Palmyra, Syria (before ISIS)

Teach yourself how to build a Business Case for any industry

including mining

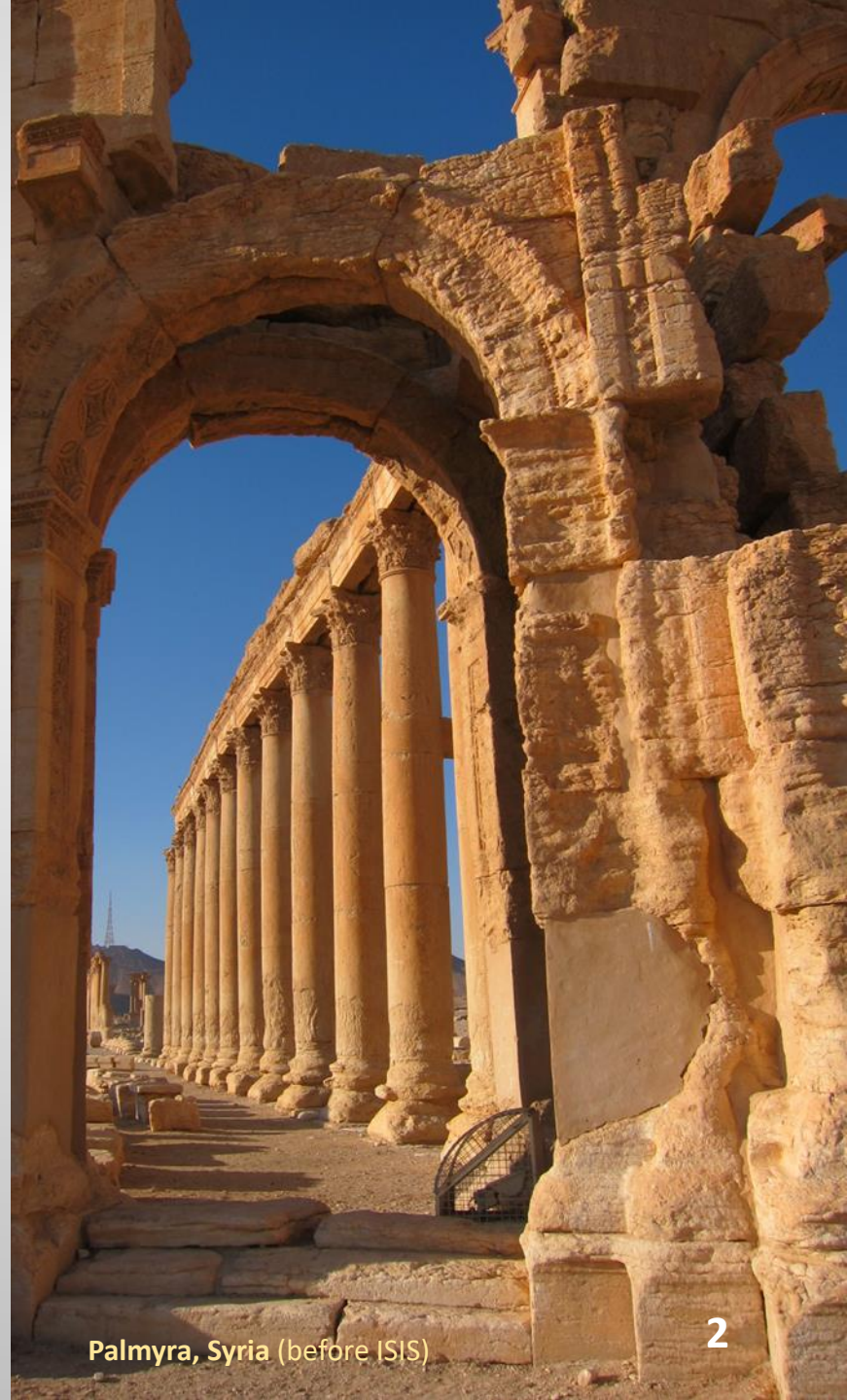
1h Hands On Modelling

Cashstream #1 – Revenue

(including Sales & Operations)

