

# Sokath Manual

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# 1 Introduction

Many have noticed that oil prices have risen sharply in the past few years. The prices are becoming so high that it will be less bearable for the economy. Unfortunately, gas prices have risen as well due to the fact that gasoline is derived from oil through a process known as cracking. These prices will become higher in the near future due to the phenomenon known as the Hubbert Peak in global oil production. (also known as Peak Oil).

The consequences can be quite uncomfortable, because there exists no known quick silver bullet solution that can be scaled up very quickly so that it can compensate the decrease in oil production. In order to make the consequences more comfortable I'm creating a software solution that can monitor and analyze the production of oil (and possibly other Fossil Fuels) and come up with suggestions how we have to do the transition to a more comfortable, green future.

The software wears the name Sokath. Sokath has to become a realtime decision based software system that can act as a software solution for the mitigation of the negative consequences of the Hubbert Peak. Right now, it is a simple tool that can be used to make a prediction about the gasoline prices and the oil prices using differences in demand and supply, and a future production base. The software contains a certain amount of components that can be seen as panels in the user interface. The panels are explained below.

The software uses data from BP <sup>1</sup>, ASPO <sup>2</sup> (Campbell and Aleklett), Koppelaar <sup>3</sup> (PO Netherlands) and various other sources.

**NOTE: some screenshots might not be up to date.**

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<sup>1</sup><http://www.bp.com/productlanding.do?categoryId=6929&contentId=7044622>

<sup>2</sup>[http://www.peakoil.net/uhdsg/RESOURCE\\_BASED\\_PRODUCTION\\_FORECAST\\_html.htm](http://www.peakoil.net/uhdsg/RESOURCE_BASED_PRODUCTION_FORECAST_html.htm)

<sup>3</sup>[http://www.peakoil.nl/wp-content/uploads/2006/09/asponl\\_2005\\_report.pdf](http://www.peakoil.nl/wp-content/uploads/2006/09/asponl_2005_report.pdf)

## 2 Overall View Panel

The Overall Panel gives an overall view of all predictions and the future demand for oil. (See Figure 1)

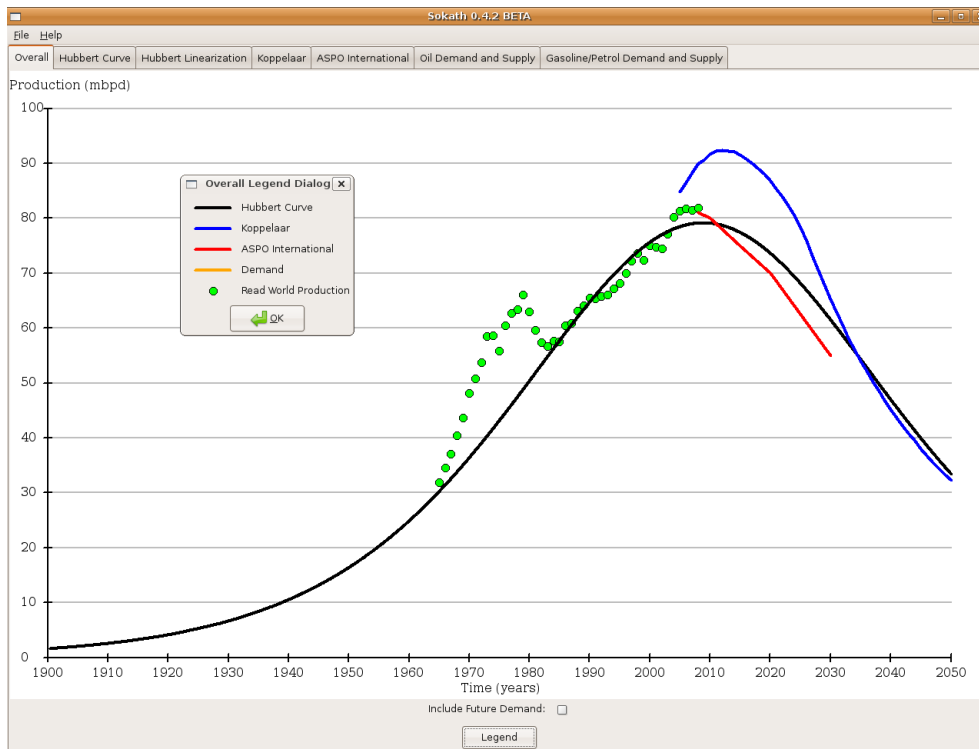


Figure 1: Overall View

In this panel you can do the following things:

