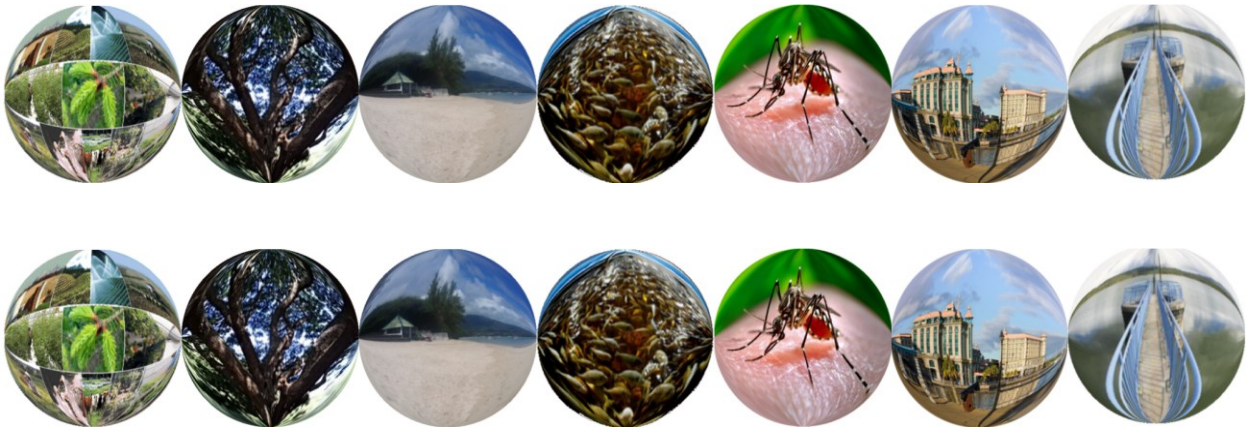
VULNERABILITY & ADAPTATION ASSESSMENT TOOLKIT: MAIN USER MANUAL



JULY 12, 2018

Ministry of Social Security, National Solidarity, and Environment and Sustainable Development
(Environment and Sustainable Development Division)
Republic of Mauritius

Vulnerability & Adaptation Assessment (VAA) Toolkit (Mauritius): Main User Manual

About this manual

This VAA-Main User Reference Toolkit manual forms part of a family of toolkits to assess vulnerability of climate change for seven sectors of the Republic of Mauritius. The user reference has been written from an application developer's perspective. A fundamental conceptual and operational knowledge of Excel is assumed.

Disclaimer

Data used has been obtained from reliable sources. The Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division) assumes no responsibility for errors and omissions in the data provided. Users are, however, kindly asked to report any errors or deficiencies in this product to the Ministry. The choices of calculation made in this tool are derived from TNC Report (2016).

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VAA (Mauritius) Toolkit
Main User Reference Manual

1. Introduction

This document refers to a user-friendly toolkit developed to assess vulnerability and adaptation for the Republic of Mauritius. The VAA for seven sectors were assessed in the Third National Communications (TNC) Report (2016) for the various climate change-related impacts observed in the various sectors in the Republic.

The VAA (Mauritius) Toolkit performs basic calculations taking the indicators of the Environmental Vulnerability Index (EVI) under related sector issues. Applicable sector and related indicators were shortlisted, besides some common indicators about climate. Users of the VAA (Mauritius) Toolkit can adjust the indicators by choosing appropriate parameters/assumptions to suit their needs of the vulnerability assessment.

With the significant warming trend of about 1.2°C, a decreasing trend in rainfall amount of about 8% and a projected rise of sea-level ranging between 52 cm and 98 cm by the end of the century if no mitigating action is taken (IPCC, 2013), the risk from natural disasters arising from extreme events such as cyclones, flood and droughts are expected to increase. Already, according to the World Risk Report 2016, Mauritius is ranked as the 13th country with the highest disaster risk and 7th on the list of countries most exposed to natural hazards (UNU-EHS, 2015). The vulnerability of RoM is projected to increase with these phenomena impacting adversely on its socio-economic and environmental sectors. The assessment of the vulnerability made on the basis of climate trend projections of the regional climate model COSMO-CLM, developed under the Disaster Risk Reduction Strategic Framework and Action Plan 2013 (DRR, 2013), predicts temperature to increase, with a range (depending on the seasons and scenarios) between 1°C and 2˚C for the period 2061-2070, with respect to the period 1996-2005 (TNC, 2016).

The threatening impacts of climate change are increasingly being felt with an accelerated sea level rise, accentuated beach erosion, increase in frequency and intensity of extreme weather events, decreasing rainfall patterns as well as recurrent flash floods. The climate challenges ahead for Mauritius should not be underlooked, especially when considering the facts that water supply by 2030 may not be sufficient to satisfy projected demand, agricultural production may decline by as much as 30% and that several beaches, that are so important for our tourism industry may slowly disappear, thus severely undermining one of our major economic pillars and depriving the economic value of this sector, worth over USD 50 million by 2050.

2. The VAA (Mauritius) Toolkit

The VAA (Mauritius) Toolkit is designed for seven sectors of Mauritius, namely, Agriculture Biodiversity Coastal Zone Fisheries Health Infrastructure and Water.

The Toolkit works in an Excel environment.

Before we move to the following pages where we present snapshots of each page, we look at the Climate Change and Environmental Vulnerability Index (CCEVI) Indicators used in this Toolkit for mapping vulnerability.

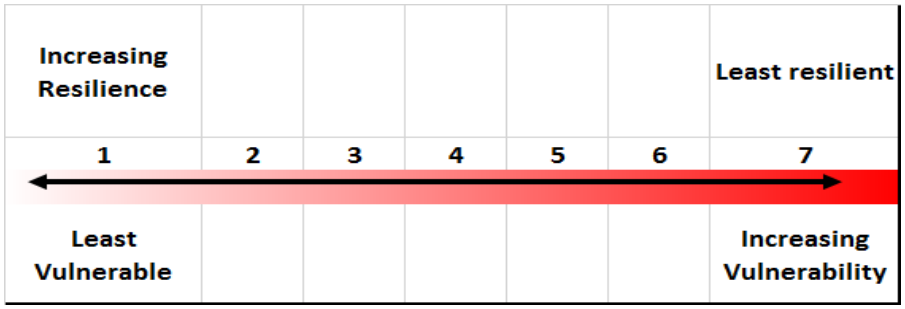
The CCEVI has been based on 50 indicators as worked out by the *SOPAC Technical Report, 2004.*

> *"Pratt, C.R., Kaly, U.L., and Mitchell, J. 2004. Manual: How to Use the Environmental Vulnerability Index (EVI). SOPAC Technical Report 383, 60 pp; 1 appendix, 2 figures. United Nations Environment Programme (UNEP). South Pacific Applied Geoscience Commission (SOPAC)."*

Measuring Climate Change and Environmental Vulnerability (CCEV) is a complicated task which includes measures for different levels of a sector from species to interdependent ecosystems and complex relationships between them. An indicator approach is used to help in the simplification of the complexity. Indicators are used to simplify models and to avoid use of substantial.

The CCEVI uses general indicators, as far as possible, as measures of various aspects of climate change and environmental vulnerability which can be quantitative or qualitative based on different scales (linear, non-linear, or with different ranges) and unit measurements. The CCEVI maps all the indicators onto a common environmental vulnerability scale in order to get an average index for the sector.

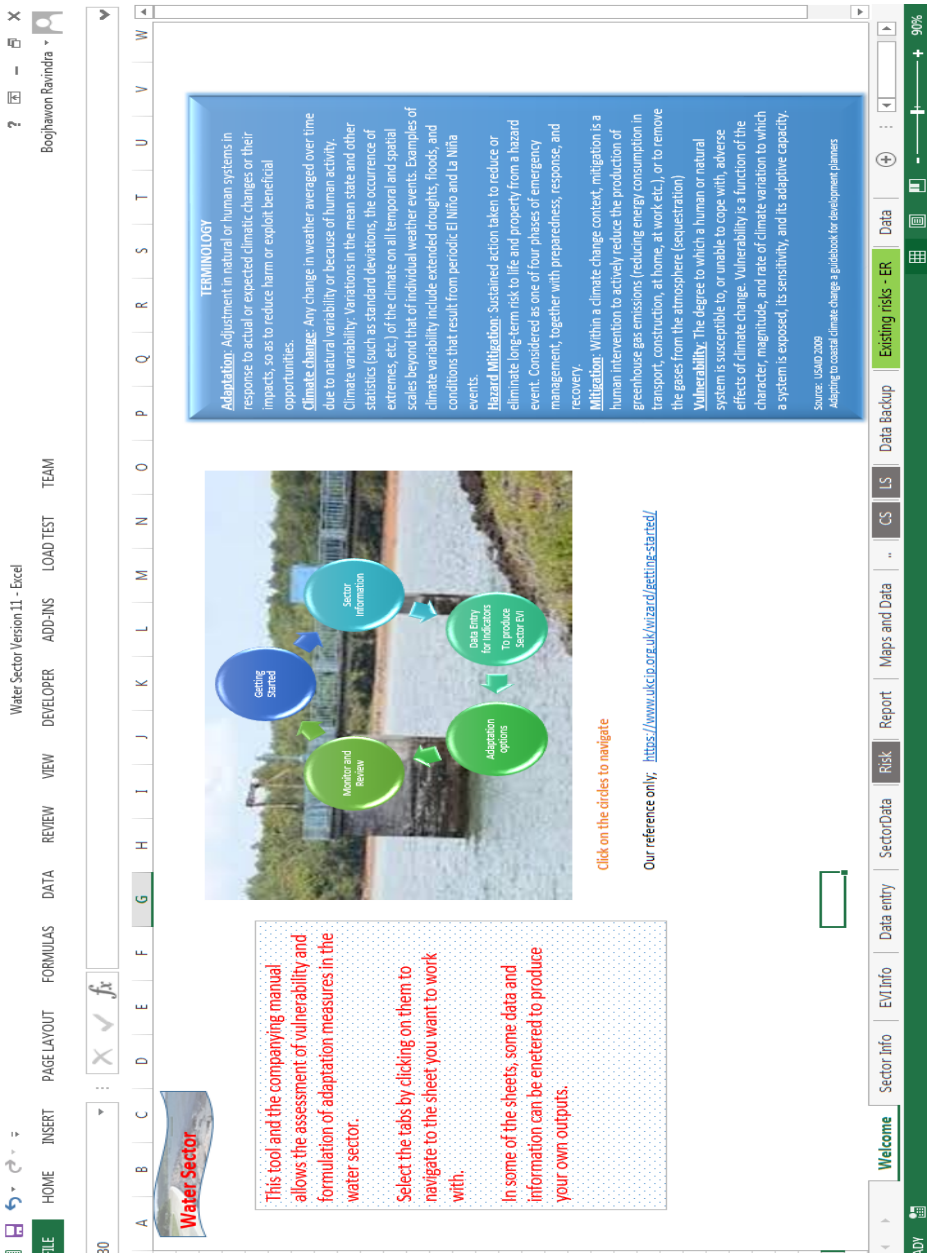
The CCEVI scale is as follows:



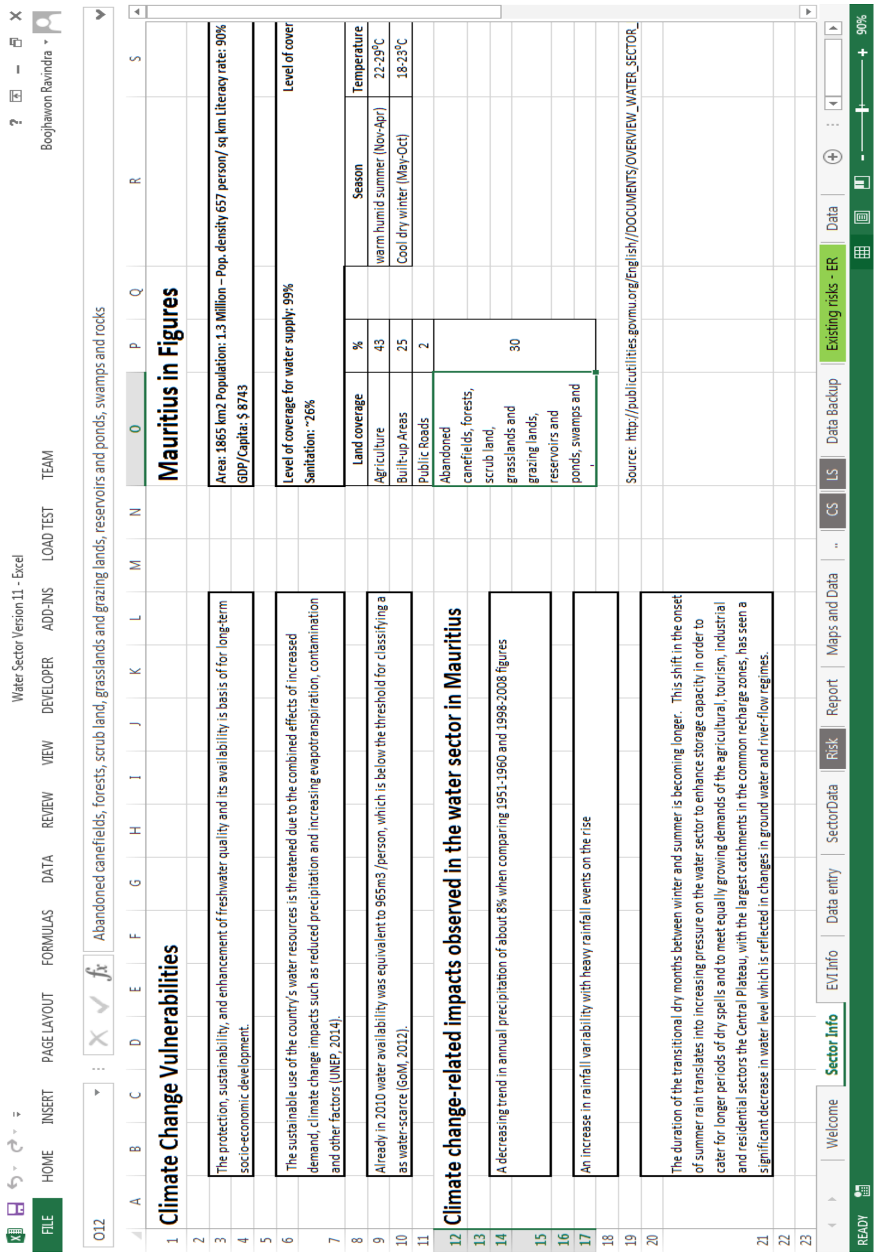
The data needed caters for a range of Climate Change and Environmental factors from:	
1	Meteorological data
2	Sea surface temperature
3	Geological and geographical information
4	Biological species and habitat data
5	Reserves
6	Human activities such as fishing, mining, pollution, population, legislation etc.

CCEVI Calculations	
1	CCEVI requires compilation of relevant environmental vulnerability data for some 50 indicators in general
2	We map each indicator using the compiled data onto a 1-7 vulnerability scale
3	If data is not available, no value is given for the indicator which is not used in the averaging process.
4	If indicator is considered not applicable, the lowest vulnerability score of 1 is allocated (e.g. volcanoes)
5	The vulnerability scores for each indicator are lumped either into categories (*Weather & Climate, Geology, Geography, Resources & services, Human populations*) or sub-indices (*Hazards, Resistance and Damage*) and the average calculated.
6	Sector (Water, Health, Infrastructure, Agriculture, Biodiversity, Fisheries and Coastal zone) or country CCEVI is calculated using an overall average.
7	Tabulation or Graphical Representations of the CCEVIs

Welcome Page of the Toolkit



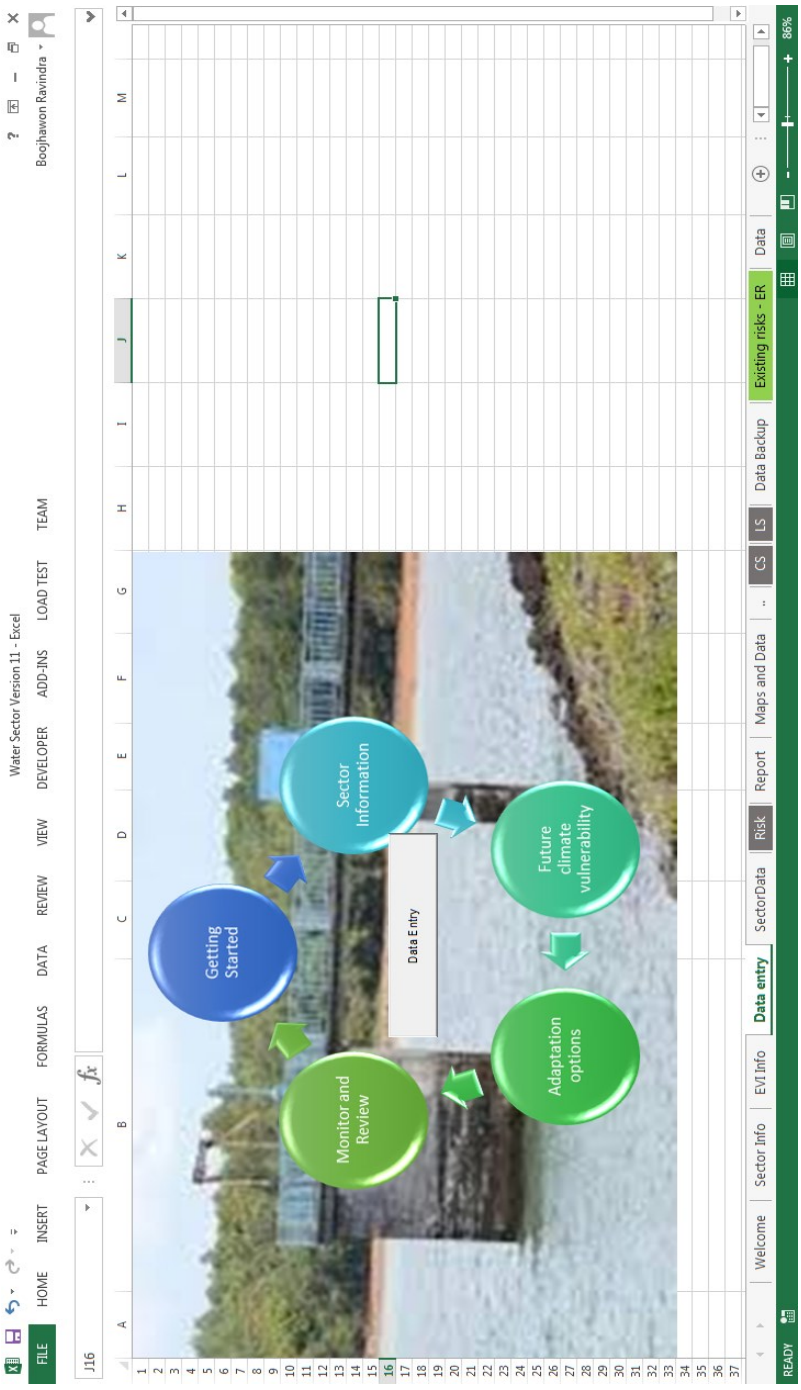
Sector Information and Mauritius in Figures