Spend only a few seconds/minutes on each page

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



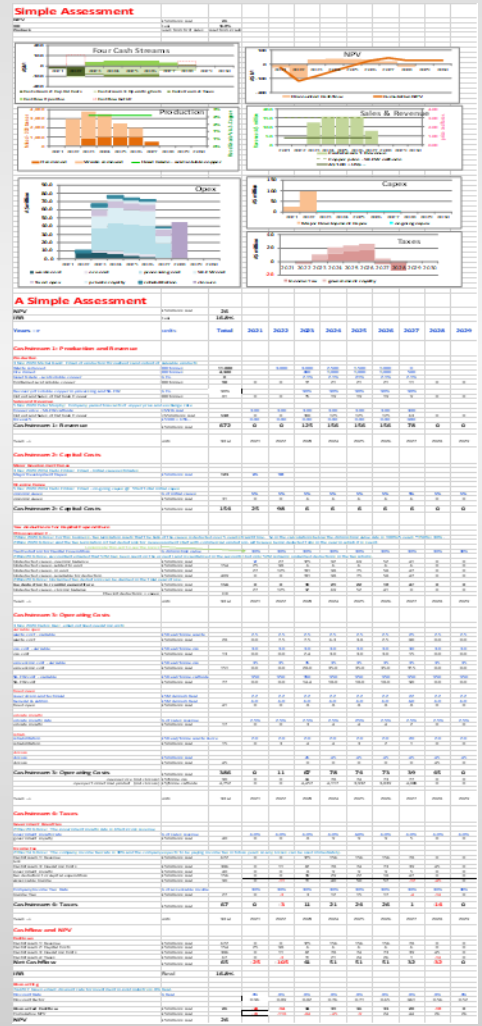
Palmyra, Syria (before ISIS)

The purpose of this module is to model **Cashstream #1: Revenue**

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling



#2: Capex

#3: Opex

#4: Taxes

Cashflow
(incl NPV)

Cashstream #1: Revenue (including Sales & Output)

A common sequence for a business is to:

1. Develop a marketing strategy which leads to estimates of customers and to a sales plan
2. Use this sales plan to generate a plan for outputs, operations, inputs, stocks, logistics, payment terms, etc
3. Compute the revenue & debtors/accounts receivable and hence the cash received **= Cashstream #1**

Revenue is the most important of the four cashstreams because it must pay for the other three (capex, opex & taxes) plus have a surplus to justify the business.

Palmyra, Syria (before Isis)

Cashstream #1: Revenue (including Sales & Output)

Market Experts will make estimates of **sales quantities and of prices**.

- Always remember these estimates are **assessments by fallible humans**.
- A different set of experts might make significantly different estimates of sales and prices

The Evaluation Specialist must politely investigate the origins, strengths and weaknesses of these estimates so as to be able to:

- Interact constructively with the marketing, sales and operations experts
- Understand the workings of the whole industry
- **Work with the experts to generate a full range of possibilities for Revenue – from 'pessimistic' through 'most likely' to 'optimistic'.**
- Understand the likely interaction of increasing/decreasing sales volumes on price

Important: Do not fall into the trap of thinking marketing and sales are external assessments that are outside your territory.

Every important parameter is definitely your task to properly understand and to constructively discuss.

Palmyra, Syria (before Isis)

Here is a simple example of 'Cashstream #1: Revenue' where it begins with a sales plan …

Graphs: Many people first want a quick visual presentation of the sales and revenue. This gives a helicopter view of assumptions and results.

Column Headings: The Years, Units, Total, Year 1, Year 2 etc are entered here in blue font for the first and only time in the entire model.

The column headings in subsequent worksheets are referenced from this row.

Sales: The marketing experts have forecast sales for the three types of units under optimistic conditions. The source of the forecast is recorded in the row above so it can be traced. The sales quantities are fresh data inputs so are in blue. Their sum is in black

Pricing of Units: The marketing experts have forecast prices in Real Terms (no inflation). The source of the forecast and the fresh data inputs are in blue font

Revenue: This is the Revenue used in Accounting and Tax – computations are in black