- If you tick the Include Future Demand checkbox, then the y-axis will have higher values (which make the graphs smaller) and the demand curve will be shown. The demand curve will go towards infinity due to the fact that demand destruction has not been implemented (yet)
- You can press the Legend button if you want to know what the lines and dots represent.

### 3 Hubbert Curve Panel

The Hubbert Curve Panel gives an overview of all Hubbert Curves of certain regions in the world (See Figure 2)

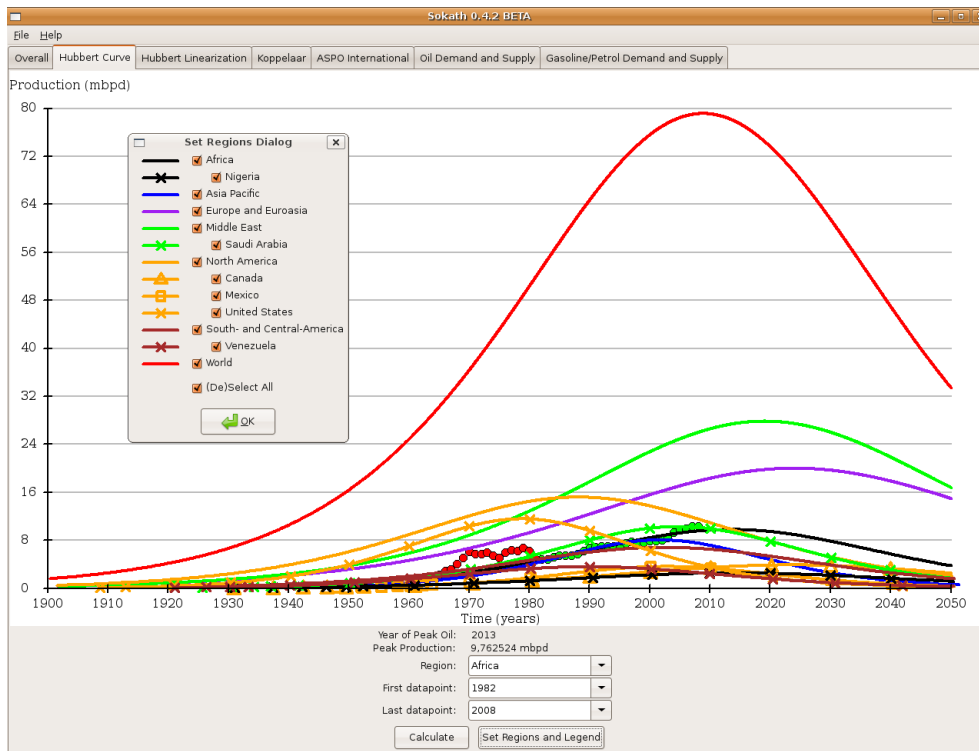


Figure 2: Hubbert Curve Panel

This panel is contains the following user interface components:

- **Year of Peak Oil** - This line of text shows the year in which Peak Oil occurs. Please mind that the number is the result of the Hubbert Curve prediction for the selected region and it may not reflect real life.
- **Peak Production** - Maximum oil production of the selected region.
- **Region** Area on which the Hubbert Curve calculation should be applied.
- **First datapoint** - The leftmost dot of the set of dots on which the Hubbert Curve calculation should be applied.
- **Last datapoint** - The rightmost dot of the set of dots on which the Hubbert Curve calculation should be applied.

- **Calculate** - Click this button if you want to calculate a new Hubbert Curve and/or change the graphs.
- **Set Regions and Legend** - Click this button if you want to see the legend and/or if you want to (de)select regions.