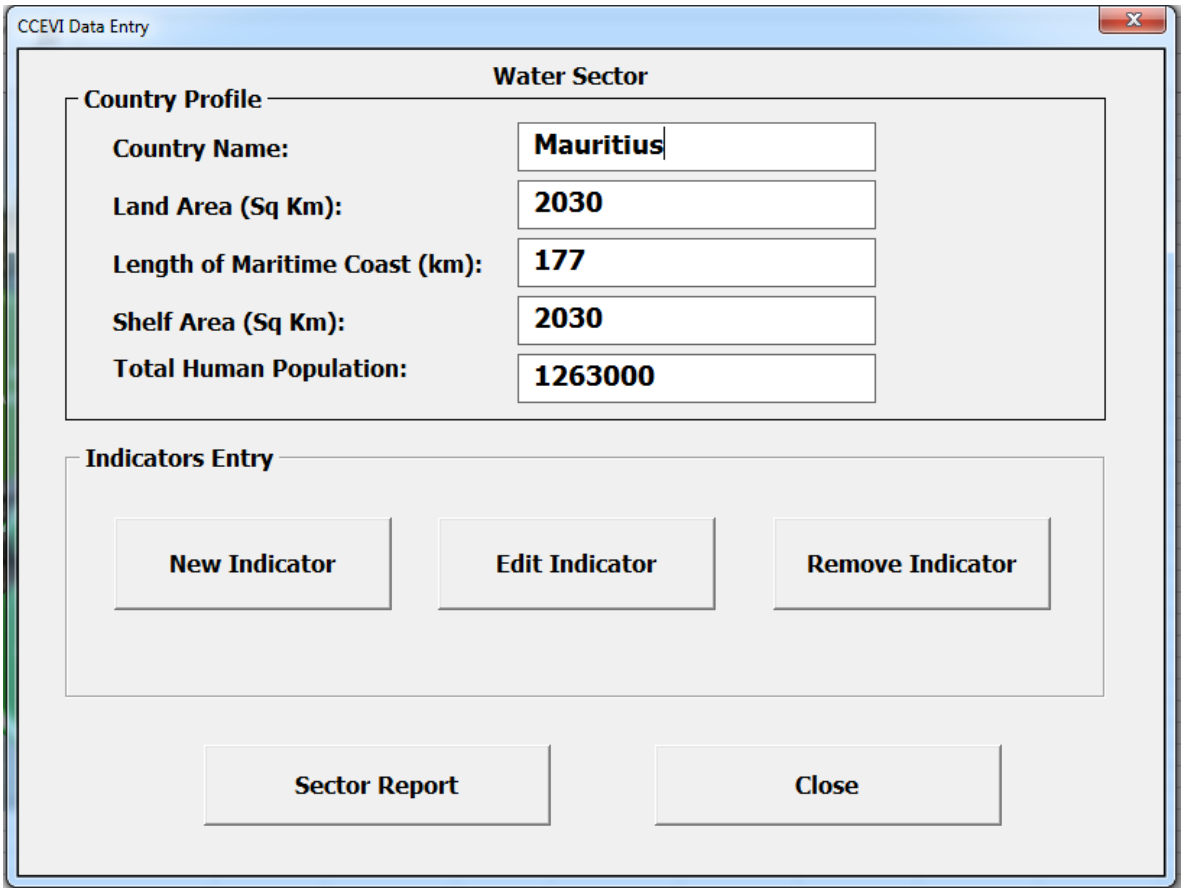


Data Entry Worksheet

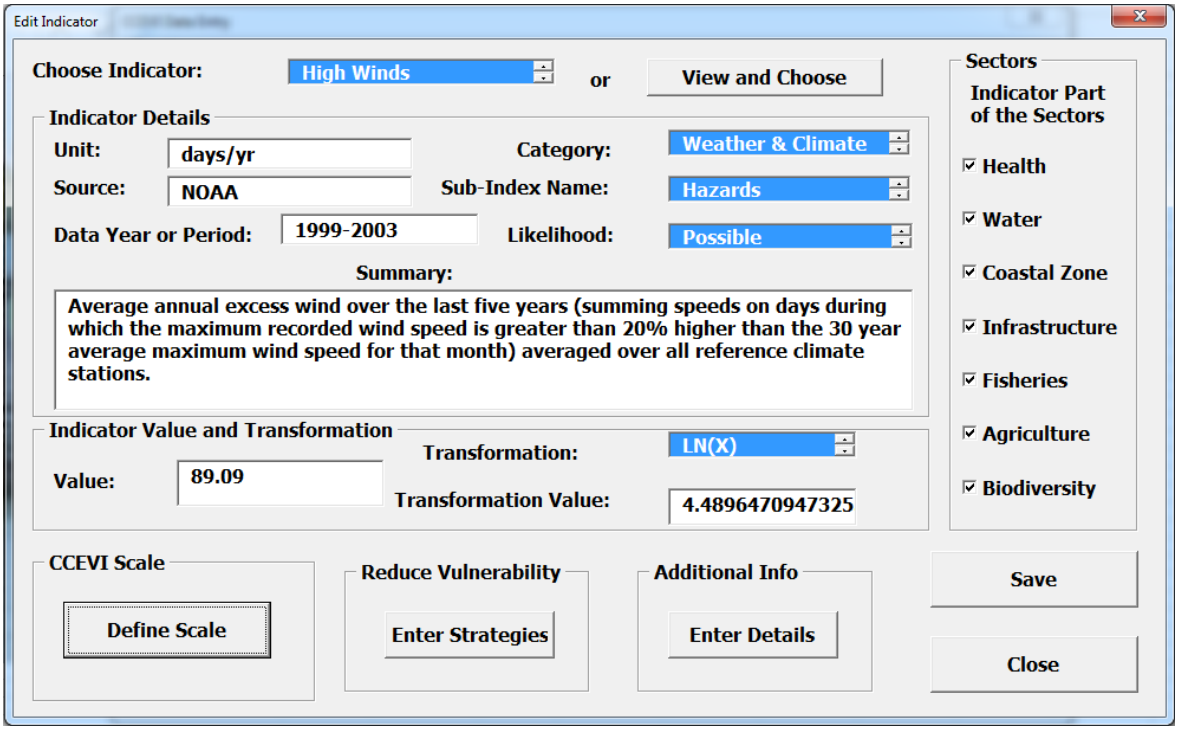
The Data Entry Sheet presents a button to launch the Data Entry Graphical User Interface (GUI).

Firstly the data entry for the sector info appears which allows the general data entry for Mauritius and then offers three main features which allows the editing of the Indicators already present by default, adding new indicators or removing non-default indicators. Finally, after data entry, a sector report is generated.



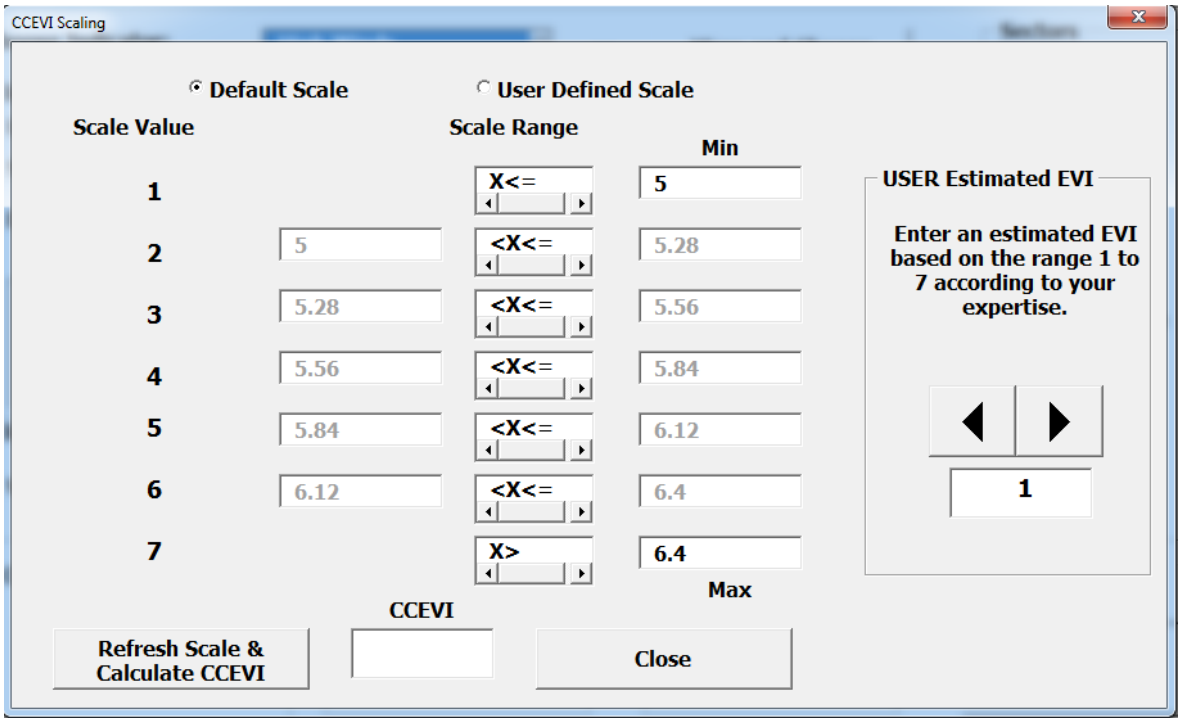


Editing existing indicators:

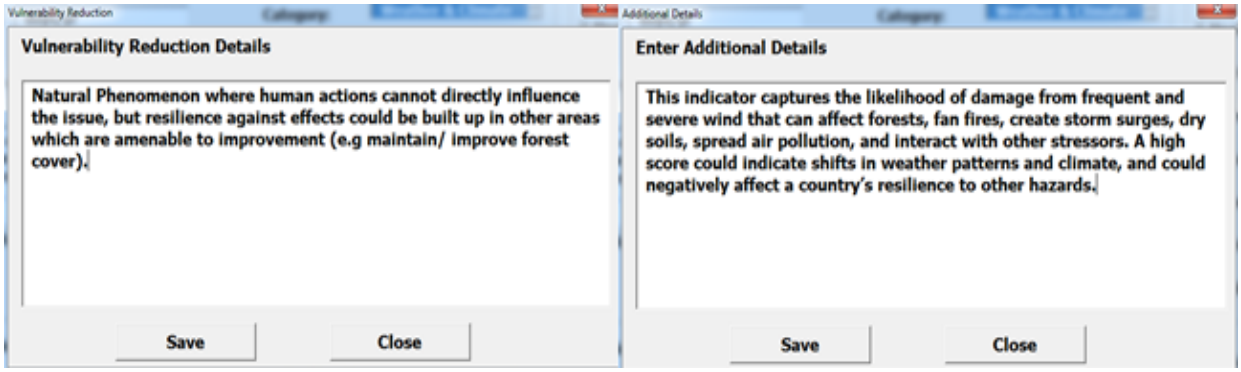


This Editing GUI allows the editing of data for a selected indicator with all its entities stating from its name, sector relations, details such as units, sources, categories, sub-indices, the likelihood or chance of its occurrence, summary details or advanced details, indicator values and corresponding transformations that can be done.

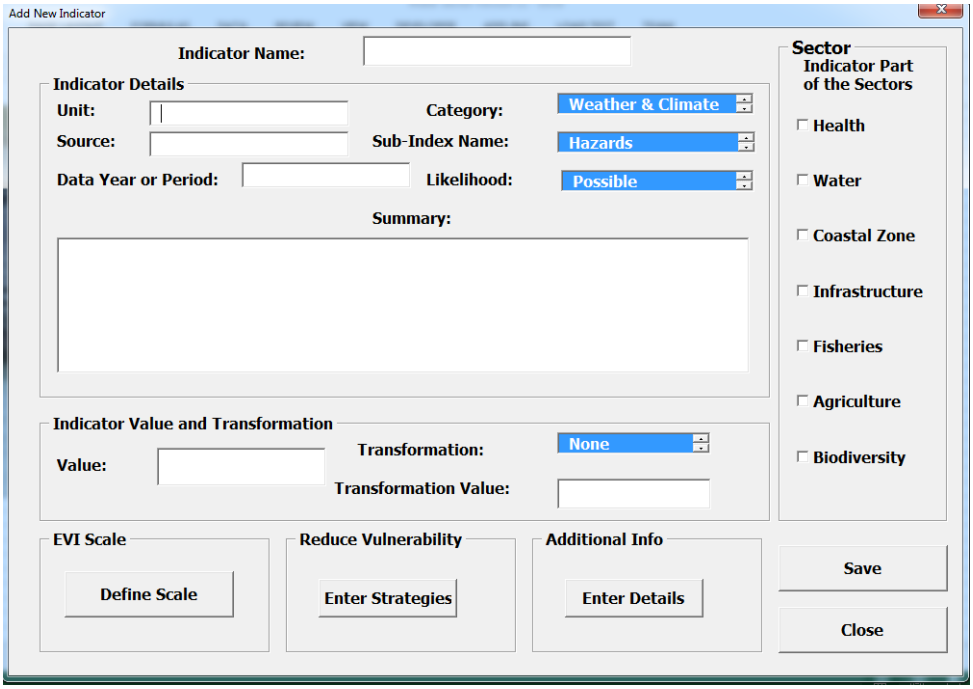
An interesting feature of the tool is that it offers three possibilities to generate the CCEVI based on the manipulation of the data range to produce the CCEVI scales with a first one as a default one, a user defined one and directly an assumed or estimated EVI based on the experience of the expert user.



Details on how to reduce Vulnerability with additional details of the indicator can be edited.



New indicators can be added and similar details as for Edit Indicator GUI are the fill-out requirements.



After the editing and inclusion of new indicators, a sector report is generated with some of the key results as shown:

	Water Sector Report			
Score and Classification	**Default EVI Score**	**User EVI Score**	**User EVI Estimate**	**Number of Indicators**
EVI Score	320	320	324	25
Vulnerability Classification	Highly vulnerable	Highly vulnerable	Highly vulnerable	
Category (Indicator Types)	**Default EVI Score**	**User EVI Score**	**User EVI Estimate**	**Number of Parameters**
Weather & Climate	2.17	2.17	2.17	6
Geology	1.80	1.80	2.00	5
Geography	4.67	4.67	4.67	6
Resources & services	4.56	4.56	4.56	27
Human Populations	4.00	4.00	4.00	6
			Total	50
ASPECTS OF VULNERABILITY	**Default EVI Score**	**User EVI Score**	**User EVI Estimate**	**Number of Parameters**
Hazards	3.31	3.31	3.41	32
Resistance	4.75	4.75	4.75	8
Damage	4.91	4.91	5.00	11
SECTOR POLICY-RELEVANT In	**Default EVI Score**	**User EVI Score**	**User EVI Estimate**	**Number of Parameters**
Water	3.20	3.20	3.24	25
Health	3.10	3.10	3.10	21
Coastal Zone	3.50	3.50	3.65	26
Infrastructure	3.55	3.55	3.55	31
Agriculture	3.04	3.04	3.04	23
Biodiversity	3.59	3.59	3.67	39
Fisheries	3.35	3.35	3.46	26

The average CCEVI for the sector is classified as per the following Rating Scale which we have interpreted as the equivalent of the interaction of the different levels of Sensitivity and Adaptivity.

Vulnerability Rating Scale		Vulnerability Equivalence to combination of Sensitivity and Adaptivity	
Legend for Classification		Sensitivity	Adaptive
Extremely vulnerable	365+	High	Low
Highly vulnerable	315+	High(Medium)	Medium(Low)
Vulnerable	265+	High(Medium)	High(Medium)
At risk	215+	Medium(Low)(Low)	High(Medium)(Low)
Resilient	<215	Low	High

The sensitivity interaction with adaptivity can iewed as follows:

Vulnerability Rating Scale			
	Sensitivity		
Adaptive capacity	**Low**	**Medium**	**High**
High	Resilient	At Risk	Vulnerable
Medium	At Risk	Vulnerable	Highly Vulnerable
Low	At Risk	High Vulnerable	Extremely Vulnerable

Vulnerability Matrix

All the sector relevant CCEVI's are also listed as shown:

Sector EVI Summary			
Indicator Names	**Default EVI**	**User Defined EVI**	**User EVI Estimate**
High Winds	1	1	1
Dry Periods	7	7	7
Wet Periods	2	2	2
Hot Periods	1	1	1
Cold Periods	1	1	1
SST	1	1	1
Volcano	1	1	1
Earthquake	1	1	1
Tsunamis	2	2	2
Terrestrial Reserves (%)	7	7	7
Fertilisers	4	4	4
Pesticides	1	1	1
Renewable Water	1	1	1
Sulphur Dioxide Emissions	6	6	6
Waste Production	1	1	1
Waste Treatment	7	7	7
Industry	3	3	3
Sanitation	5	5	5
Population	6	6	6
Population Growth	4	4	4
Tourists	5	5	5
Coastal Settlements	7	7	7
Environmental Agreements	1	1	1
Conflicts	1	1	1

The Sector CCEVI's are also directly mapped onto a consequence list as shown:

Consequence	Insignificant	Minor	Moderate	Major	Major	Catastrophic	Catastrophic
EVI	1	2	3	4	5	6	7

This consequence rating is coupled with the likelihood of the indicator (see table for likelihood scale) to Risk Rating Matrix.

Likelihood Scale

Rating	Recurrent risk	Single event
Almost certain	Could occur several times per year	More likely than not: probability greater than 50%
Likely	May arise about once per year	As likely as not: 50/50 chance
Possible	May arise about once in 10 years	Less likely than not but still appreciable: probability less than 50% but still quite high
Unlikely	May arise about once in 25 years	Unlikely but not negligible: probability noticeably greater than zero
Rare	Unlikely during the next 25 years	Negligible: probability very small, near zero
	Ref: Likelihood scale adopted from AGO (Australian Greenhouse Office) 2006	

