Teach yourself how to build a Business Case for a Social Enterprise

2b. Hands On Modelling

A Typical Worksheet

Building a business case has three stages: -

Step 1: Build a business model in Excel

Step 2: Use the model to evaluate the project

Step 3: Make decisions

Spend only a few seconds on each page

It may contain errors so always check your own work

and have it audited by a competent person

Building a business case has three stages: -

Step 1: Build a business model in Excel

Step 2: Use the model to evaluate the project

This module will construct a typical worksheet

Step 3: Make decisions

Spend only a few seconds on each page

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This module will cover: -

Worksheets typically have three parts:

Worksheet rigor will make it easy to follow: -

A. Intuitive down the worksheet

B. Intuitive across the worksheet

How to reduce errors and speed up workmanship

Splitting the window

A worksheet typically has three parts...

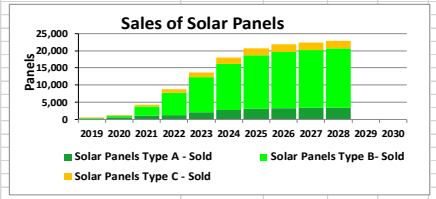
1. Bold Title
2. Summary
3. Workings

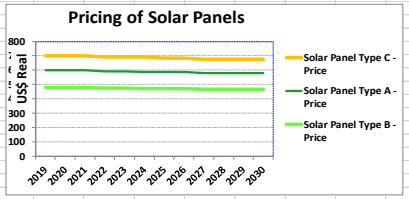
Economic Model of Solar Panels for Northern Villages - BASE CASE

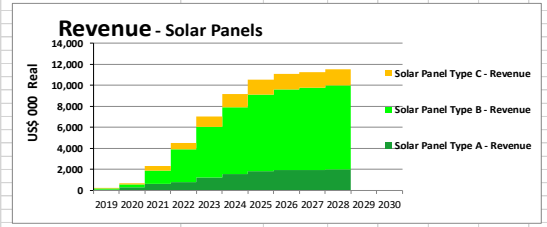
1. Sales & Revenue

Cashflow Results

Internal Rate of Return		12%
Net Present Value	US$ 000	1,697
Net Cash Flow (Real)	US$ 000 Real	7,668







Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cashstream 1: Sales & Revenue														
1. Sales of Solar Panels														
2018 11 20 Forecast of solar panel sales by Rural Communities Co														
Solar Panels Type A - Sold	solar panels	20,641	136	480	990	1,296	2,025	2,673	3,078	3,240	3,321	3,402	0	0
Solar Panels Type B- Sold	solar panels	99,584	170	560	2,680	6,548	10,231	13,505	15,552	16,370	16,779	17,189	0	0
Solar Panels Type C - Sold	solar panels	13,660	80	160	589	874	1,365	1,802	2,075	2,184	2,239	2,293	0	0
Total solar panels sold	solar panels	133,885	386	1,200	4,259	8,718	13,621	17,980	20,704	21,794	22,339	22,884	0	0
2. Pricing of Solar Panels														
2018 11 20 Forecast of solar panel prices by Rural Communities Co														
Solar Panel Type A - Price	US$ Real/ unit incl VAT		599	599	599	593	593	587	587	587	581	581	581	581
Solar Panel Type B - Price	US$ Real/ unit incl VAT		480	480	480	475	475	470	470	470	465	465	465	465
Solar Panel Type C - Price	US$ Real/ unit incl VAT		699	699	699	692	692	692	685	685	678	678	678	678
3. Revenue from Solar Panels														
Solar Panel Type A - Revenue	US$ 000 Real	12,116	81	288	593	769	1,201	1,569	1,807	1,902	1,930	1,977	0	0
Solar Panel Type B - Revenue	US$ 000 Real	46,755	82	269	1,285	3,109	4,858	6,348	7,309	7,694	7,806	7,996	0	0
Solar Panel Type C - Revenue	US$ 000 Real	9,359	56	112	411	604	944	1,246	1,420	1,495	1,517	1,554	0	0
Revenue from Solar Panels	US$ 000 Real	68,230	219	668	2,290	4,482	7,003	9,163	10,536	11,091	11,252	11,527	0	0
5. Debtors														
2018 10 07 email from Accountant G Lee														
days from sale to cash received	days		25	25	25	25	25	25	25	25	25	25	25	25
debtors at end of year	US$ 000 Real		15	46	157	307	480	628	722	760	771	790	0	0
Total increase/(decrease) in debtors at end	US$ 000 Real	0	15	31	111	150	173	148	94	38	11	19	-790	0
CHECK: Debtors sum to zero		OK												
Cashstream 1: Revenue (incl. debtors)	US$ 000 Real	68,230	204	637	2,179	4,332	6,830	9,015	10,442	11,053	11,241	11,508	790	0

The first part is a set of bold titles …

Economic Model of Solar Panels for Northern Villages - BASE CASE

1. Sales & Revenue

1. Bold Titles

At the head of **every** worksheet is: -

- The name of the model - in green font referenced across from the "Intro & audits" worksheet
- The name of this worksheet - bold and descriptive

Immediately on opening the worksheet everyone knows what it is about.

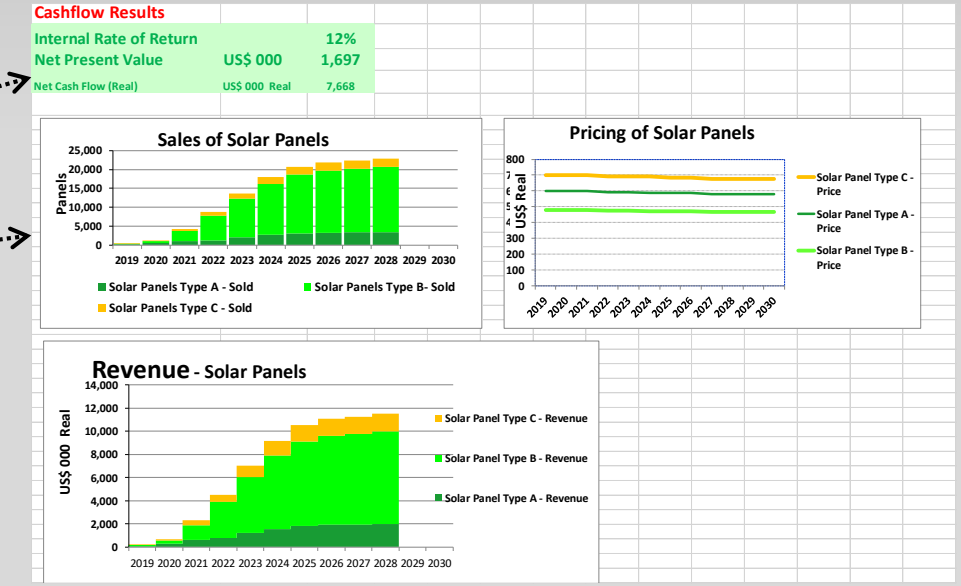
(How many times have you opened a model and not known what is happening on that worksheet until you investigate and check up and down and all over the page?)

The second part is a summary of results and key inputs……

2. Summary

- Show the results as numbers
- Show the inputs and the results as graphs

Some people prefer numbers whereas others prefer graphs/visual



Graphs are extremely important

- Firstly, you find your own errors before others do!
- Colleagues will find their own errors
- But poor modellers jump this step because they are in too much of a rush

→ Everyone can quickly understand the project & its underlying business.