**Note:** The green dots are the set of dots used for the calculation of new Hubbert Curve for the selected region.

## 4 Hubbert Curve Example

Lets say you want to change the Hubbert Curve of the World. First, deselect all regions in the Set Regions and Legend dialog and select World. Press OK and only the red line is visible in the graph. However, the dots are not lined up correctly. In order to make them line up with the World Hubbert Curve line, you have to change the region from Africa to World in the Region box below the graph. Press Calculate and the dots will line up correctly. Your graph should now look like Figure 3.

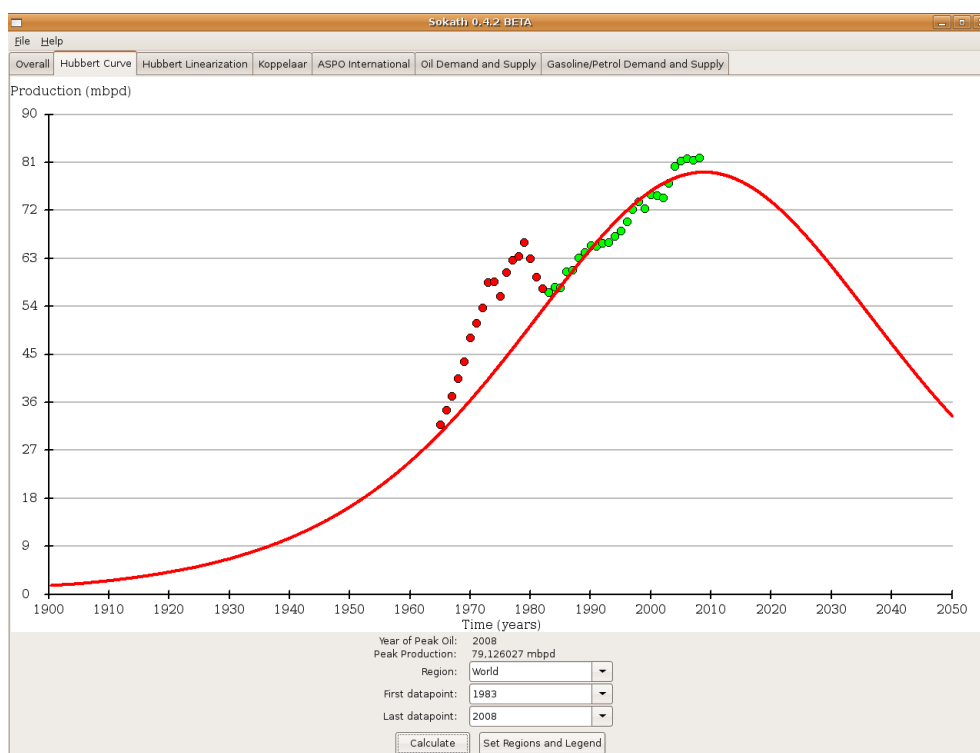


Figure 3: Hubbert Curve of World

Now, lets say that you want to make a new prediction for the world. The datapoint range is now 1983-2008, but this can be changed in an easy way. For example, if you want to see how the curve looks like when you set the range to 1990-2008, you have to do the following 2 steps:

- Change the value of First Datapoint box, which is below the graph, from 1983 to 1990.
- Press Calculate