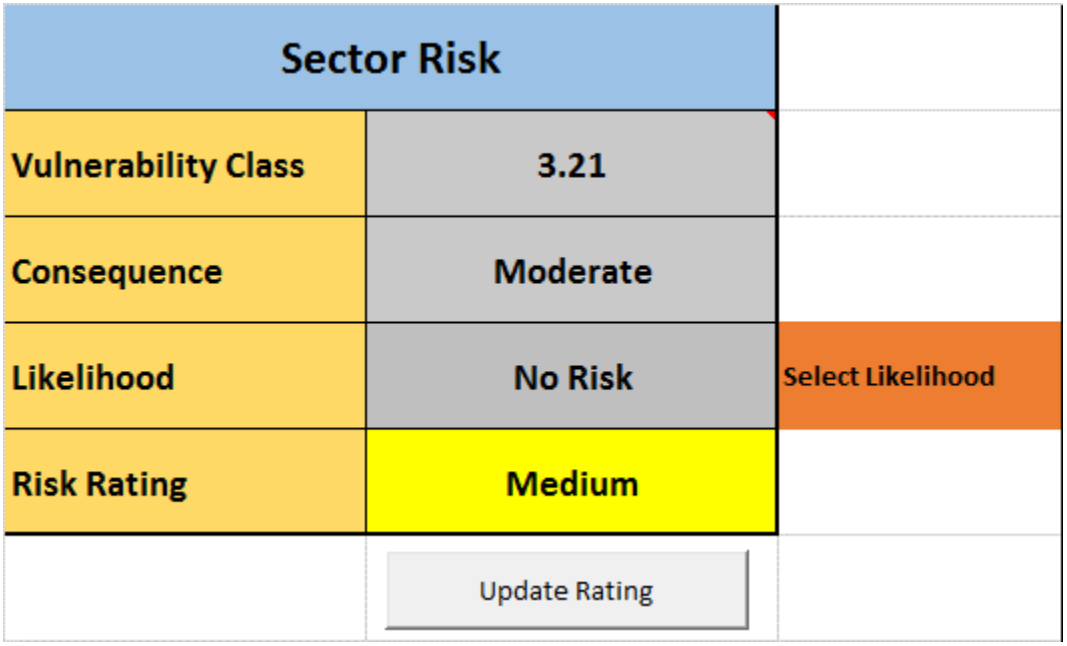
Risk Rating Scale

	Consequences				
Probability	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Medium	Medium	Medium	Medium
Rare	Low	Low	Low	Low	Medium
No Risk	No Risk	No Risk	No Risk	No Risk	No Risk

The individual Risk is displayed as shown:

Indicator Names	Consequence (Default)	Consequence (User)	Consequence (Estimate)	Likelihood	Risk (Default)	Risk (User)	Risk (Estimate)
High Winds	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Dry Periods	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Wet Periods	Minor	Minor	Minor	Possible	Medium	Medium	Medium
Hot Periods	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Cold Periods	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
SST	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Volcano	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Earthquake	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Tsunamis	Minor	Minor	Minor	Possible	Medium	Medium	Medium
Terrestrial Reserves (%)	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Fertilisers	Major	Major	Major	Possible	High	High	High
Pesticides	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Renewable Water	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Sulphur Dioxide Emissions	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Waste Production	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Waste Treatment	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Industry	Moderate	Moderate	Moderate	Possible	Medium	Medium	Medium
Sanitation	Major	Major	Major	Possible	High	High	High
Population	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Population Growth	Major	Major	Major	Possible	High	High	High
Tourists	Major	Major	Major	Possible	High	High	High
Coastal Settlements	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Environmental Agreements	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Conflicts	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low

The final Sector Risk Rating is also provided where the user has to intervene by allocating an estimated sector likelihood with respect to the chance that it is affected in general by CC:



One added feature to the toolkit is the mapping of data district-wise on a grayscale.

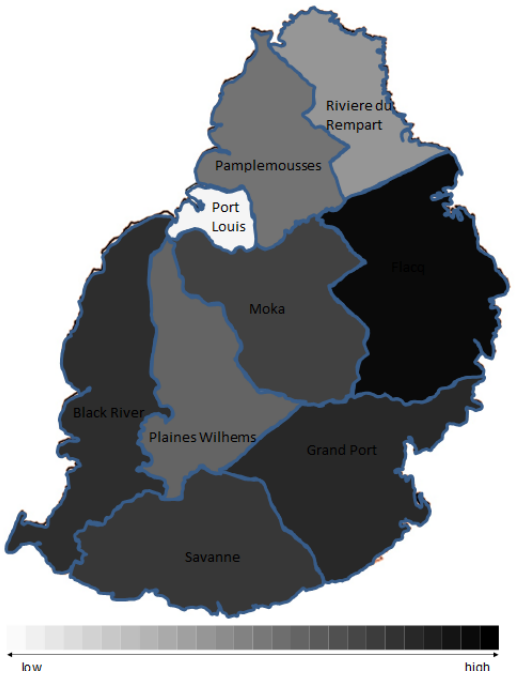
A new workbook appears which consist of a data sheet, a map sheet where a user can choose the appropriate indicator to map.

Data

Indicators	Pamplemousses	Riviere du Rempart	Flacq	Grand Port
Hazard	8508695.513	2035910.062	241841747.3	71238253.27
Hazkm2	8.508695513	2.035910062	241.8417473	71.23825327
Area	179.7	146.8	297.5	260.6
Pop16	140,279	108,042	138,543	112,985
Hzprop	0.047349446	0.013868597	0.812913436	0.273362445
PopDen	780.6288258	735.9809264	465.6907563	433.5571757
Vulpop	36.96234272	10.20702298	378.5662729	118.5182498
VulHazIndx	1.686347998	0.000442532	23.21148538	6.825346552

Savanne	Black River	Port Louis	Moka	Plaines Wilhems
13236115.83	85286402.36	21064188.88	31489271.71	41490318.7
13.23611583	85.28640236	21.06418888	31.48927171	41.4903187
246.9	254.6	39.7	234.3	197.6
68,547	81,359	119,554	83,346	368,558
0.053609218	0.334981942	0.530584103	0.134397233	0.209971248
277.6306197	319.5561665	3011.435768	355.7234315	1865.172065
14.8835603	107.0455452	1597.819945	47.80824493	391.6325071
0.295120372	6.102428806	100.039064	2.369769687	24.03481456

Choropleth Map of Mauritius | Select Indicator



Area

Pamplemousses	179.7
Riviere du Rempart	146.8
Flacq	297.5
Grand Port	260.6
Savanne	246.9
Black River	254.6
Port Louis	39.7
Moka	234.3
Plaines Wilhems	197.6

The **Projections Forecasting Sheet** requires the time series data to be copy paste in columns A and B:

Year	Actual Data
2007	25
2008	26
2009	14
2010	46
2011	31
2012	28
2013	19
2014	27
2015	13
2016	14

The user has to input the number of forecasting steps ahead:

Prediction Ahead		
Step Ahead	10	Input Step Ahead

Finally, user can edit title, axis labels and then press the Forecast button.

Title	Time Series Plot
X-label	Year
Y-Label	Data
	Press to Forecast

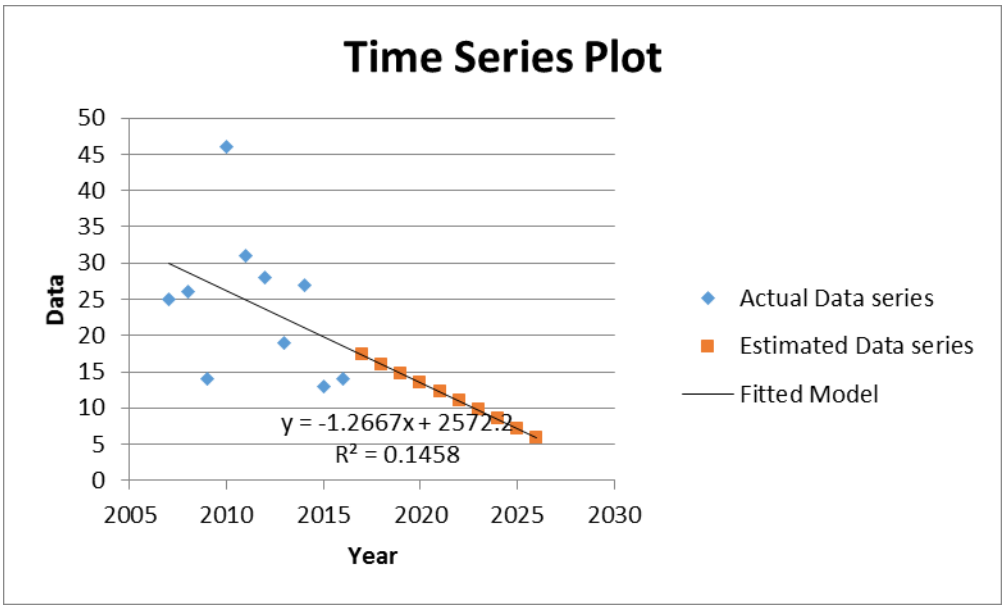
The outputs will be generated as follows:

Year	Predicted Values
2007	25
2008	26
2009	14
2010	46
2011	31
2012	28
2013	19
2014	27
2015	13
2016	14
2017	17.33333333
2018	16.06666667
2019	14.8
2020	13.53333333
2021	12.26666667
2022	11
2023	9.733333333
2024	8.466666667
2025	7.2
2026	5.933333333

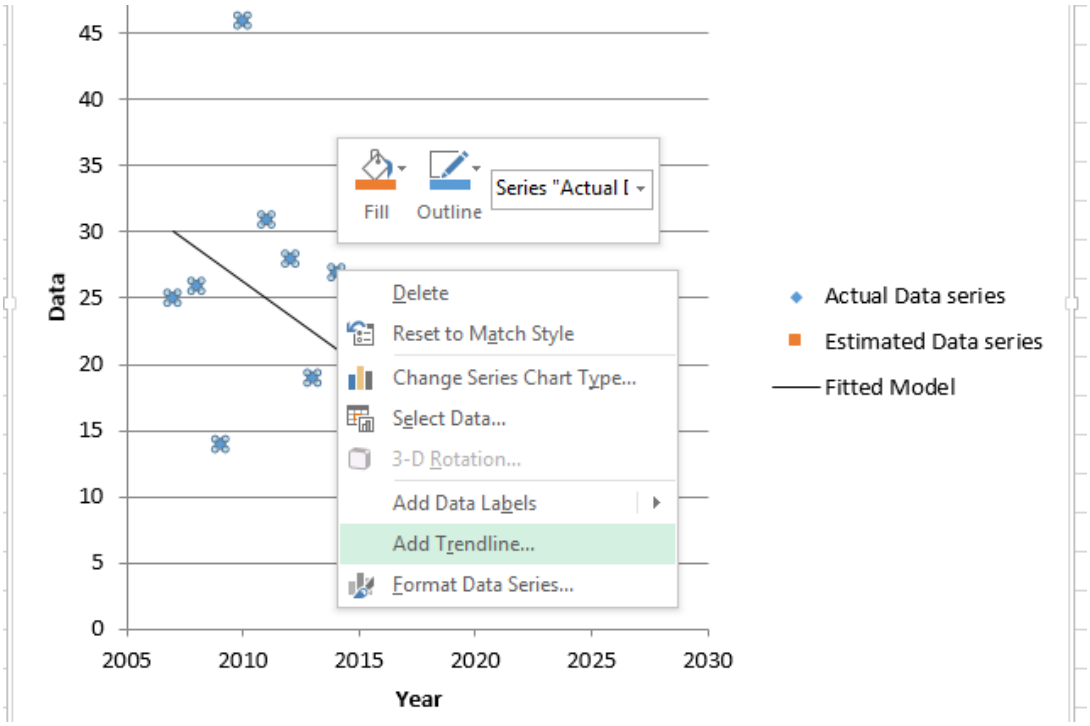
Forecasting using Simple Linear Regression Models		
Model Parameters		
Slope	-1.266666667	
Intercept	2572.2	
Prediction Ahead		
Step Ahead	10	Input Step Ahead

The simple linear regression slopes and intercept are obtained together with the prediction for the requested step ahead.