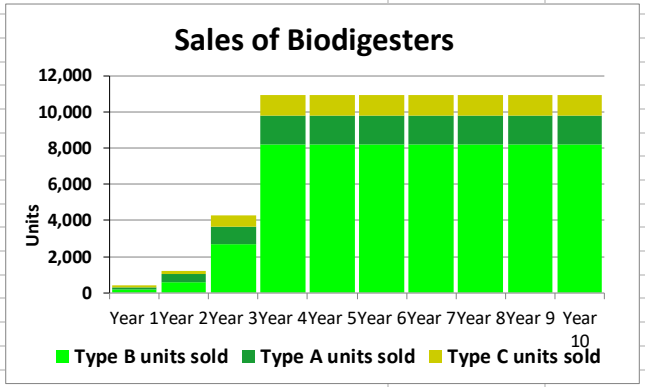
Debtors: The source of the estimate and the fresh data inputs are in blue font

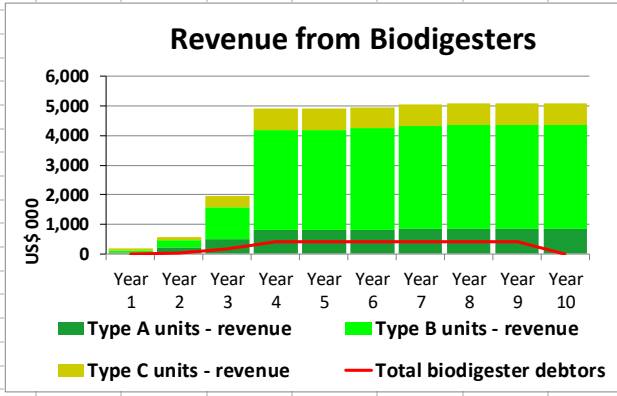
. Then the debtors and increase/decrease in debtors is computed in black.

Cashstream #1: Revenue: The **cash** received after debtors is computed in black and becomes the first and most important of the four "Cashstreams"

Business Case for ABC Biodigesters

Cashstream 1: Revenue





Years -->	units	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Sales of units - optimistic case										
1 Aug 20XX: ABC model 'Quarterly Cashflow' Rows 15, 18, 21										
Type A units sold	biodigester units	12,943	136	480	990	1,620	1,620	1,620	1,620	1,620
Type B units sold	biodigester units	60,703	170	560	2,680	8,185	8,185	8,185	8,185	8,185
Type C units sold	biodigester units	8,473	80	160	589	1,092	1,092	1,092	1,092	1,092
Total biodigester units sold	biodigester units	82,118	386	1,200	4,258	10,896	10,896	10,896	10,896	10,896
Pricing of units - optimistic case										
1 Aug 20XX: ABC model 'Quarterly Cashflow' Rows 16, 19 ,22										
Type A units - price	US$ Real/ unit	5,101	499	499	494	504	504	509	519	524
Type B units - price	US$ Real/ unit	4,181	409	409	405	413	413	417	425	430
Type C units - price	US$ Real/ unit	6,491	635	635	629	641	641	648	661	667
Revenue - optimistic case										
Type A units - revenue	US$ 000 Real	6,641	68	240	489	816	816	824	841	849
Type B units - revenue	US$ 000 Real	25,593	70	229	1,085	3,380	3,380	3,414	3,482	3,517
Type C units - revenue	US$ 000 Real	5,537	51	102	370	700	700	707	721	729
Total biodigester revenue	US$ 000 Real	37,771	188	570	1,944	4,897	4,897	4,946	5,045	5,095
Debtors										
3Aug 20XX P Cardin: email of estimates of debtors										
Debtors - days from sale to cash received	days	310	31	31	31	31	31	31	31	31
Total biodigester debtors	US$ 000 Real		16	48	165	416	416	420	428	433
increase/(decrease) in debtors	US$ 000 Real		16	32	117	251	0	4	8	4
Revenue as Cash										
Cashstream 1: Revenue	US$ 000 Real	**37,771**	**172**	**538**	**1,827**	**4,646**	**4,897**	**4,941**	**5,036**	**5,091**
Years -->		Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8

Here is a simple example of 'Cashstream #1: Revenue' where it begins with a production plan rather than with a sales plan

It is typical of a business where the output or production capability is the defining parameter because the market is very large.

It is typical of mining and of small operations in a big market.