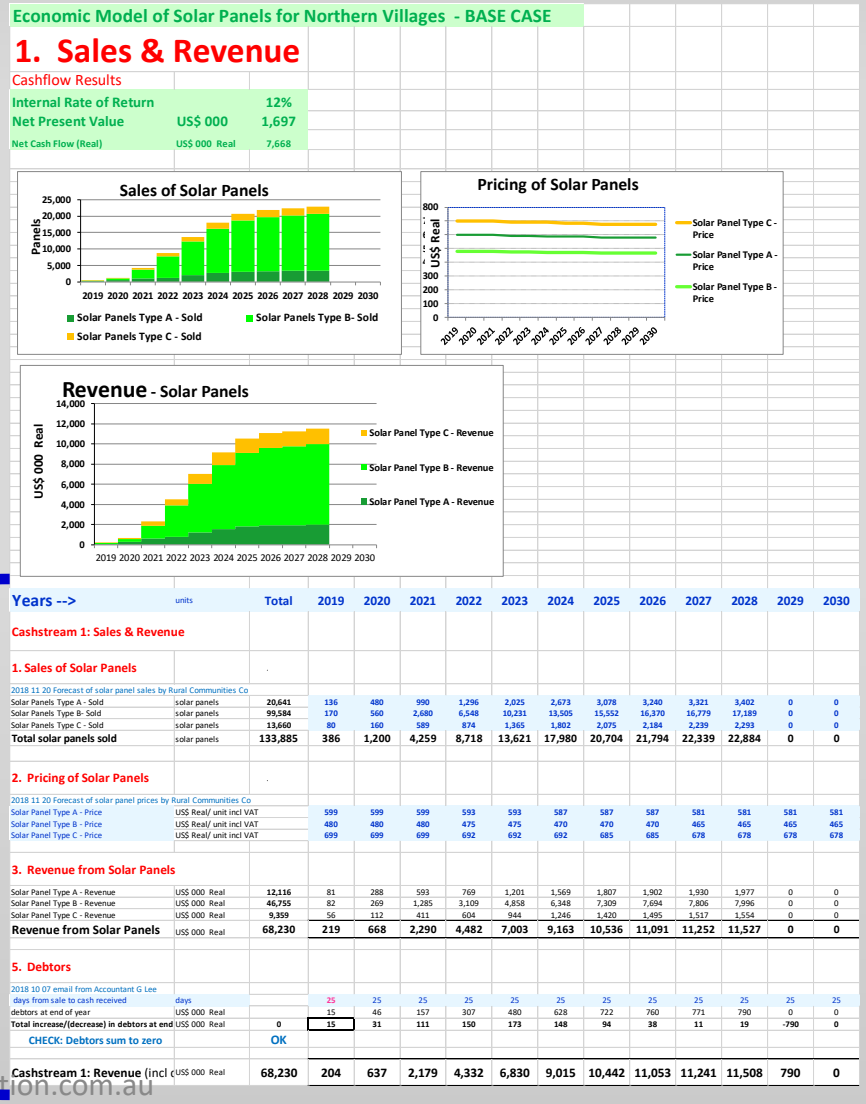
The third part is the biggest because it comprises all the workings……

3. Workings

Workings will form the bulk of the typical worksheet.

- Each worksheet will be unique to the specific project
- The formula in a cell is called an **'algorithm'**

  It can be a simple addition or it can be a long, complex, sophisticated formula that uses all sorts of Excel functions that are unfamiliar to most people. This website prefers small steps of simple formulas to people showing off their knowledge of 'elite' Excel.



3. Workings

The workings must be →

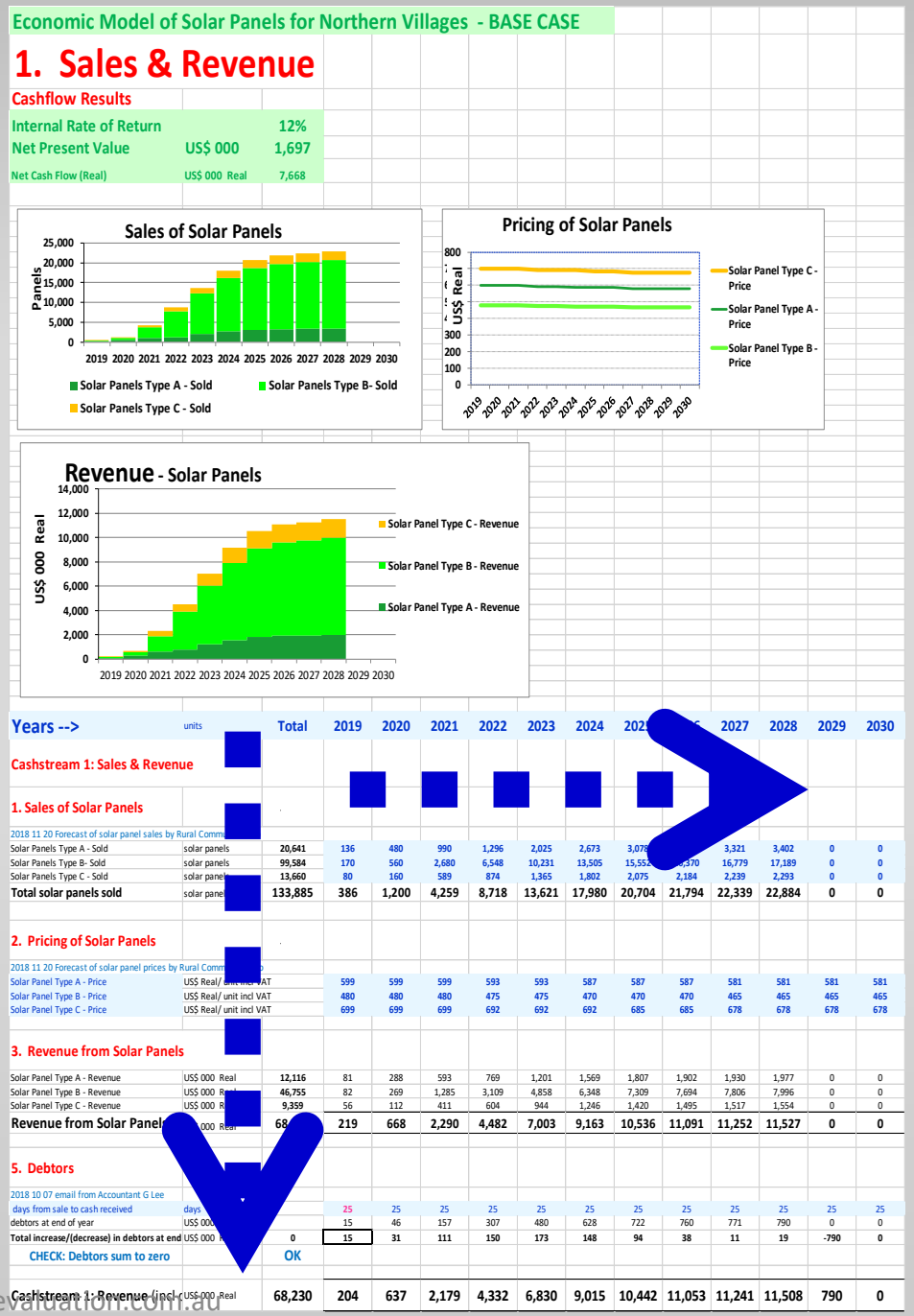
3. Workings

must be:

A. intuitive down the worksheet

and

B. Intuitive across the worksheet



Workings are made intuitive <u>down</u> the worksheet by:

a) discrete work blocks.

Here the sales revenue is computed in **self-contained discrete blocks.**

Very easy to understand!

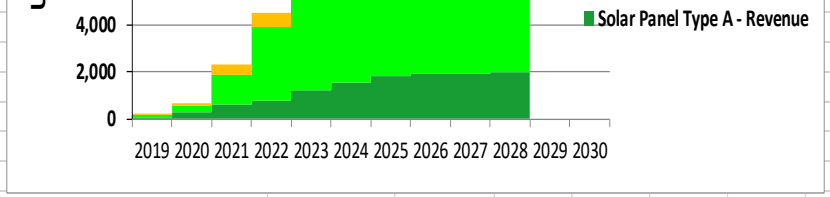
1. Sales

2. Pricing

3. Revenue

4. Debtors

Cashstream 1: Sales Revenue



Years -->	units	Total	2019	2020	2021	2022	2023	2024
Cashstream 1: Sales & Revenue								
1. Sales of Solar Panels								
2018 11 20 Forecast of solar panel sales by Rural Communities Co								
Solar Panels Type A - Sold	solar panels	20,641	136	480	990	1,296	2,025	2,673
Solar Panels Type B- Sold	solar panels	99,584	170	560	2,680	6,548	10,231	13,505
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2. Pricing of Solar Panels								
2018 11 20 Forecast of solar panel prices by Rural Communities Co								
Solar Panel Type A - Price	US$ Real/ unit incl VAT		599	599	599	593	593	587
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Solar Panel Type C - Price	US$ Real/ unit incl VAT		699	699	699	692	692	692
3. Revenue from Solar Panels								
Solar Panel Type A - Revenue	US$ 000 Real	12,116	81	288	593	769	1,201	1,569
Solar Panel Type B - Revenue	US$ 000 Real	46,755	82	269	1,285	3,109	4,858	6,348
Solar Panel Type C - Revenue	US$ 000 Real	9,359	56	112	411	604	944	1,246
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Total increase/(decrease) in debtors at end	US$ 000 Real	0	15	31	111	150	173	148
CHECK: Debtors sum to zero		OK						
Cashstream 1: Revenue (incl	US$ 000 Real	68,230	204	637	2,179	4,332	6,830	9,015