Your graph should now look like Figure 4

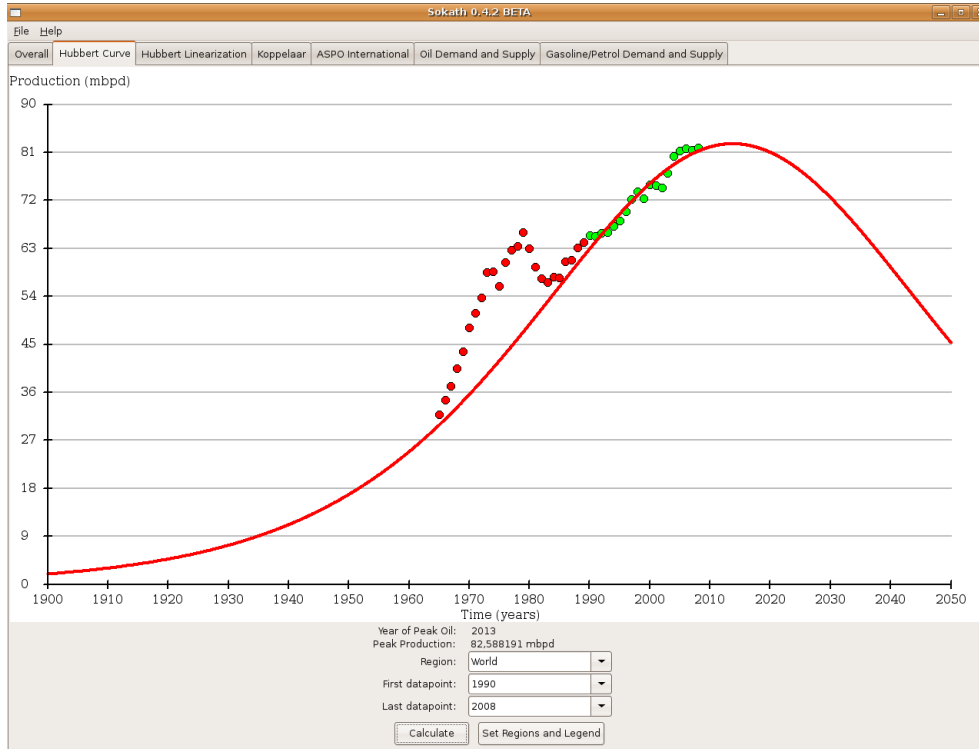


Figure 4: New Hubbert Curve of World

Now, you might not see a big change at first sight if you look at both Figure 3 and 4, but there are differences. The Year of Peak Oil and Peak Production has changed.

For more information about the Hubbert Curve, please visit this Wikipedia page: [http://en.wikipedia.org/wiki/Hubbert\\_curve](http://en.wikipedia.org/wiki/Hubbert_curve)



## 5 Hubbert Linearization Panel

This panel is basically a helper panel for the Hubbert Curve Panel. The graph consists of straight lines (Hubbert Lines) and red-green colored dots (Figure 5). The lines are part of the Hubbert Curve calculations. This panel works the same as the Hubbert Curve Panel.

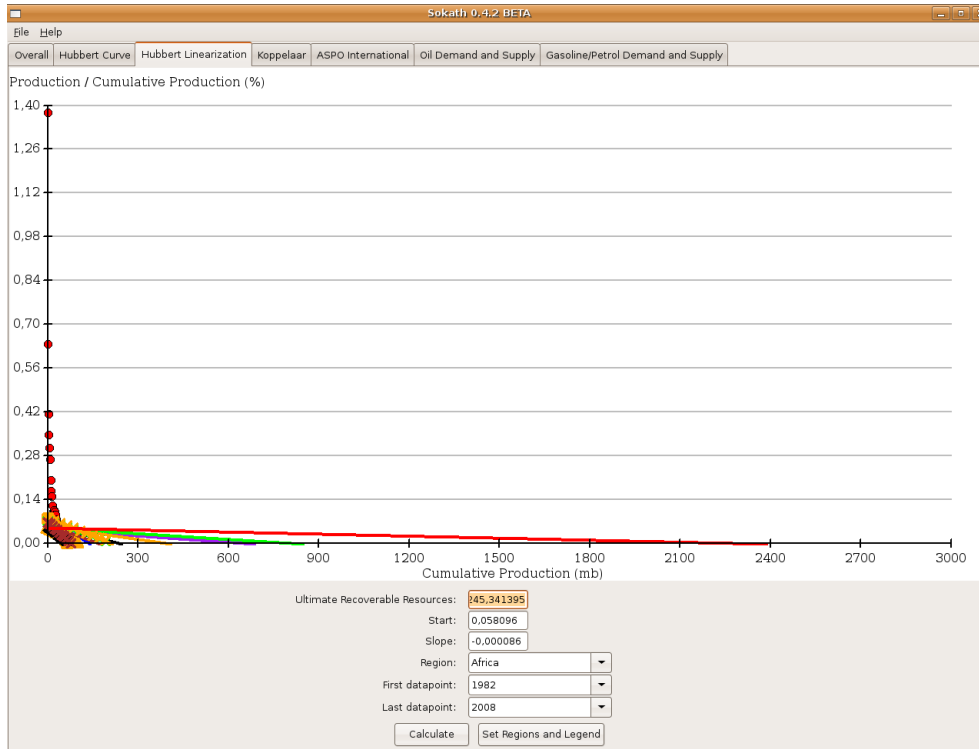


Figure 5: Hubbert Linearization Panel

It is easy to see that this is not the best view of the graph. To change this, change the value of the Region box (below the graph) from Africa to World and press Calculate. Your graph should now look like Figure 6.