This tiny model is a preliminary or concept study to test if the idea deserves further investigation.
The input data is coarse and so the revenue can be no more accurate.
Working stocks, debtors/accounts receivable will be added if the evaluation is progressed to the next level.

Production

source of data →

production data →

computation →

production data →

computation →

Sales and Revenue

production data →

computation →

Cashstream 1: Revenue (cash) ➡

Years -->	units	Total	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
Cashstream 1: Production and Revenue								
Production								
3 Nov 2020 Michel Basil: Email of production throughputs and output of saleable products								
Waste removed	000 tonnes	11,000		3,000	3,000	2,500	1,500	1,000
Ore mined	000 tonnes	4,300			800	1,000	1,000	1,000
Head Grade - acid soluble copper	% Cu	0			2.1%	2.1%	2.1%	2.1%
Contained acid soluble copper	000 tonnes	90	0	0	17	21	21	21
Recovery of soluble copper in processing and SX-EW	% Cu	90%			90%	90%	90%	90%
Output and Sales of Cathode Copper	000 tonnes	81	0	0	15	19	19	19
Sales and Revenue								
5 Nov 2020 Peter Murphy: Company paired forecasts of copper price and exchange rate								
Copper price - SX-EW cathode	US$/lb real		3.00	3.00	3.00	3.00	3.00	3.00
Output and Sales of Cathode Copper	US$ millions real	538	0	0	100	125	125	125
Forex A$	A$1.00 = US$...		0.80	0.80	0.80	0.80	0.80	0.80
Cashstream 1: Revenue	A$ millions real	672	0	0	125	156	156	156

Here is an example of ‘Cashstream #1: Revenue’ of slightly more complexity: -

As a study advances, the detail inside Cashstream 1 usually will increase as more investigations and analyses are completed. This example could be a pre-feasibility study that compares alternatives.

In this example, the business imports products A, B and C and on-sells them to its small customers. It incurs tariffs and VAT.

Graphs: Give immediate understanding of the profile of assumed sales, pricing and revenue →

Column Headings: The Years, Units, Total, Year 1, Year 2 etc are entered here in blue font for the first and only time in the entire model →