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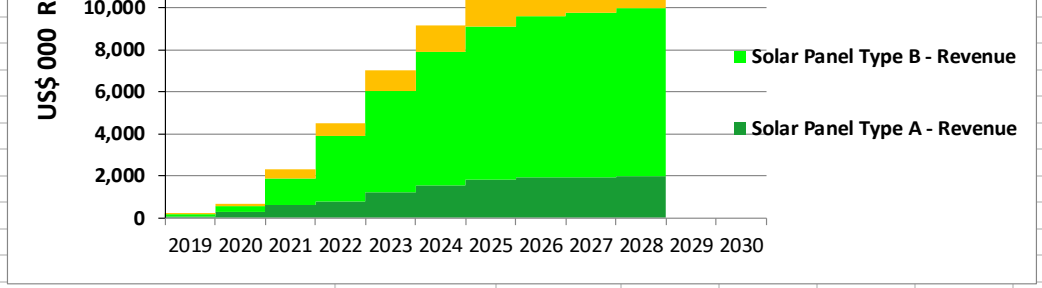

1. Sales
2. Pricing
3. Revenue
4. Debtors

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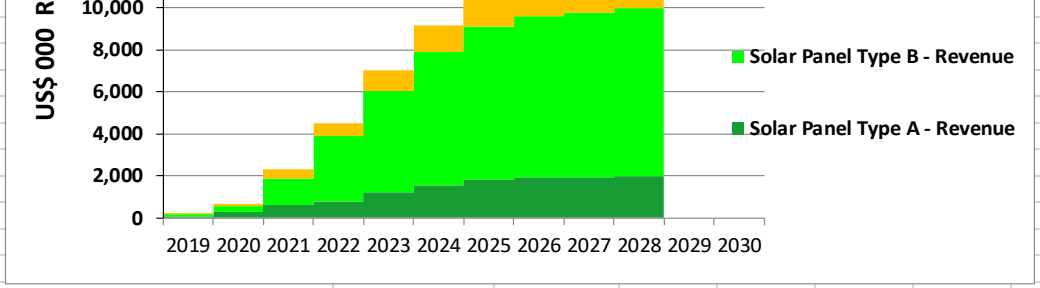

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total sales

total revenue

total debtors

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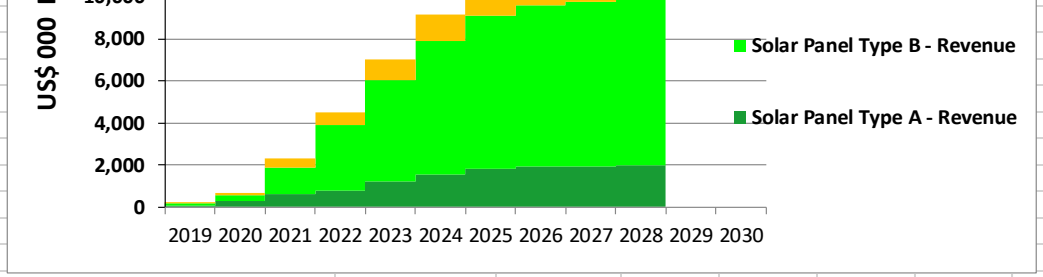
d) Each subsection flows into an obvious bold total for that 'CASH-STREAM'



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CHECK: Debtors sum to zero		OK						
Cashstream 1: Revenue (incl	US$ 000 Real	**68,230**	204	637	2,179	4,332	6,830	9,015

CASH-STREAM

Workings are made intuitive down the worksheet by:

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d) Each subsection flows into an obvious bold total for that 'CASHSTREAM'
e) Every row is immediately identified by its colour coding

Green means the data is 'referenced' across from another worksheet

Blue means this data is inputted here

Black means these are calculations
- Using cells only on this same worksheet !!!

Years -->	units	Total	2019	2020	2021
Cashstream 3: Operating Costs					
1. Sales of solar panels					
Referenced from the 'Sales&Revenue' worksheet					
Solar Panels Type A - Sold	solar panels	**20,641**	136	480	990
Solar Panels Type B- Sold	solar panels	**99,584**	170	560	2,680
Solar Panels Type C - Sold	solar panels	**13,660**	80	160	589
Total solar panels sold	solar panels	**133,885**	**386**	**1,200**	**4,259**
2. Purchase price of solar panels					
2018 05 17 Quote by email from Modern Electrics, G Rayton purchase cost of solar panels from factory warehouse					
Purchase cost of solar panels - Type A	US$ real /panel		300	300	300
Purchase cost of solar panels - Type B	US$ real /panel		280	280	280
Purchase cost of solar panels - Type C	US$ real /panel		390	390	390
3. Purchase cost of solar panels					
cost of solar panels - Type A	US$ 000 real	**6,192**	41	144	297
cost of solar panels - Type B	US$ 000 real	**27,883**	48	157	750
cost of solar panels - Type C	US$ 000 real	**5,327**	31	62	230
cost of solar panels - total	US$ 000 real	**39,403**	**120**	**363**	**1,277**

Workings are made intuitive down the worksheet by:

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c) Each discrete work-block has obvious results at its foot
d) Each subsection flows into an obvious bold total for that 'CASHSTREAM'
e) Every row is immediately identified by its colour coding
f) The source of fresh data input is noted in the row above

Record the source of data the row above.

- **When** was it produced
- **Who** supplied it to you
- **What** are the contents of the email, report, note, phone call.

So everyone can see if the data is fresh and sound.

This is one of the unique features of this website that is so much appreciated by other users of business models.
But many modellers are too lazy or in a rush.

Cashstream 3: Operating Costs			
Months -->	units	Total	Apr 2020
3a. production of fertiliser			
2018 09 05 J Lemon telecon: Assume there will be three weeks of organic fertiliser in working stocks in the plan			
sales of organic fertiliser	kilograms	**2,529,537**	**0**
working stocks of processer uniits	days		
fertiliser - working stocks closing	kilograms		0
fertiliser - increase/(decrease) in working stocks	kilograms		0
production of fertiliser	kilograms	**2,529,537**	**0**
3b. variable cost of production			
2018 09 05 T Chan: "Operation of the Organic Fertiliser Plant" pages 4 to 8			
collection	$/ kg Real		
mulching, mixing, processing	$/ kg Real		
logistics	$/ kg Real		
repairs & maintenance	$/ kg Real		
3b. variable cost of production	$/t Real		0.00
variable cost of production	$ Real	**326,110**	**0**
3c. fixed costs			
2018 09 05 T Chan: "Operation of the Organic Fertiliser Plant" pages 4 to 8. Fixed costs will start immediately			
employees	$ Real	**46,080**	**960**
telephones & computers	$ Real	**2,400**	**50**
insurance	$ Real	**480**	**10**
bookkeeping, accounting, legal, insurance	$ Real	**1,920**	**40**

A. . Workings are made intuitive <u>down</u> the worksheet by:

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f) The source of fresh data input is noted in the row above

g) Computations are in simple, obvious steps

The sequence of calculations is very obvious because it is in clear, simple steps.

- The sources of the data is recorded.
- The steps are small & obvious
- The results are easily checked
- The worksheet is intuitive
- "It is like a 'story book'"

Poor modellers would compress these steps into one, long complex algorithm:

- It would 'secretly' use data from other worksheets.
- It would be tedious to check
- Errors would not be obvious.
- But the modeller would be smug.