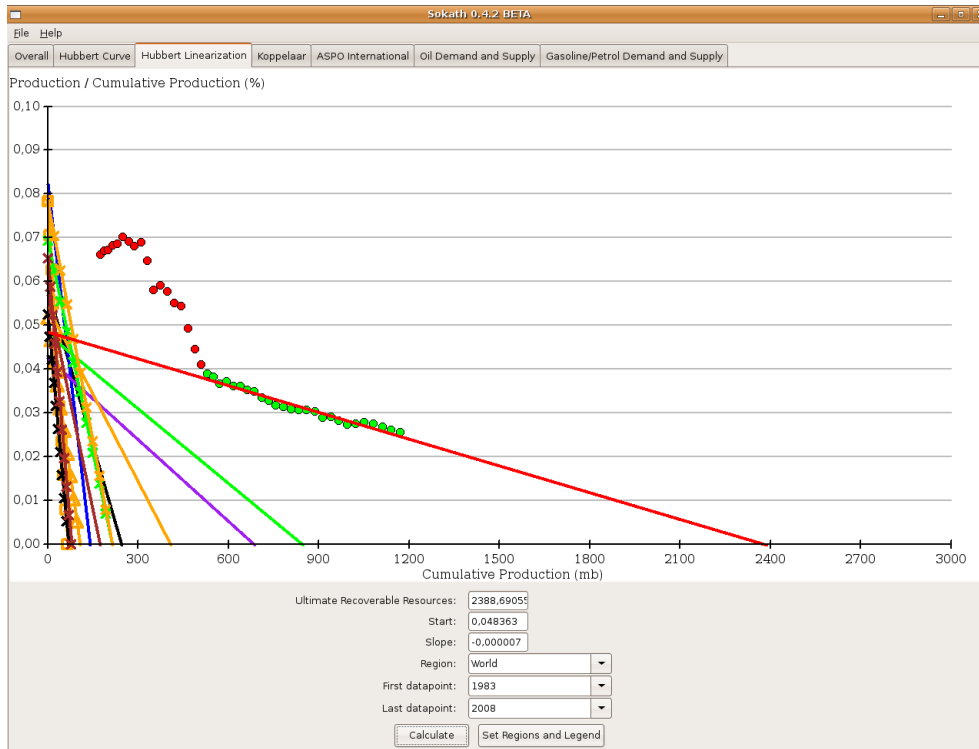


Figure 6: Hubbert Linearization Panel

The panel contains the following user interface components:

- **Ultimate Recoverable Resources** - This line of text shows the ultimate recoverable resources for the selected region. Please mind that the number is the result of the Hubbert Curve prediction for the selected region and it may not reflect real life.
- **Start** - Starting point of the Hubbert Line of the selected region.
- **Slope** - Slope of the Hubbert Line of the selected region.
- **Region** - Area on which the Hubbert Curve calculation should be applied.
- **First datapoint** - The leftmost dot of the set of dots on which the Hubbert Curve calculation should be applied.
- **Last datapoint** - The rightmost dot of the set of dots on which the Hubbert Curve calculation should be applied.

- **Calculate** - Click this button if you want to calculate a new Hubbert Line and/or change the graphs.
- **Set Regions and Legend** - Click this button if you want to see the legend and/or if you want to (de)select regions.