Sales: of the three types of units →

Pricing of Units: of the three types of units including VAT →

Revenue: As used in Accounting and Tax computations →

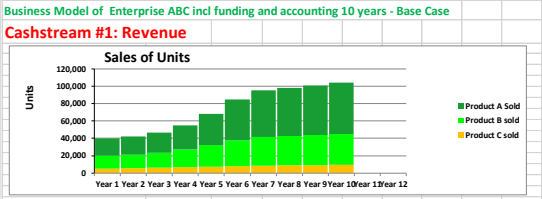
Tariffs : on imported goods →

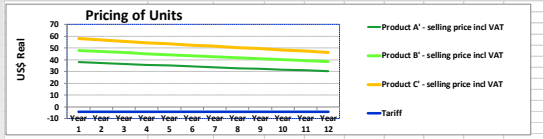
Value Added Tax : →

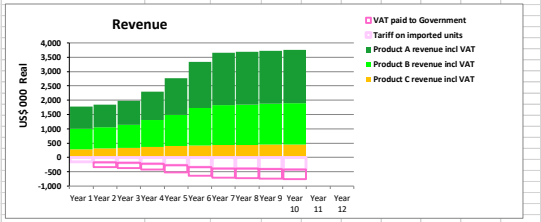
Debtors: →

Cashstream #1: Revenue: **cash received after Tariffs, VAT and Debtors.** →

www.economicevaluation.com.au







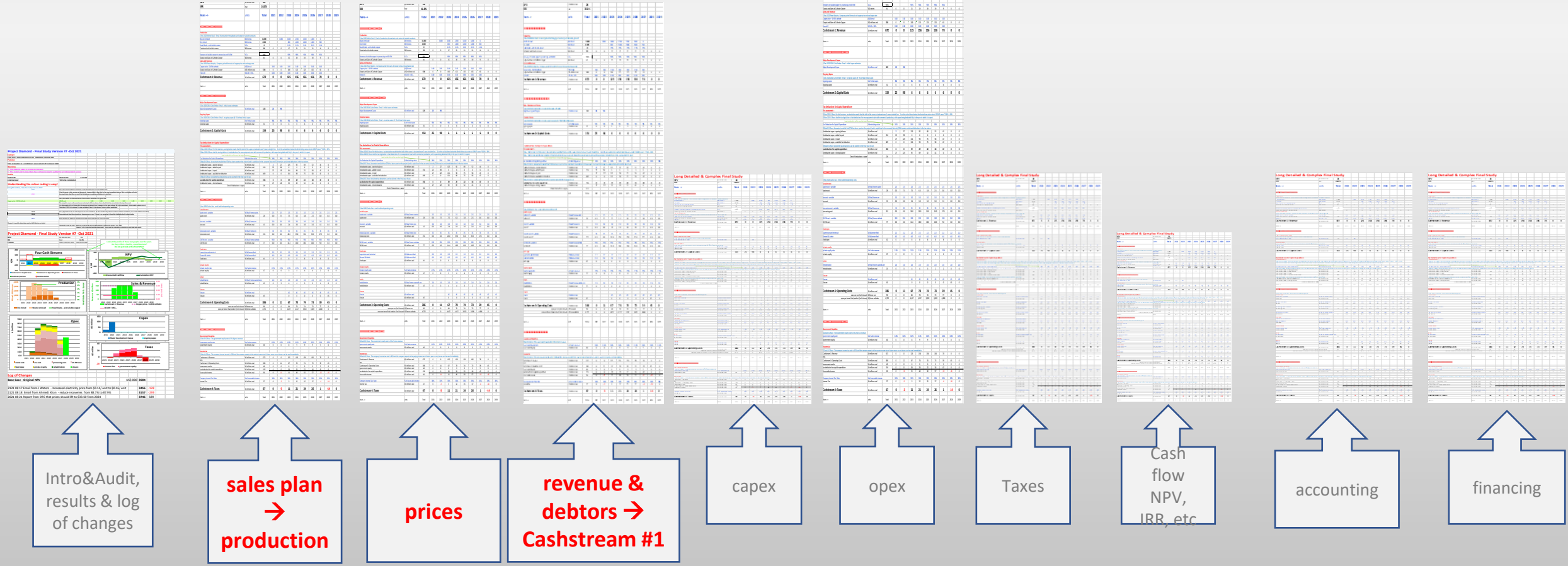
Years -->	units	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cashstream 1: Revenue									
1. Sales of A, B & C units									
1 Aug 2024: Enterprise ABC Marketing Report: page 15									
Units Sold									
Product A Sold	units	400,091	20,000	21,000	23,100	27,720	36,036	46,847	53,874
Product B sold	units	261,523	15,000	15,750	17,325	20,790	24,948	29,938	32,931
Product C sold	units	73,951	5,000	5,500	6,050	6,655	7,321	8,053	8,455
Total ABC units sold	units	735,565	40,000	42,250	46,475	55,165	68,305	84,837	95,260
2. Selling Prices including VAT of ABC units									
Price decreases in real terms									
1 Aug 2024: Enterprise ABC Marketing Report: page 22									
Product A - pricing decrease	in real terms			2%	2%	2%	2%	2%	2%
Product B - pricing decrease	in real terms			2%	2%	2%	2%	2%	2%
Product C - pricing decrease	in real terms			2%	2%	2%	2%	2%	2%
Product A' - selling price incl VAT	US$ Real/ unit		38	37	36	36	35	34	34
Product B' - selling price incl VAT	US$ Real/ unit		48	47	46	45	44	43	43
Product C' - selling price incl VAT	US$ Real/ unit		58	57	56	55	53	52	51
3. Revenue from ABC units									
Product A revenue incl VAT	US$ 000 Real	13,606	760	782	843	991	1,263	1,609	1,814
Product B revenue incl VAT	US$ 000 Real	11,283	720	741	799	939	1,105	1,299	1,400
Product C revenue incl VAT	US$ 000 Real	3,879	290	313	337	363	392	422	434
Revenue incl VAT from ABC units	US$ 000 Real	28,767	1,770	1,836	1,979	2,294	2,759	3,330	3,648
Years -->	units	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
4. Tariff on Imports									
2024 05 17 Dept of Industry will place a $4 per unit tarriff on imported units. (Assume this tariff will rise with inflation so remain $4 real)									
Total ABC units sold	units	735,565	40,000	42,250	46,475	55,165	68,305	84,837	95,260
Tariff	US$ / unit		-4	-4	-4	-4	-4	-4	-4
Tariff on imported units	US$ 000 Real	-2,942	-160	-169	-186	-221	-273	-339	-381
5. Value Added Tax									
2024 06 17 Dept of Taxation website shows a 10% VAT on sales of units. This means that 1/11th of the selling price is VAT.									
Revenue incl VAT from ABC units	US$ 000 Real	735,565	1,770	1,836	1,979	2,294	2,759	3,330	3,648
VAT as a percentage of selling price				9.1%	9.1%	9.1%	9.1%	9.1%	9.1%
VAT paid to Government	units	-2,454	0	-167	-180	-209	-251	-303	-332
6. Revenue after tariffs and VAT									
Total Revenue	US$ 000 Real	23,371	1,610	1,500	1,613	1,865	2,235	2,688	2,935
7. Debtors (Accounts Receivable)									
2024 07 20 F Widdhi: email that buyers will average 14 days to pay cash.									
days from sale to cash received	days		14	14	14	14	14	14	14
Debtors at end of year	US$ 000 Real		68	70	76	88	106	128	140
Increase/(decrease) in debtors at end of ye	US$ 000 Real	0	-68	-3	-5	-12	-18	-22	-12
8. Revenue after debtors									
Cashstream 1: Revenue (cash)	US$ 000 Real	23,371	1,542	1,497	1,607	1,853	2,[illegible]	2,666	2,923
CHECK: Cashstream 1 = Revenue		OK							
Years -->		Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