Years -->	units	Total	2019	2020	2021
Cashstream 3: Operating Costs					
1. Sales of solar panels					
Referenced from the 'Sales&Revenue' worksheet					
Solar Panels Type A - Sold	solar panels	**20,641**	126	480	990
Solar Panels Type B- Sold	solar panels	**99,584**	1[illegible]	560	2,680
Solar Panels Type C - Sold	solar panels	**13,660**	8[illegible]	160	589
Total solar panels sold	solar panels	**133,885**	3[illegible]	**1,200**	**4,259**
2. Purchase price of solar panels					
2018 05 17 Quote by email from Modern Electrics, G Rayton purchase cost of solar panels from factory warehouse					
Purchase cost of solar panels - Type A	US$ real /panel		3[illegible]	300	300
Purchase cost of solar panels - Type B	US$ real /panel		2[illegible]	280	280
Purchase cost of solar panels - Type C	US$ real /panel		3[illegible]	390	390
3. Purchase cost of solar panels					
cost of solar panels - Type A	US$ 000 real	**6,192**	41	144	297
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cost of solar panels - Type C	US$ 000 real	**5,327**	31	[illegible]	230
cost of solar panels - total	US$ 000 real	**39,403**	**120**	**363**	**1,277**

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a) discrete work blocks.
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d) Each subsection flows into an obvious bold total for that 'CASHSTREAM'
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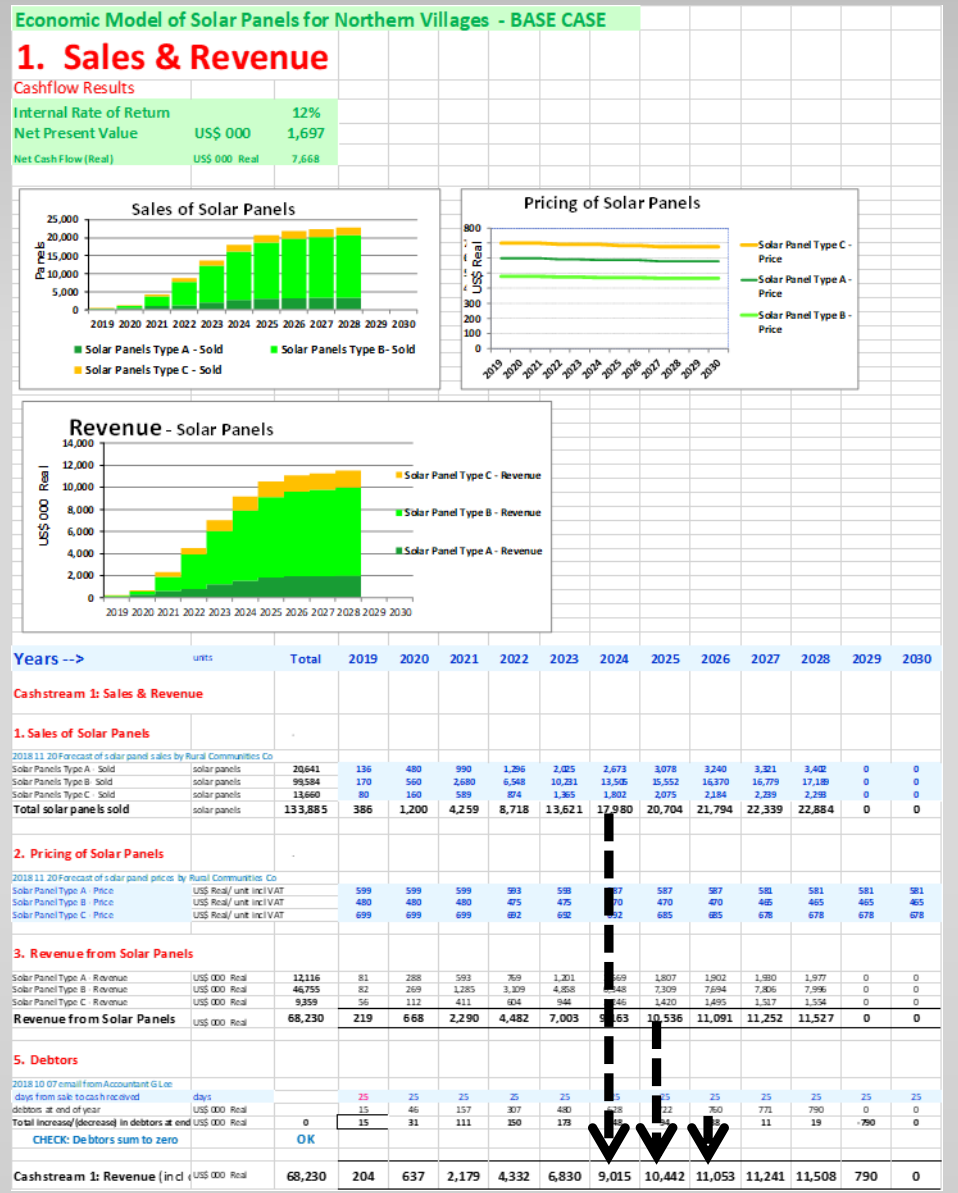
f) The source of fresh data input is noted in the row above
g) Computations are in simple, obvious steps

h) Sub-totals are obvious and flow to a visual section total.



subtotal →

subtotal →

subtotal →

Section total →

A. Workings are made intuitive <u>down</u> the worksheet by:

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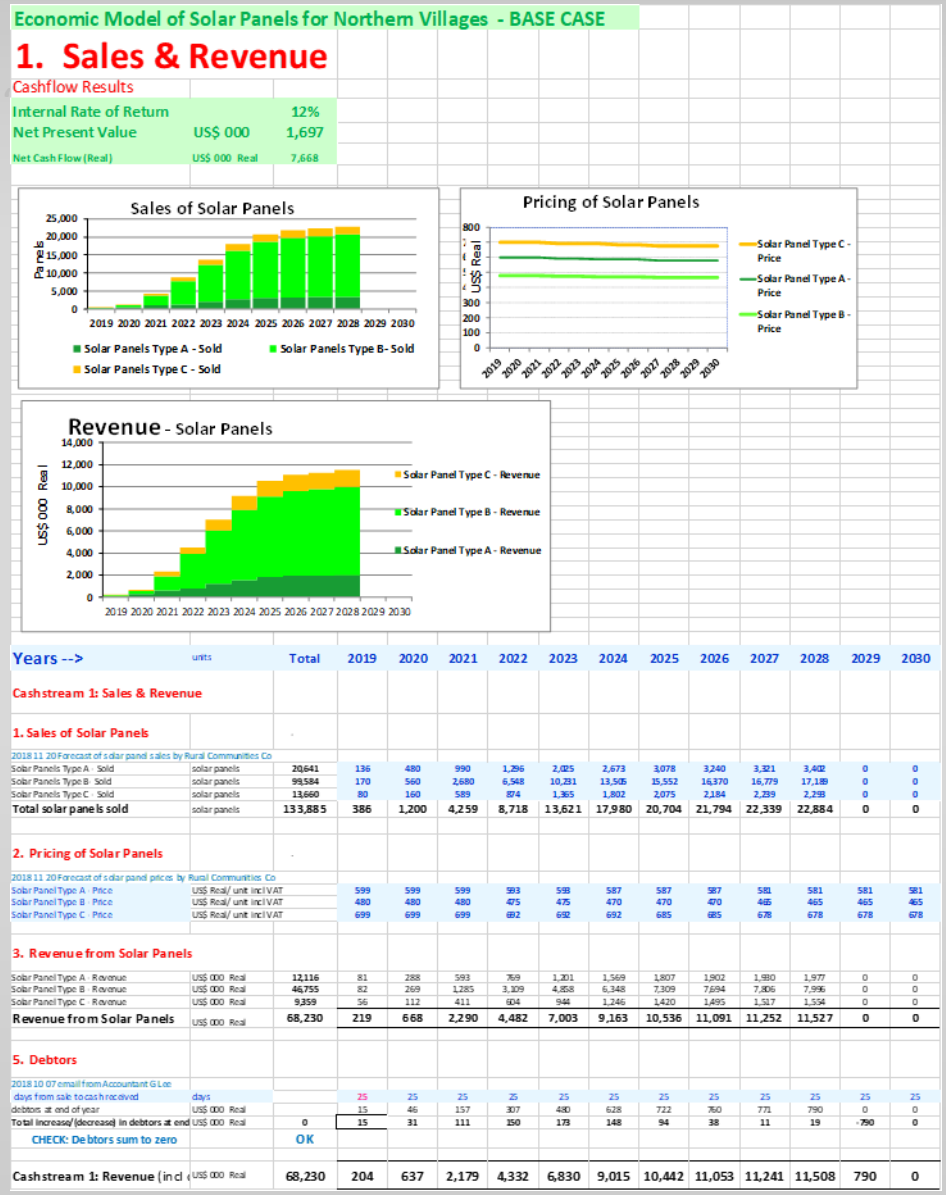
g) Computations are in simple, obvious steps
h) Sub-totals are obvious and flow to a visual section total.