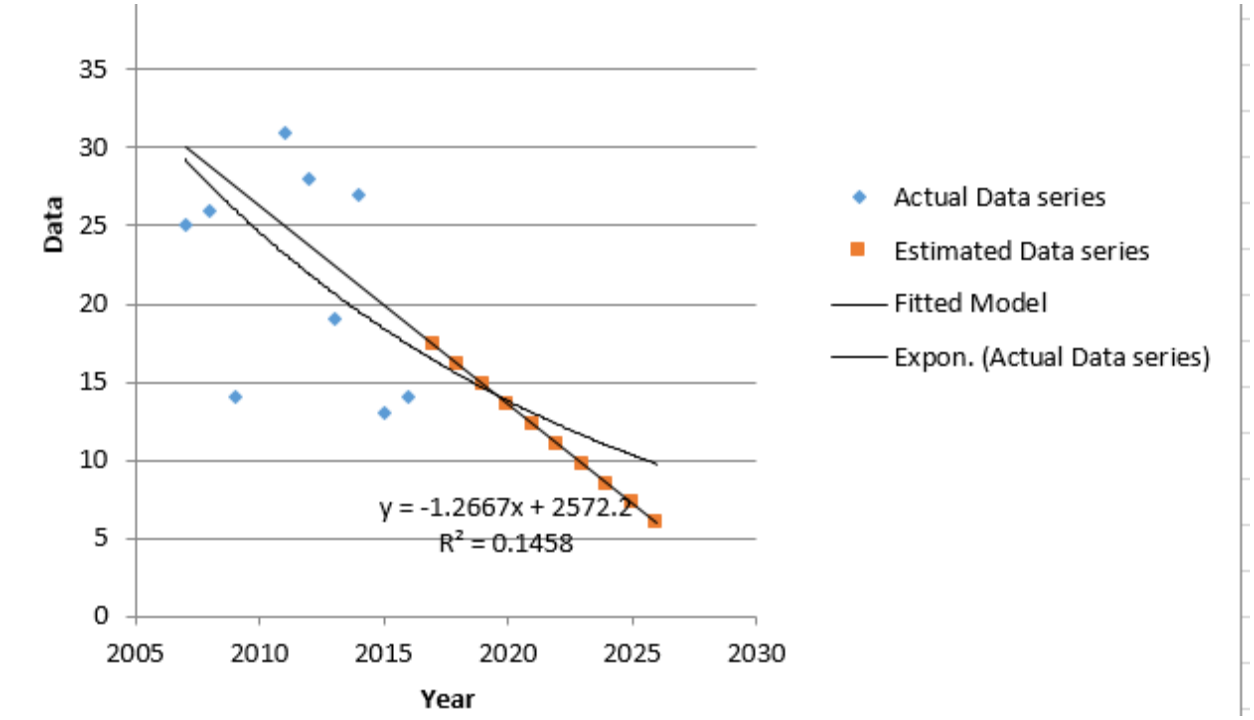
Also, the forecasting time series plot is generated as follows:

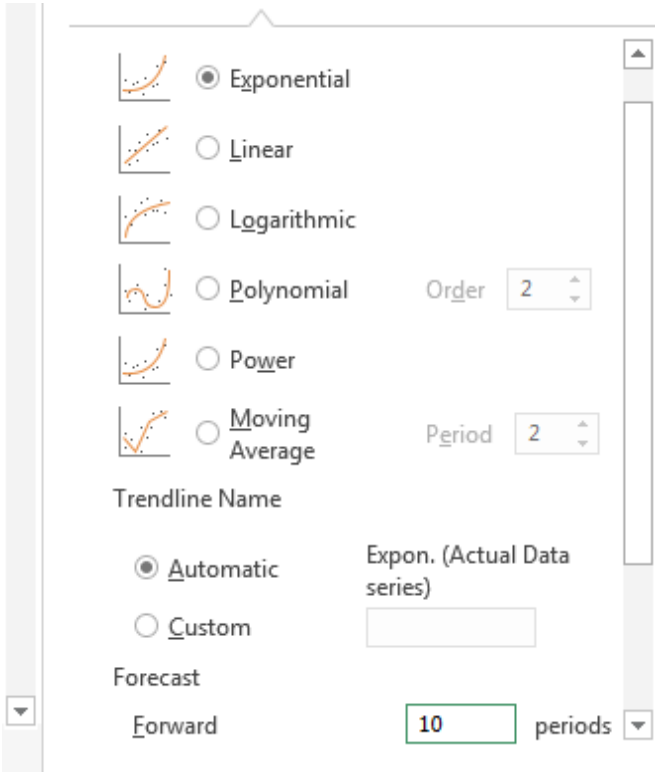


If a user wants to add higher order models, he has to right click on the blue coloured scatter coordinates and click at add trendline.



The user can select different models, for e.g. choose an exponential model and use an appropriate forecasting period (step ahead).





Development of Indicators require the use of data and developing an appropriate scale representing different score of 1 to 7. Thus the **IndicatorScale sheet,** uses two sets of data: (1) a base period (2) a last five year data for an identified or proposed indicator as shown.

PLEASE INPUT BASE YEAR AND CURRENT YEAR DATA				
Base Period Year	**Base Period Data**		**Last Five Year**	**Last Five Data**
2007	25.00		2013	19.00
2008	26.00		2014	27.00
2009	14.00		2015	13.00
2010	46.00		2016	15.00
2011	31.00		2017	10.00
2012	28.00		2018	13.00

The sheet automatically computes the scale minimum and maximum to be used as inputs during the editing or creation of new indicators. The current mean indicator value is also computed based on the last five year data.

Base Year Statistics	
Mean	28.33333
Standard Deviation	10.40513
Min	14
Max	46
n	6

Last Five Year Statistics	
Mean	16.16667
Standard Deviation	6.080022
Min	10
Max	27

Indicator Confidence Interval				
Confidence Interval for μ				
Confidence Level:		95	%	
Critical Value:		**2.57**	**(t-value)**	
CI is given by	(	**17.41**	**39.25**	)

Indicator Summary to be used in XLM Toolkit	
Indicator Current Average value:	**16.16667**
Indicator Scale Min Value:	**17.41**
Indicator Scale Max Max:	**39.25**

3. A general Case Study

We consider the yearly rainfall at Clemencia as a Case Study where same methodology can be used for all the seven sectors.

Step 1: Input *Time Series Data* and the *number of years for prediction ahead* into **Projections** Sheet as per the steps.

Year	Actual Data
2003	2820
2004	2979.8
2005	2780.6
2006	2312
2007	1903.3
2008	2755.1
2009	2627.8
2010	2456.9
2011	1839.5
2012	1440.5
2013	2025.7
2014	1922
2015	1999.6
2016	1660.4
2017	2442.3

Prediction Ahead		
Step Ahead	10	Input Step Ahead

Instructions to Users:

Step 1: Input time series data in Columns A (time) & B (data value)

Step 2: Input the Step Ahead, i.e., Number forecasts ahead

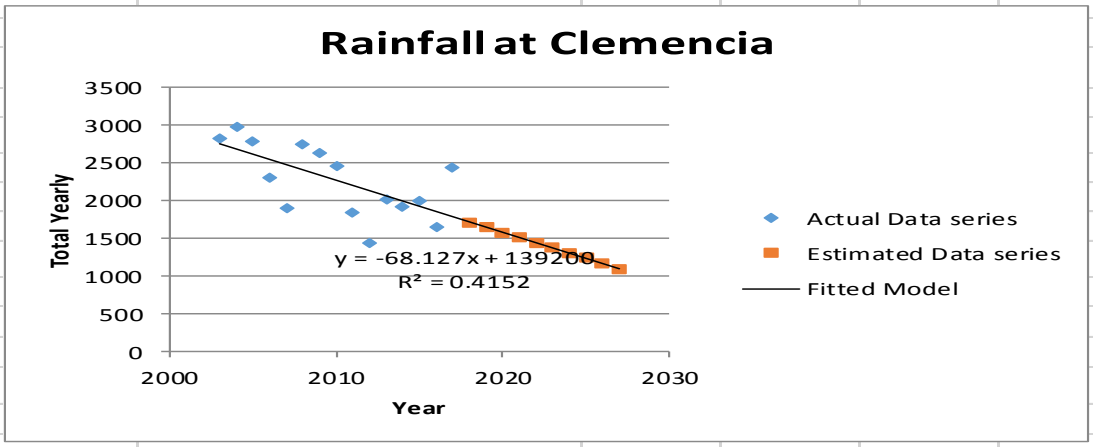
Step 3: You can edit Title, x-label and y-label

Step 4: Press Forecast button

Press Forecast Button.