Here is an example of 'Cashstream #1: Revenue' in a long, detailed and complex model: -

In this illustration Cashstream #1 requires three worksheets…

- → a detailed sales plan which leads to production requirements including raw materials, outputs, working stocks, customers, logistics, … etc
- → prices – which are complex
- → revenue and debtors which lead to Cashstream #1

Many businesses/projects require long, detailed and complex computations of Cashstream #1.



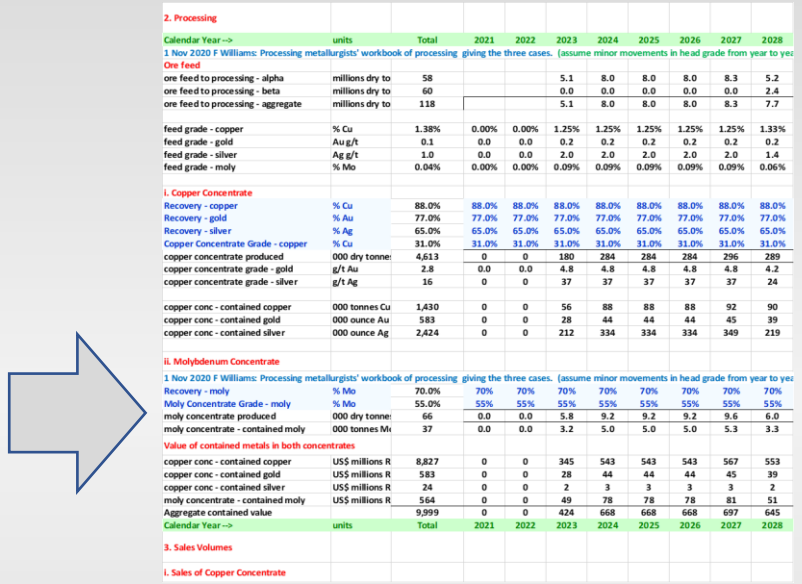
Three models of the same computations

Here are three illustrations of different ways of modelling the revenue of Cashstream #1 .

Each has the same fresh data inputs, the same processing sequence and the same output of products for sale.

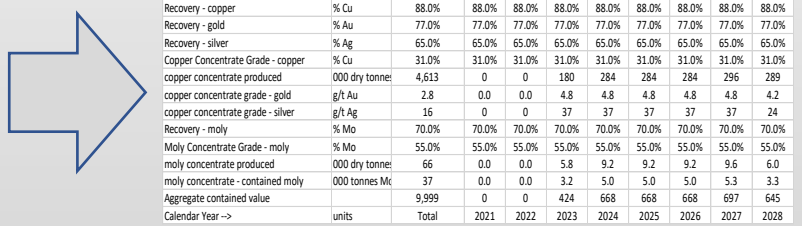
Do not look at the detail but at the ease of quickly following each model!