i) You have resisted any urge to use advanced Excel :

Avoid using:-

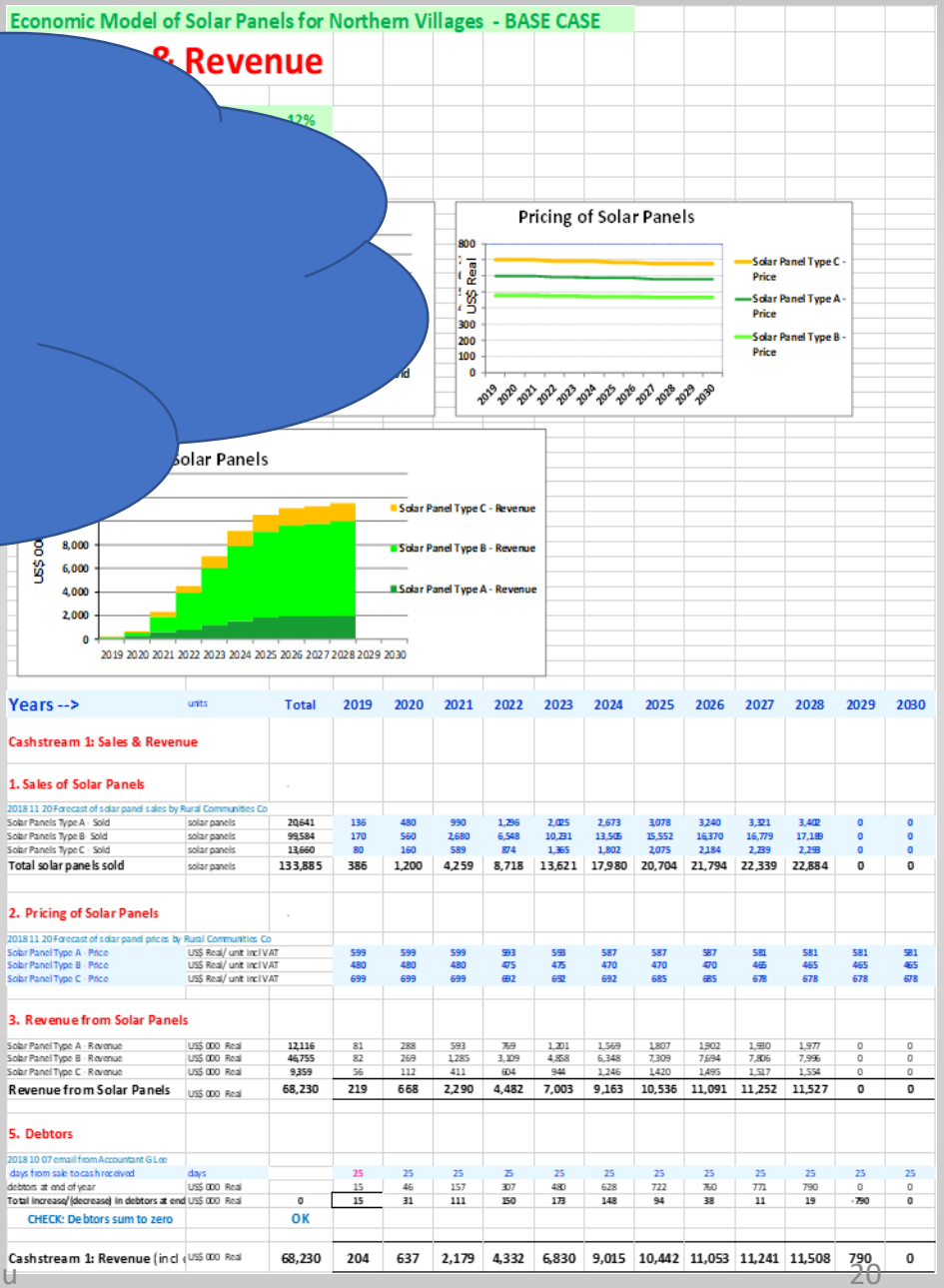
- functions,
- draw-down menus, tables,
- links,
- etc

You may feel confident about using these functions but your Project Team will hate them and lose confidence in your model. They will 'roll their eyes' and be dismayed and not bother with your work.

Instead. take a little extra time and use your intellect to create your model so it is easy for others to easily read. The time spent upfront will be repaid many times over to yourself and your colleagues.

Think: “I am not creating a ‘trophy’ to display my prowess in modelling.”

“Instead, my work needs to be so easy-to-follow, that a person unfamiliar with the project can quickly understand it all and feel empowered.”



Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cashstream 1: Sales & Revenue														
1. Sales of Solar Panels														
2018 11 20 Forecast of solar panel sales by Rural Communities Co														
Solar Panels Type A - Sold	solar panels	20,641	136	480	990	1,296	2,025	2,673	3,078	3,240	3,321	3,402	0	0
Solar Panels Type B - Sold	solar panels	99,584	170	560	2,680	6,548	10,231	13,505	15,552	16,370	16,779	17,189	0	0
Solar Panels Type C - Sold	solar panels	13,660	80	160	589	874	1,365	1,802	2,075	2,184	2,239	2,293	0	0
Total solar panels sold	solar panels	133,885	386	1,200	4,259	8,718	13,621	17,980	20,704	21,794	22,339	22,884	0	0
2. Pricing of Solar Panels														
2018 11 20 Forecast of solar panel prices by Rural Communities Co														
Solar Panel Type A - Price	US$ Real/ unit incl VAT		599	599	599	593	593	587	587	587	581	581	581	581
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Solar Panel Type C - Price	US$ Real/ unit incl VAT		699	699	699	692	692	692	685	685	678	678	678	678
3. Revenue from Solar Panels														
Solar Panel Type A - Revenue	US$ 000 Real	12,116	81	288	593	769	1,201	1,569	1,807	1,902	1,930	1,977	0	0
Solar Panel Type B - Revenue	US$ 000 Real	46,755	82	269	1,285	3,109	4,858	6,348	7,309	7,694	7,806	7,996	0	0
Solar Panel Type C - Revenue	US$ 000 Real	9,359	56	112	411	604	944	1,246	1,420	1,495	1,517	1,554	0	0
Revenue from Solar Panels	US$ 000 Real	68,230	219	668	2,290	4,482	7,003	9,163	10,536	11,091	11,252	11,527	0	0
5. Debtors														
2018 10 07 email from Accountant G Lee														
days from sale to cash received	days		25	25	25	25	25	25	25	25	25	25	25	25
debtors at end of year	US$ 000 Real		15	46	157	307	480	628	722	760	771	790	0	0
Total increase/(decrease) in debtors at end	US$ 000 Real	0	15	31	111	150	173	148	94	38	11	19	-790	0
CHECK: Debtors sum to zero		OK												
Cashstream 1: Revenue (incl	US$ 000 Real	68,230	204	637	2,179	4,332	6,830	9,015	10,442	11,053	11,241	11,508	790	0

3. Workings

must be:

A. intuitive down the worksheet

and

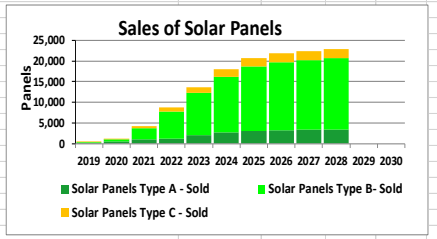
B. Intuitive across the worksheet.