Title	Rainfall at Clemencia
X-label	Year
Y-Label	Total Yearly

Press to Forecast



2018	1719.349524
2019	1651.222381
2020	1583.095238
2021	1514.968095
2022	1446.840952
2023	1378.71381
2024	1310.586667
2025	1242.459524
2026	1174.332381
2027	1106.205238

Forecasting using Simple Linear Regression Models	
Model Parameters	
Slope	-68.12714286
Intercept	139199.9238

Step 2: Develop the indicator: **RainClemencia** by first using the IndicatorScale sheet to find the minimum and maximum threshholds based on 95% confidence interval as per instructions in the sheet.

	Instructions
Step 1:	Input Data for Base year in Column A (Year) and B (Data)
Step 2:	Input Data for last five years in Column E (Year) and F (Data)

PLEASE INPUT BASE YEAR AND CURRENT YEAR DATA				
Base Period Year	**Base Period Data**		**Last Five Year**	**Last Five Data**
2003	2820		2013	2025.7
2004	2979.8		2014	1922
2005	2780.6		2015	1999.6
2006	2312		2016	1660.4
2007	1903.3		2017	2442.3
2008	2755.1			
2009	2627.8			
2010	2456.9			
2011	1839.5			
2012	1440.5			

Base Year Statistics	
Mean	2391.55
Standard Deviation	508.5046
Min	1440.5
Max	2979.8
n	10

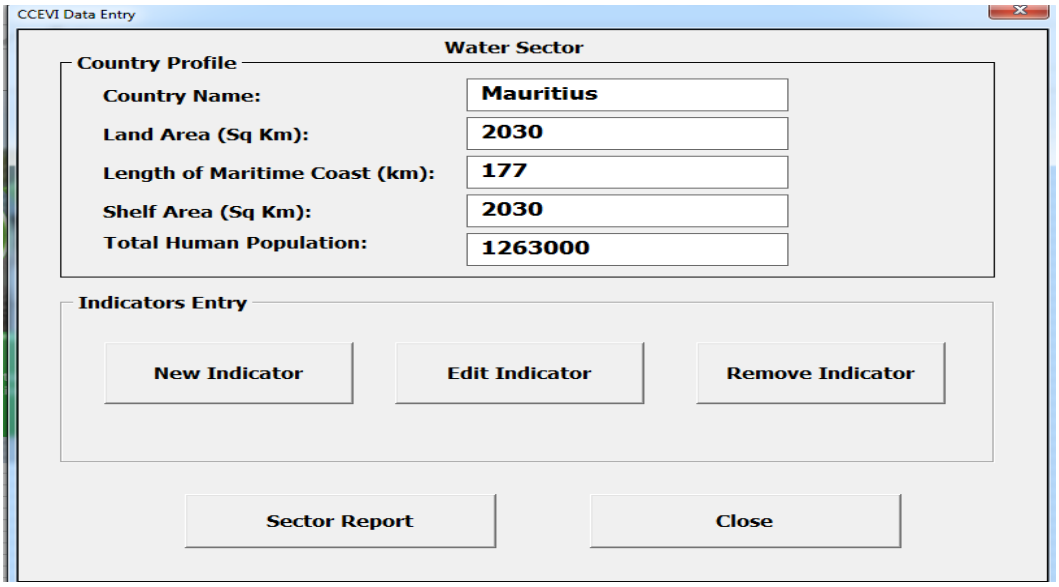
Last Five Year Statistics	
Mean	2010
Standard Deviation	281.6035
Min	1660.4
Max	2442.3

Indicator Confidence Interval				
Confidence Interval for μ				
Confidence Level:		95	%	
Critical Value:		**2.26**	**(t-value)**	
CI is given by	(	**2027.79**	**2755.31**	)

Indicator Summary to be used in XLM Toolkit	
Indicator Current Average value:	**2010**
Indicator Scale Min Value:	**2027.79**
Indicator Scale Max Max:	**2755.31**

The Min threshold value of 2027.79 and maximum value of 2755.31 will be used while creating the indicator and the mean last five years total rainfall is 2010.

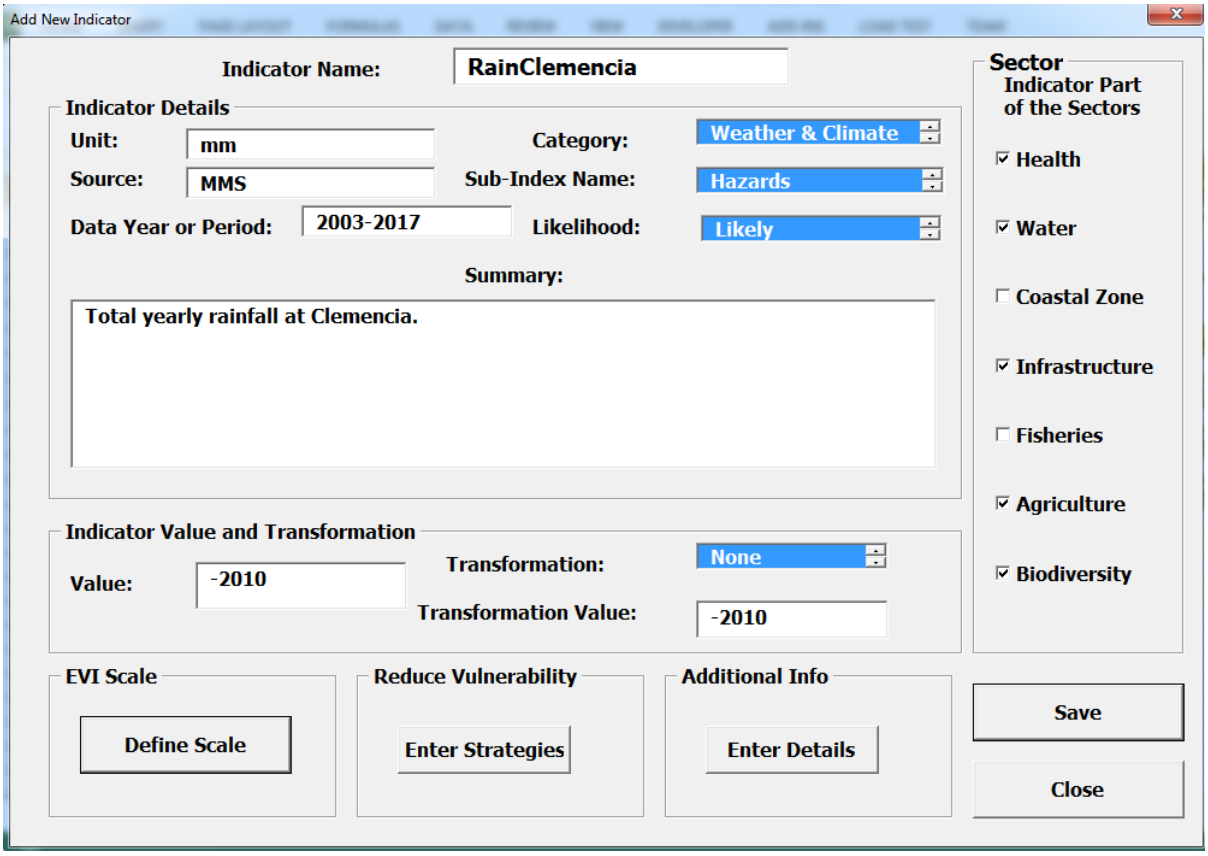
STEP 2: Go to **Data entry sheet** and press Data Entry button.