Intuitive: This version has discrete work-blocks, bold sub-headings, data inputs in blue, computations in black and the time line in green. Its clear flow means that anyone can easily follow the sequence, check the validity of the input data, understand the small steps of computational logic. This model has more rows to make it easier to follow. Others should feel confident with it.



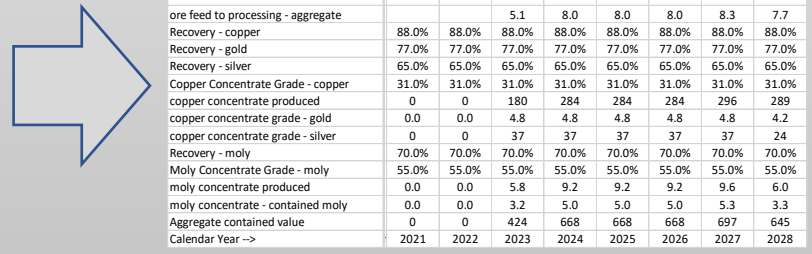
2. Processing										
Calendar Year -->	units	Total	2021	2022	2023	2024	2025	2026	2027	2028
1 Nov 2020 F Williams: Processing metallurgists' workbook of processing giving the three cases. (assume minor movements in head grade from year to ye										
Ore feed										
ore feed to processing - alpha	millions dry to	58			5.1	8.0	8.0	8.0	8.3	5.2
ore feed to processing - beta	millions dry to	60			0.0	0.0	0.0	0.0	0.0	2.4
ore feed to processing - aggregate	millions dry to	118			5.1	8.0	8.0	8.0	8.3	7.7
feed grade - copper	% Cu	1.38%	0.00%	0.00%	1.25%	1.25%	1.25%	1.25%	1.25%	1.33%
feed grade - gold	Au g/t	0.1	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
feed grade - silver	Ag g/t	1.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	1.4
feed grade - moly	% Mo	0.04%	0.00%	0.00%	0.09%	0.09%	0.09%	0.09%	0.09%	0.06%
i. Copper Concentrate										
Recovery - copper	% Cu	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%
Recovery - gold	% Au	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%
Recovery - silver	% Ag	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Copper Concentrate Grade - copper	% Cu	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%
copper concentrate produced	000 dry tonne	4,613	0	0	180	284	284	284	296	289
copper concentrate grade - gold	g/t Au	2.8	0.0	0.0	4.8	4.8	4.8	4.8	4.8	4.2
copper concentrate grade - silver	g/t Ag	16	0	0	37	37	37	37	37	24
copper conc - contained copper	000 tonnes Cu	1,430	0	0	56	88	88	88	92	90
copper conc - contained gold	000 ounce Au	583	0	0	28	44	44	44	45	39
copper conc - contained silver	000 ounce Ag	2,424	0	0	212	334	334	334	349	219
ii. Molybdenum Concentrate										
1 Nov 2020 F Williams: Processing metallurgists' workbook of processing giving the three cases. (assume minor movements in head grade from year to ye										
Recovery - moly	% Mo	70.0%	70%	70%	70%	70%	70%	70%	70%	70%
Moly Concentrate Grade - moly	% Mo	55.0%	55%	55%	55%	55%	55%	55%	55%	55%
moly concentrate produced	000 dry tonne	66	0.0	0.0	5.8	9.2	9.2	9.2	9.6	6.0
moly concentrate - contained moly	000 tonnes Mo	37	0.0	0.0	3.2	5.0	5.0	5.0	5.3	3.3
Value of contained metals in both concentrates										
copper conc - contained copper	US$ millions R	8,827	0	0	345	543	543	543	567	553
copper conc - contained gold	US$ millions R	583	0	0	28	44	44	44	45	39
copper conc - contained silver	US$ millions R	24	0	0	2	3	3	3	3	2
moly concentrate - contained moly	US$ millions R	564	0	0	49	78	78	78	81	51
Aggregate contained value		9,999	0	0	424	668	668	668	697	645
Calendar Year -->	units	Total	2021	2022	2023	2024	2025	2026	2027	2028
3. Sales Volumes										
i. Sales of Copper Concentrate										

Private 'Trophy': This 'expert' in Excel has combined multiple rows into complex algorithms. The 'expert' is very proud. But who can recognise the six lots of fresh input data and the seven lots of calculations? Where and where was the input data sourced? Understanding this model would require lots of time unravelling the algorithms.