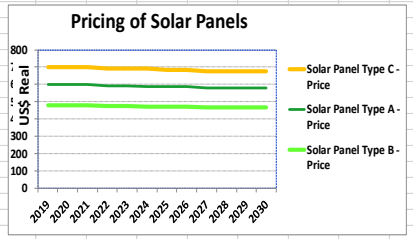
Economic Model of Solar Panels for Northern Villages - BASE CASE

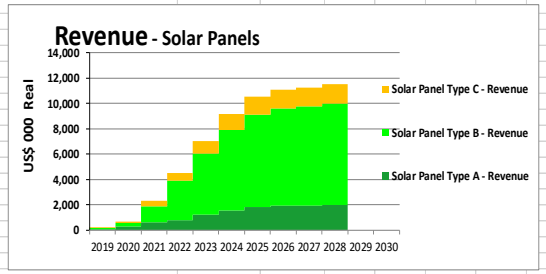
1. Sales & Revenue

Cashflow Results

Internal Rate of Return		12%
Net Present Value	US$ 000	1,697
Net Cash Flow (Real)	US$ 000 Real	7,668







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Solar Panels Type C - Sold	solar panels	13,660	80	160	589	874	1,365	1,802	2,075	2,184	2,239	2,293	0	0
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CHECK: Debtors sum to zero		OK												
Cashstream 1: Revenue (incl. GST)	US$ 000 Real	68,230	204	637	2,179	4,332	6,830	9,015	10,442	11,053	11,241	11,508	790	0

B. . Workings are intuitive <u>across</u> the worksheet because:

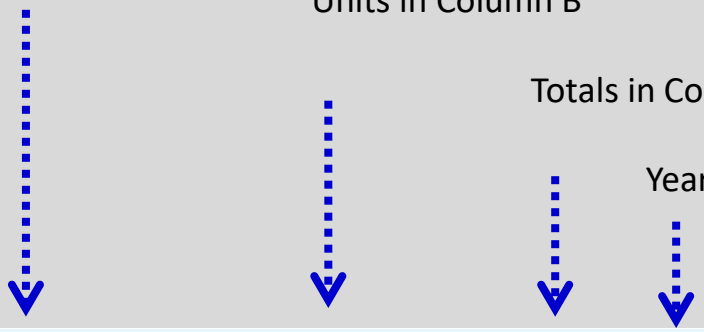
a) Every column has a purpose

Descriptors in Column A

Units in Column B

Totals in Column C

Years or months in Column D and to the right



Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026
Cashstream 1: Sales & Revenue										
1. Sales of Solar Panels										
2018 11 20 Forecast of solar panel sales by Rural Communities Co										
Solar Panels Type A - Sold	solar panels	**20,641**	136	480	990	1,296	2,025	2,673	3,078	3,240
Solar Panels Type B- Sold	solar panels	**99,584**	170	560	2,680	6,548	10,231	13,505	15,552	16,370
Solar Panels Type C - Sold	solar panels	**13,660**	80	160	589	874	1,365	1,802	2,075	2,184
Total solar panels sold	solar panels	**133,885**	**386**	**1,200**	**4,259**	**8,718**	**13,621**	**17,980**	**20,704**	**21,794**

Sometimes Column D will hold opening balances,
Sometimes Columns D to say H may hold historical data for comparison

Do not do this ....

Do not have Column A as blank

Do not have Column B only for main headings

		Years -->	units	Total	2019	2020	2021
		Cashstream 1: Sales & Revenue					
		1. Sales of Solar Panels					
		2018 11 20 Forecast of solar panel sales by Rural Communities Co					
		Solar Panels Type A - Sold	solar panels	**20,641**	**136**	**480**	**990**
		Solar Panels Type B- Sold	solar panels	**99,584**	**170**	**560**	**2,680**
		Solar Panels Type C - Sold	solar panels	**13,660**	**80**	**160**	**589**
		Total solar panels sold	solar panels	**133,885**	**386**	**1,200**	**4,259**
		2. Pricing of Solar Panels					
		2018 11 20 Forecast of solar panel prices by Rural Communities Co					
		Solar Panel Type A - Price	US$ Real/ unit incl VAT		**599**	**599**	**599**
		Solar Panel Type B - Price	US$ Real/ unit incl VAT		**480**	**480**	**480**
		Solar Panel Type C - Price	US$ Real/ unit incl VAT		**699**	**699**	**699**
		3. Revenue from Solar Panels					
		Solar Panel Type A - Revenue	US$ 000 Real	**12,116**	81	288	593
		Solar Panel Type B - Revenue	US$ 000 Real	**46,755**	82	269	1,285
		Solar Panel Type C - Revenue	US$ 000 Real	**9,359**	56	112	411
		Revenue from Solar Panels	US$ 000 Real	**68,230**	**219**	**668**	**2,290**

Do not fall into the trap of having blank columns and in-dents to make the worksheet look ‘nicer’ or more ‘accounting-like’.

- They only add clutter,
- They add redundant volume,
- People make mistakes more easily and
- errors are harder to detect.

B. Workings are intuitive <u>across</u> the worksheet because:

a) Every column has a purpose

b) Column A shows every heading and descriptor with full wording.

- Full descriptions are used.
  ('Sales of solar panels – Type A' is used rather than 'Panels – A'
- Using minimal wording is unfair on other users with limited experience
- Repeating the same descriptor for different meanings is lazy

Column A

'purchase price' is more descriptive than 'cost'

Cash Operating Costs			
1. Sales of solar panels			
Referenced from the 'Sales&Revenue' worksheet			
Solar Panels Type A - Sold	solar panels	**20,641**	136
Solar Panels Type B- Sold	solar panels	**99,584**	170
Solar Panels Type C - Sold	solar panels	**13,660**	80
Total solar panels sold	solar panels	**133,885**	**386**
2. Purchase price of solar panels			
2018 05 17 Quote by email from Modern Electrics, G Rayton purchase cost of solar panels from factory warehouse			
Purchase price of solar panels - Type A	US$ real /panel		300
Purchase price of solar panels - Type B	US$ real /panel		280
Purchase price of solar panels - Type C	US$ real /panel		390
3. Cost of solar panels			
cost of solar panels - Type A	US$ 000 real	**6,192**	41
cost of solar panels - Type B	US$ 000 real	**27,883**	48
cost of solar panels - Type C	US$ 000 real	**5,327**	31
cost of solar panels - total	US$ 000 real	**39,403**	**120**

B. Workings are intuitive <u>across</u> the worksheet because:

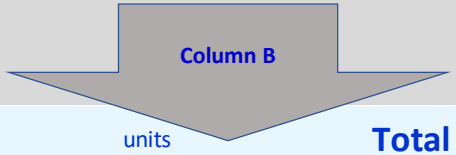
a) Every column has a purpose

b) Every descriptor has full wording

c) Column B shows the units with full and unambiguous wording.

- metres - not "M" or "m"
- US$ 000 Real - not $k
- *US$ nominal per solar panel - not $/p*

Too many models have been rushed out using only "$" → But are they US$? A$? $real? $Nominal?



Years -->	units	Total	2019	2020	2021
Cashstream 1: Sales & Revenue					
1. Sales of Solar Panels					
2018 11 20 Forecast of solar panel sales by R[illegible]s Co					
Solar Panels Type A - Sold	solar panels	20,641	136	480	990
Solar Panels Type B- Sold	solar panels	99,584	170	560	2,680
Solar Panels Type C - Sold	solar panels	13,660	80	160	589
Total solar panels sold	[illegible]lar panels	133,885	386	1,200	4,259
2. Pricing of Solar Panels					
2018 11 20 Forecast of solar panel prices by Rural [illegible] Co					
Solar Panel Type A - Price	US$ Real/ unit incl VAT		599	599	599
Solar Panel Type B - Price	US$ Real/ unit incl VAT		480	480	480
Solar Panel Type C - Price	US$ Real/ unit incl VAT		699	699	699

B. Workings are made intuitive <u>across</u> the worksheet because:

a) Every column has a purpose

b) Every unit has full meaning

d) Column C shows row totals

- **The totals are obvious <u>on the left</u>** and not hidden away to the right in row Z.
- These totals are important to do accurate modelling and should be kept visible
- You must check these totals against the source data to confirm the correct amounts have been inputted.

