' from VAT, it will not pay VAT on sales but it will not get a refund of VAT paid on its inputs. It is helpful to be 'zero rated' but awful to be 'exempt'.

iv. Royalties: -

There are two types of Royalty: Government and Private.

Private royalties should be computed in the operating costs because they are not a tax

Government royalties can be computed in any of three cashstreams: Revenue#1, Operating costs#3 or Taxes#4, but it is best to include government royalties in the cashstream that is conventional for that industry. Many industries tend to deduct government royalties from revenue, a few industries include government royalties in the operating costs whereas the rest compute them in the Taxes section.

> **Petroleum** royalties can be extremely complex and need to be computed separately in one of the Taxes worksheets – often in Nominal Terms to get correct deductions for the huge upfront investment.

A major cause of errors and alienation

If you want: -

1. to get a prize for very poor modelling and
2. to be relegated to being irrelevant to your colleagues and
3. to make huge hidden errors and
4. to create a model that is very tedious and frustrating to understand or audit

then use elaborate, long and convoluted algorithms to compute complex government royalties and compress them in just a few rows.

Some people who are 'half-smart' with Excel will spend hours creating most sophisticated and convoluted algorithms. But sadly they are immature as professionals. They are creating a business model as their 'trophy' rather than for colleagues to quickly understand and to use as a working tool.

iv. Extra Notes on Mining Royalties: -

Mining Royalties have several forms: -

Percentage of revenue.

These should be straight forward to compute, and can be done in real terms. The legislation will define where along the production sequence the 'revenue' is measured. It could be at the 'mine gate', after first transport, prior to ship-loading or receipt by customer.

> For example, if a 2% Royalty was levied at the mine gate then you would need to begin with the revenue paid by the customer, say free on board ship, and deduct all the operating costs back to the mine gate. Royalty = 2% of (revenue – ship loading – unloading and storage at port – transport to port from mine gate)

In most business models it may not matter if the official revenue or the 'cashstream#1: revenue' is used as the starting point. The difference is debtor movements which usually are small and what is lost one year is gained the next..

$ per tonne, $ per lb, or similar

These are easy to compute and usually are on the official tonnes sold whether or not they have been paid or delivered. The official rates are Nominal dollars so if your model is in real terms you will need to erode them by inflation year by year. Over time, governments tend to adjust them for inflation, so you might decide to leave them constant at today's $ level.

Share of profits or cash surplus

Obviously this will require more rows of computation. First read the legislation on the Internet and discuss with your tax adviser so you personally understand the logic. It may require calculations to be escalated into Nominal Terms to determine the Royalty payment, which can be de-escalated to real terms to fit back into the model.

Fit-for-purpose

As with all parts of the evaluation model, decide how significant the Royalty payment would be and how much fine detail versus close approximation is warranted. Avoid being sucked into lots of detailed computations that are intellectually rewarding but not justified. Your model is not the Royalty Return to the Government.

Royalties usually are calculated on the official sales to the customers, whether or not they have handed over the cash.

Business Evaluation has three levels: -

Level 3: Decision making

Level 2: Evaluating the business/project
is where you can add most value

Level 1: Hands-on economic modelling
taxes can be fast, easy & appropriate

END

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Buses - north western Iran to Armenia