2. Processing										
ore feed to processing - aggregate	millions dry to	118			5.1	8.0	8.0	8.0	8.3	7.7
Recovery - copper	% Cu	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%
Recovery - gold	% Au	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%
Recovery - silver	% Ag	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Copper Concentrate Grade - copper	% Cu	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%
copper concentrate produced	000 dry tonne	4,613	0	0	180	284	284	284	296	289
copper concentrate grade - gold	g/t Au	2.8	0.0	0.0	4.8	4.8	4.8	4.8	4.8	4.2
copper concentrate grade - silver	g/t Ag	16	0	0	37	37	37	37	37	24
Recovery - moly	% Mo	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Moly Concentrate Grade - moly	% Mo	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
moly concentrate produced	000 dry tonne	66	0.0	0.0	5.8	9.2	9.2	9.2	9.6	6.0
moly concentrate - contained moly	000 tonnes Mo	37	0.0	0.0	3.2	5.0	5.0	5.0	5.3	3.3
Aggregate contained value		9,999	0	0	424	668	668	668	697	645
Calendar Year -->	units	Total	2021	2022	2023	2024	2025	2026	2027	2028

Lazy or Rushed: This version is even worse because the 'expert' has omitted the units for each row and has not bothered to put a total of each row clearly visible on the left side. Others cannot do a sense check of each sub-total nor quickly check the accuracy of the input data against the external source of that data. It is arrogant and untrustworthy.



2. Processing								
ore feed to processing - aggregate			5.1	8.0	8.0	8.0	8.3	7.7
Recovery - copper	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%
Recovery - gold	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%
Recovery - silver	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Copper Concentrate Grade - copper	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%	31.0%
copper concentrate produced	0	0	180	284	284	284	296	289
copper concentrate grade - gold	0.0	0.0	4.8	4.8	4.8	4.8	4.8	4.2
copper concentrate grade - silver	0	0	37	37	37	37	37	24
Recovery - moly	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Moly Concentrate Grade - moly	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
moly concentrate produced	0.0	0.0	5.8	9.2	9.2	9.2	9.6	6.0
moly concentrate - contained moly	0.0	0.0	3.2	5.0	5.0	5.0	5.3	3.3
Aggregate contained value	0	0	424	668	668	668	697	645
Calendar Year -->	2021	2022	2023	2024	2025	2026	2027	2028

How to successfully model Revenue, Sales & Operations …

A person creating an economic evaluation model needs to **fully understand in detail, the complete sequence of a business** from customer needs through to deliveries, from raw material inputs through to finished products, from the shape of this individual business to the shape of the evolving industry.

The evaluation specialist typically needs to put the computer aside, to get amongst the receipt of customers' orders, get across to the operations/production facility and get amongst the despatch and logistics.

You need to spend time with the people working/managing the customer→ production → logistics sequence. Where appropriate: spend time on-shift with the operators, understand the sourcing of raw materials, follow each product through to delivery to its customers, know what customer need (not want), investigate the pricing, understand the marketing strategy, understand the entire industry …

Evaluation specialists cannot be passive/lazy and simply accept at 'face value' the various operational forecasts, the sales forecasts and the logistics/payments from each of the experts in these fields.

Beware of study leaders, with engineering, operational or technical backgrounds, who naturally focus on their arena of expertise. They may treat the sales and pricing as sacrosanct and beyond question. These leaders tend to focus on the capex and opex, not understanding that testing ideas in marketing, sales and revenue should have much more impact.

Stage and ampitheatre, Palmyra, Syria (before ISIS)

Tetrapylon at the crossroads, Palmyra, Syria (before ISIS)

"Get off your seat and amongst the action!"

Business evaluations in the mining industry have particular challenges in ***Cashstream #1: Revenue, Sales & Operations*** and so have an extra module to read.

END