Column C

Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cashstream 1: Sales & Revenue														
1. Sales of Solar Panels														
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Solar Panels Type C - Sold	solar panels	13,660	80	160	589	874	1,365	1,802	2,075	2,184	2,239	2,293	0	0
Total solar panels sold	solar panels	**133,885**	**386**	**1,200**	**4,259**	**8,718**	**13,621**	**17,980**	**20,704**	**21,794**	**22,339**	**22,884**	**0**	**0**
2. Pricing of Solar Panels														
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3. Revenue from Solar Panels														
Solar Panel Type A - Revenue	US$ 000 Real	**12,116**	81	288	593	769	1,201	1,569	1,807	1,902	1,930	1,977	0	0
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Revenue from Solar Panels	US$ 000 Real	**68,230**	**219**	**668**	**2,290**	**4,482**	**7,003**	**9,163**	**10,536**	**11,091**	**11,252**	**11,527**	**0**	**0**

Years -->	units	Total	2019	2020	2021	2022							
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There is a terrible history of business model disasters that have resulted from incorrect data being inputted. A classic error is to be too rushed to include totals.

This modeller was too lazy or in too much of a rush to include row totals and check back with the source data.

Unbelievable!!!!

B. Workings are intuitive <u>across</u> the worksheet because:

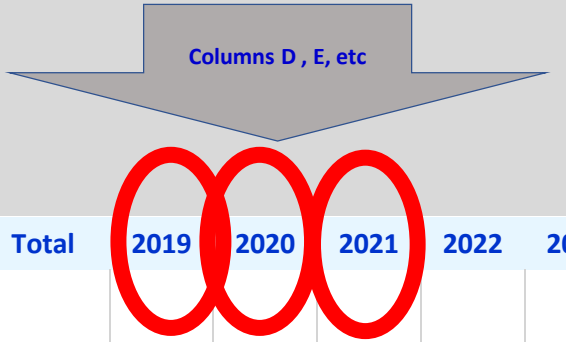
a) Every descriptor has full wording

b) Every unit has full meaning Column c

c) Column C shows the totals for all columns to the right

e) Columns D, E, F etc are recognised as prime positioning.

The columns to the right of "Total" should get straight into action.
They are not left blank or cluttered with unused history.
(Sometimes they will be needed for opening data or historical data.)



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b) Every descriptor has full wording
c) Every unit has full meaning Column c
d) Column C shows the totals for all columns to the right
e) Columns D & E are recognised as prime positioning.

f) Years are consistent in every worksheet.

- Here for example, 2019 is in column D. And so 2019 will be in Column D in every other worksheet in this entire business model.
- **This is most important** to reduce your own errors, to make auditing faster and to make understanding by others so much easier.

Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
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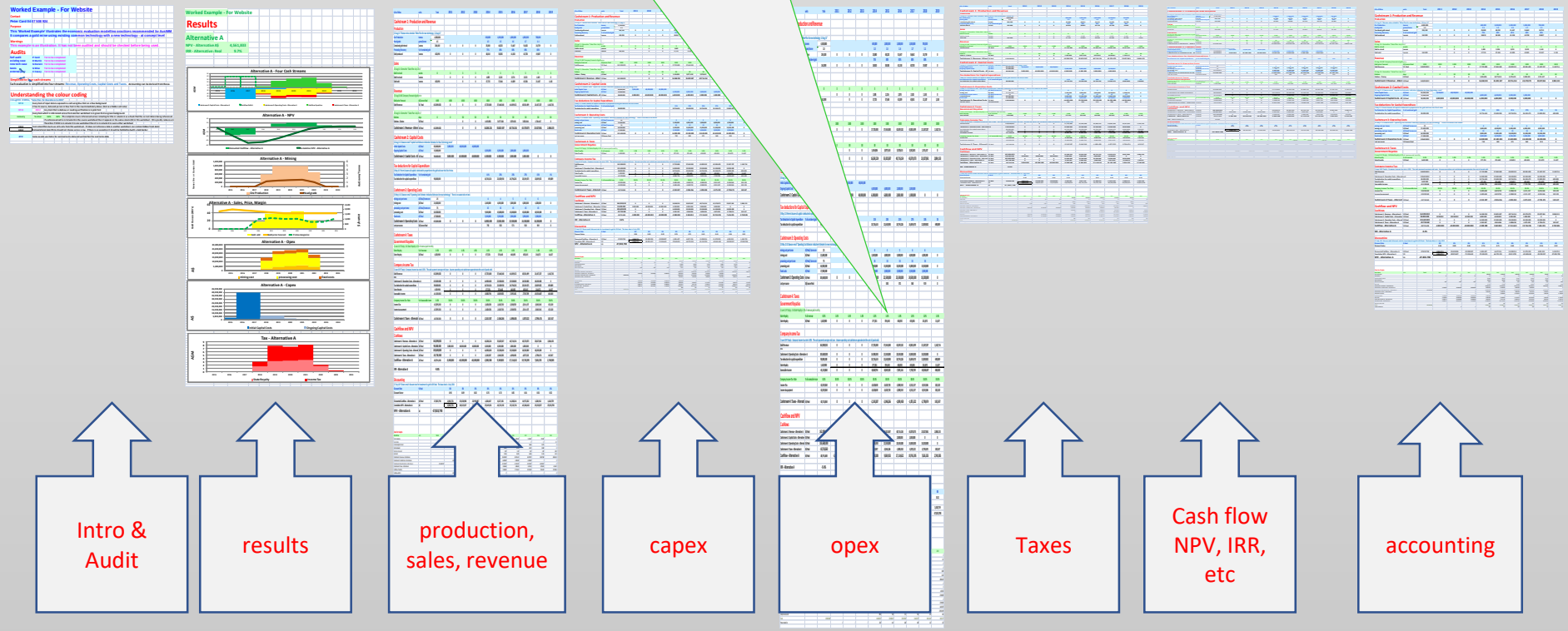
3. Revenue from Solar Panels														

For example: If you go into any cell in Column F that is referenced from another worksheet (thus coloured green) and see its algorithm refers to a column other than F then you must check for an error.



Intro & Audit

results

production, sales, revenue

capex

opex

Taxes

Cash flow NPV, IRR, etc

accounting

B. The workings are intuitive <u>across</u> the worksheet because:

g) There are no hidden rows, no hidden columns and no hidden worksheets

- But it is fine to use 'Data Grouping' where the + and – are visible

Years -->	units	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
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Solar Panels Type A - Sold	solar panels	20,641	136	480	990	1,296	2,025	2,673	3,078	3,240	3,321	3,402	0	0
Solar Panels Type B- Sold	solar panels	99,584	170	560	2,680	6,548	10,231	13,505	15,552	16,370	16,779	17,189	0	0
Solar Panels Type C - Sold	solar panels	13,660	80	160	589	874	1,365	1,802	2,075	2,184	2,239	2,293	0	0
Total solar panels sold	solar panels	133,885	386	1,200	4,259	8,718	13,621	17,980	20,704	21,794	22,339	22,884	0	0
2. Pricing of Solar Panels														
2018 11 20 Forecast of solar panel prices by Rural Communiti														
Solar Panel Type A - Price	US$ Real/ unit incl VA													
Solar Panel Type B - Price	US$ Real/ unit incl VAT													
Solar Panel Type C - Price	US$ Real/ unit incl VAT													
3. Revenue from Solar Panels														
Solar Panel Type A - Revenue	US$ 000 Real	12,1												
Solar Panel Type B - Revenue	US$ 000 Real	46,75												
Solar Panel Type C - Revenue	US$ 000 Real	9,359												
Revenue from Solar Panels	US$ 000 Real	68,230												

It is dreadful working your way through a workbook to discover the reason you could not follow the logic quickly was because a few rows or columns are hidden or a few worksheets are hidden.

It takes too long to unwind that 'hidden' structure.