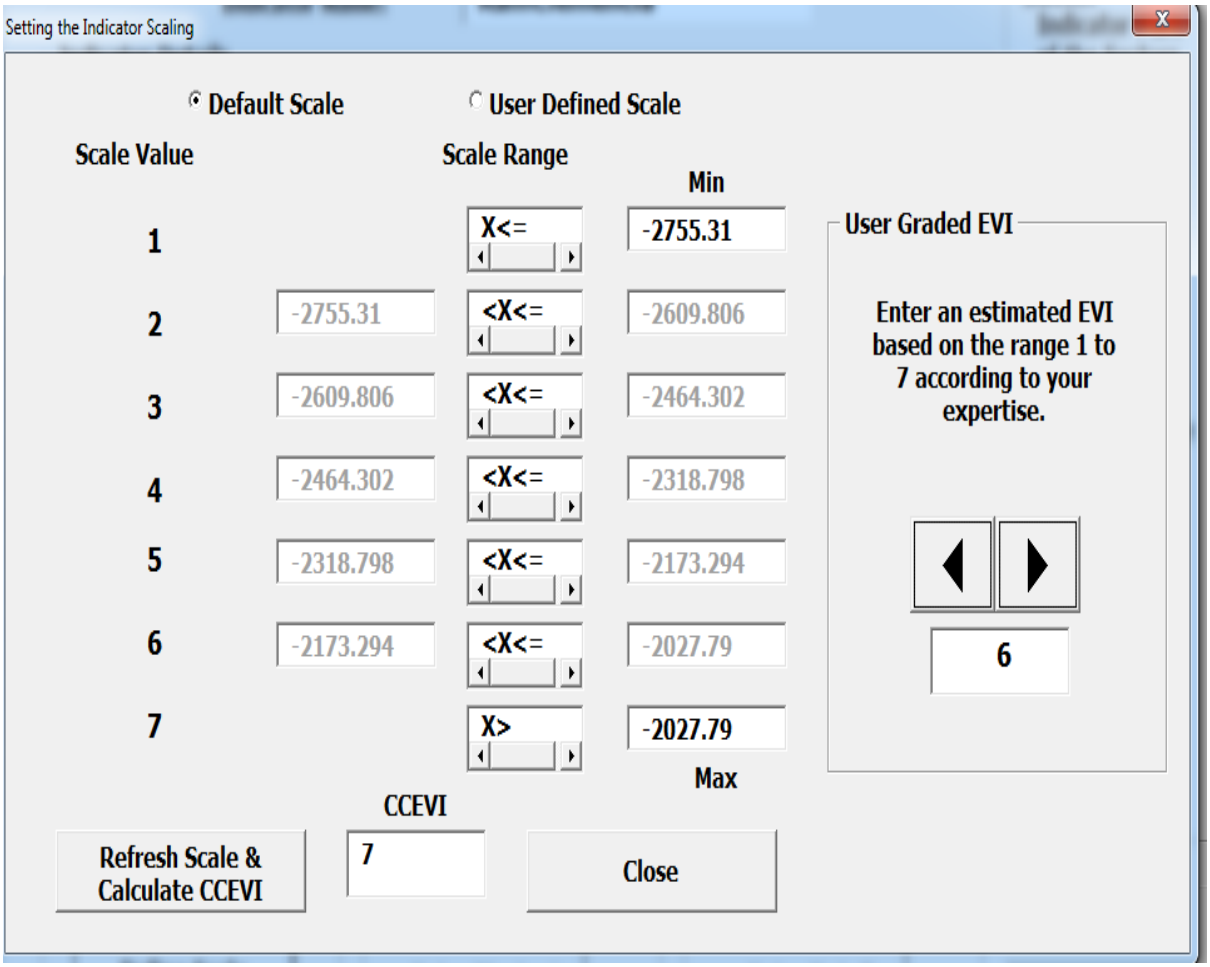
Press New Indicator and input relevant information.

NOTE: Since a decrease in rainfall is of major concern, we will feed negative values for the **RainClemencia** indicator.

Thus, Min threshold value of -2755.31 and maximum value of -2027.79 will be used while creating the indicator and the mean last five years total rainfall is -2010.



Press: Define Scale and input the min and max to get the CCEVI value under the default scale, user Defined Scale and User Graded EVI options by pressing the Refresh Scale and then close. Attribute the indicator to the relevant sectors.



Press save under the Add New Indicator GUI. User can add Strategies and other details using the **Enter Strategies** and **Enter Details** button. Then Close.

Press sector report button Data Entry GUI and close.

Go to the **Sector data** sheet and you will find your indicator present.

Sector EVI Summary			
Indicator Names	**Default EVI**	**User Defined EVI**	**User EVI Estimate**
High Winds	1	3	6
Dry Periods	7	7	7
Wet Periods	2	2	2
Hot Periods	1	1	1
Cold Periods	1	1	1
Volcano	1	1	1
Earthquake	1	1	1
Tsunamis	2	2	2
Terrestrial Reserves (%)	7	7	7
Fertilisers	4	4	4
Pesticides	1	1	1
Renewable Water	1	1	1
Sulphur Dioxide Emissions	6	6	6
Waste Production	1	1	1
Waste Treatment	7	7	7
Industry	3	3	3
Sanitation	5	5	5
Population	6	6	6
Population Growth	4	4	4
Tourists	5	5	5
Coastal Settlements	7	7	7
Environmental Agreements	1	1	1
Conflicts	1	1	1
R1	4	3	6
RainClemencia	7	6	3

This contributes to a total of 25 indicators related to the Water Sector.

The Risk associated to the RainClemencia indicator is given in the Risk sheet.

Indicator Names	Consequence (Default)	Consequence (User)	Consequence (Estimate)	Likelihood	Risk (Default)	Risk (User)	Risk (Estimate)
High Winds	Insignificant	Moderate	Catastrophic	Possible	Low	Medium	High
Dry Periods	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Wet Periods	Minor	Minor	Minor	Possible	Medium	Medium	Medium
Hot Periods	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Cold Periods	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Volcano	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Earthquake	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Tsunamis	Minor	Minor	Minor		No Risk	No Risk	No Risk
Terrestrial Reserves (%)	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Fertilisers	Major	Major	Major	Possible	High	High	High
Pesticides	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Renewable Water	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Sulphur Dioxide Emissions	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Waste Production	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Waste Treatment	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Industry	Moderate	Moderate	Moderate	Possible	Medium	Medium	Medium
Sanitation	Major	Major	Major	Possible	High	High	High
Population	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Population Growth	Major	Major	Major	Possible	High	High	High
Tourists	Major	Major	Major	Possible	High	High	High
Coastal Settlements	Catastrophic	Catastrophic	Catastrophic	Possible	High	High	High
Environmental Agreements	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
Conflicts	Insignificant	Insignificant	Insignificant	Possible	Low	Low	Low
R1	Major	Moderate	Catastrophic		No Risk	No Risk	No Risk
RainClemencia	Catastrophic	Catastrophic	Moderate	Likely	Extreme	Extreme	High

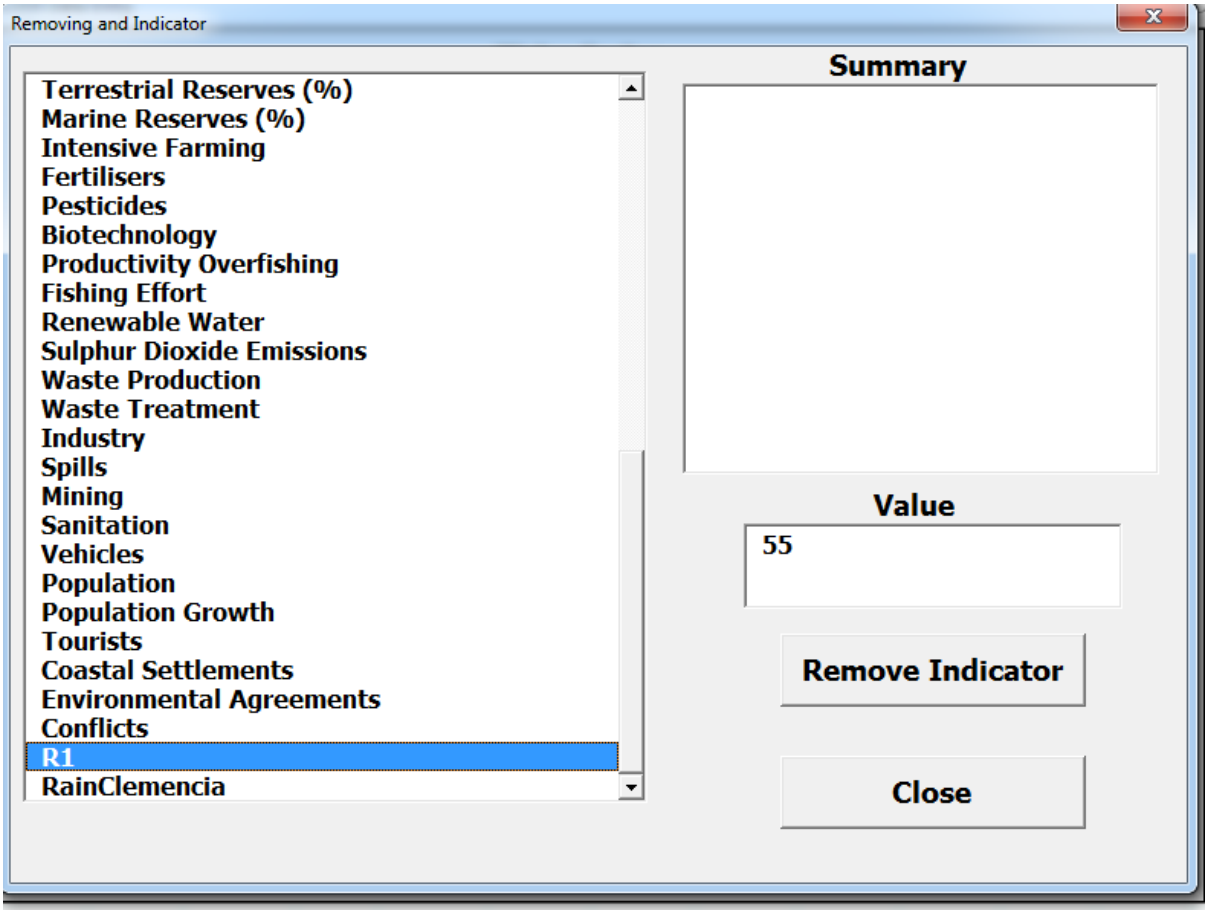
The consequence related to this indicator is Catastrophic and Likelihood behaviour is likely while the risk associated is Extreme under the Default option set by the user.

The Sector Risk High since the sector consequence is Moderate, likelihood chosen by the user is Likely and after updating the rating the sector risk rating is High.

Sector Risk		user1: Average of Default EVI, User EVI Score and User Estimate
Vulnerability Class	3.48	
Consequence	Moderate	Select Likelihood below
Likelihood	Likely	Almost Certain Likely Possible Unlikely Rare No Risk
Risk Rating	High	
Update Rating		
Always press update		

Step 3: You can edit your indicator by going to Data entry sheet again, pressing the Data entry button, then the Edit Indicator button. Select the relevant indicator and change or update information accordingly.

Step 4: A user can remove an indicator using the same Data Entry GUI, pressing the Remove Indicator button and choosing the unwanted indicator, e.g. here we remove R1, as follows:



Lastly generate the Sector Report before closing the Data Entry GUI.