The modeller could have used the Data Grouping function (which appears obvious)

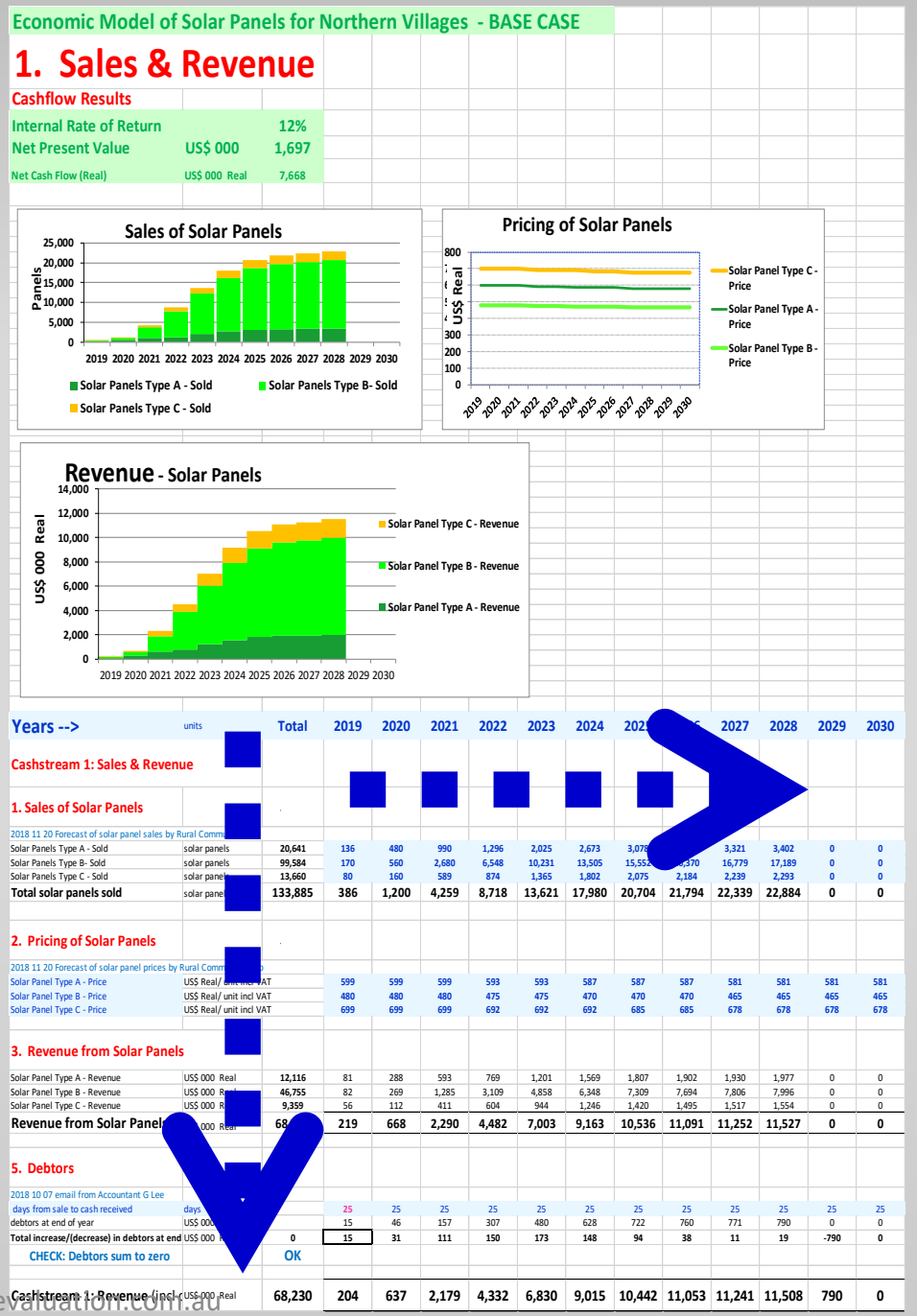
In summary, workings

must be:

A. intuitive down the worksheet

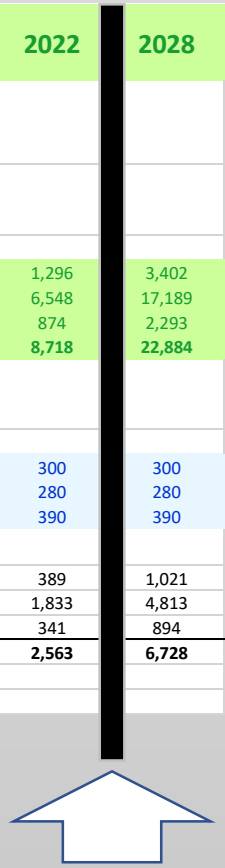
and

B. Intuitive across the worksheet



Modelling tip: Splitting the screen

Years -->	units	Total	2019	2020	2021	2022	2028	2029	2030
Cashstream 3: Operating Costs									
1. Sales of solar panels									
Referenced from the 'Sales&Revenue' worksheet									
Solar Panels Type A - Sold	solar panels	**0**	136	480	990	1,296	3,402	0	0
Solar Panels Type B- Sold	solar panels	**0**	170	560	2,680	6,548	17,189	0	0
Solar Panels Type C - Sold	solar panels	**0**	80	160	589	874	2,293	0	0
Total solar panels sold	solar panels	**0**	**386**	**1,200**	**4,259**	**8,718**	**22,884**	**0**	**0**
2. Purchase price of solar panels									
2018 05 17 Quote by email from Modern Electrics, G Rayton purchase cost of solar panels from factory warehouse									
Purchase price of solar panels - Type A	US$ real /panel		300	300	300	300	300	300	300
Purchase price of solar panels - Type B	US$ real /panel		280	280	280	280	280	280	280
Purchase price of solar panels - Type C	US$ real /panel		390	390	390	390	390	390	390
3. Cost of solar panels									
cost of solar panels - Type A	US$ 000 real	**6,192**	41	144	297	389	1,021	0	0
cost of solar panels - Type B	US$ 000 real	**27,883**	48	157	750	1,833	4,813	0	0
cost of solar panels - Type C	US$ 000 real	**5,327**	31	62	230	341	894	0	0
cost of solar panels - total	US$ 000 real	**39,403**	**120**	**363**	**1,277**	**2,563**	**6,728**	**0**	**0**



How to work more quickly and confidently: -

Try modelling with the window split so you always see what is happening in the last columns:

It gives control → always see what is happening at the end of the rows

Is the algorithm or data entry being repeated across the worksheet to the last year?

It brings speed when copying → Copy a cell; put the cursor on the cell in Column D; depress the 'Shift' key; put the cursor on the cell in the final column; use the right tab on your mouse to copy to all cells as values, formulas, formats or all.

I have used this technique for many years and it has saved me making many silly errors.

Years -->	units	Total	2019	2020	2021	2022	2028	2029	2030
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cost of solar panels - total	US$ 000 real	**39,403**	**120**	**363**	**1,277**	**2,563**	**6,7**	**0**	**0**

Glossary 1	
Business Model or 'Economic Model'	A forecast of the social enterprise's physical operations, deliveries of benefits, sales, costs, taxes and net cashflow. It usually is over several years and computed in monthly intervals or in years. It gives a 'helicopter view' of the underlying economic health of the enterprise showing how much funding it will require and when it is likely to 'stand on its own legs' to be self-supporting. . (It uses cash rather than accounting concepts.) Funding and ownership can be added when the project looks promising
Project Funding	Getting investors, donors and lenders to provide cash to fund the project
Accounting	An internationally regulated way of assessing or forecasting the performance of the project over a specified period – past or future - given its recent results, past inputs and future liabilities. (Uses non-cash concepts so may be difficult for some non-accounting people to quickly understand.)
Tax	Extracting money from the project as entirely defined by government legislation - and like accounting uses non-cash concepts.
Real terms	Before applying inflation – example $2.50 today and still $2.50 in 5 years (Usually employed in business case modelling.)
Nominal terms or Dollars of the Day	*After applying inflation – example $2.50 today becomes $3.97 in 5 years* (Used in accounting, tax and funding.)

Glossary 2	
Four Cashstreams	The business of any social enterprise (or any industry) can be shown in just four cash streams
Cashstream1: Revenue	The cash that will be received from sales of products and delivery of benefits
Cashstream 2: Capital Costs 'capex'	The cash that will be paid out to start-up the project and when up and running, on purchases of things that will last more than one year – 'sustaining capital' to keep it going
Cashstream 3: Operating Costs 'opex'	The cash that will actually be paid out to run the project and make the sales. Typically some will be 'fixed' or 'overheads' that are constant whether many units or few units are being made/sold and 'variable costs' that vary directly with the number of units made/sold.
Cashstream 4: Taxes	The cash that is paid out to meet the expectations of the governments and community - usually as income tax
Net Cashflow	Cash from revenue minus cash paid out as capital costs, operating costs and taxes.
Cumulative cashflow & payback	The running total of cash paid out/received from the beginning. Usually this becomes increasingly negative during construction and 'ramp up'. It improves when sales revenue exceeds all costs. When it improves back up to zero this is called "Payback". Then hopefully becomes strongly positive.

end