**Note:** The green dots are the set of dots used in the Hubbert Curve calculations.

## 6 "Multi Cycle Hubbert Linearization" or "Multi Hubbert Mode"

This mode is available in the Hubbert Curve Panel and the Hubbert Linearization Panel. With this mode you are able to make multiple Hubbert Curves for an oil-producing region. After you've made all the curves, you can then let the program add them up or take maximum values across the entire timeline. This process will create a single curve for the specified region. When this mode has been activated, a new set of controls will be enabled. These controls resemble the set of controls you have seen in the outdated screenshots in the previous sections of this manual. You can switch to this mode by pressing the "Switch to Multi Hubbert Mode" button.

**WARNING:** This mode is highly experimental at this point in time. This version of the application is BETA, this means it can crash when you don't use it in the right way. You can make it work by disabling all countries, EXCEPT for the UK, in the Set Regions and Legend Dialog. Only then it is safe to switch to Multi Hubbert Mode.

## 7 Koppelaar Panel

This panel shows the predictions made Rembrandt Koppelaar (President of Peak Oil Netherlands Foundation).

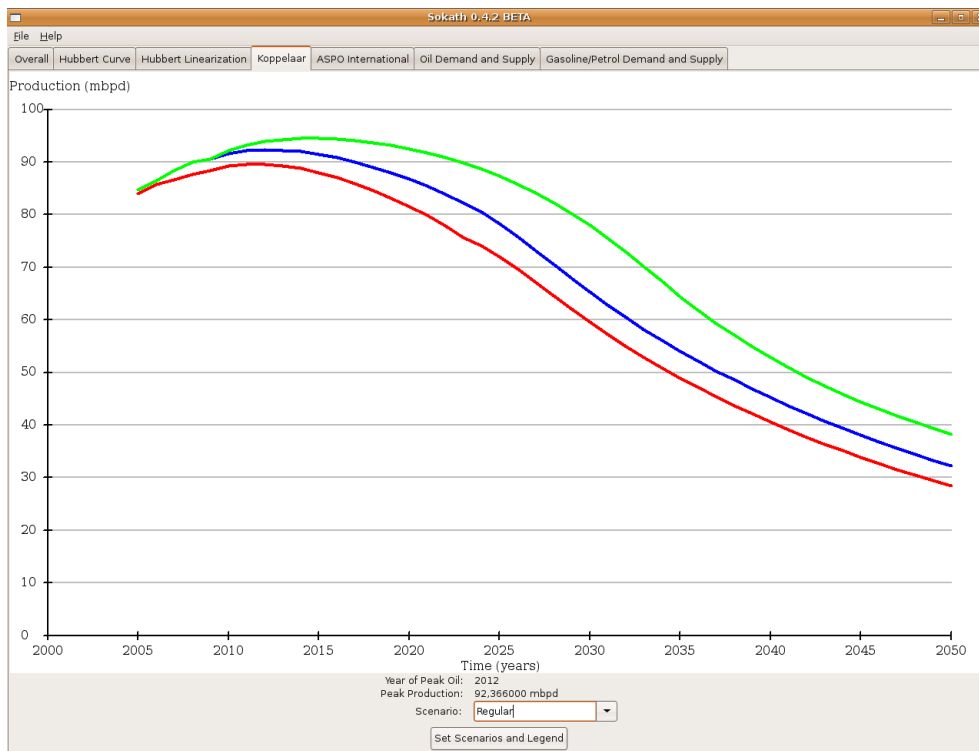


Figure 7: Koppelaar Panel

The panel contains the following user interface components:

- **Year of Peak Oil** - This line of text shows the year in which Peak Oil occurs. Please mind that the number is the result of Koppelaar's bottom-up analysis and it may not reflect real life.
- **Peak Production** - Maximum oil production of the selected scenario.
- **Scenario** - Selected Koppelaar Scenario
- **Set Scenarios and Legend** - Click this button if you want to see the legend and/or if you want to (de)select Koppelaar scenarios.

There is no example of the usage of this panel, because it only shows graphs and it doesn't calculate anything.

**BIG TIP:** In this panel, you can select the Koppelaar scenario which should be used for oil price prediction.

## 8 ASPO Panel

This panel shows the predictions made by the Association for the Study and Peak Oil and Gas. ASPO is founded by dr. Colin Campbell and it is currently lead by dr. Kjell Aleklett.

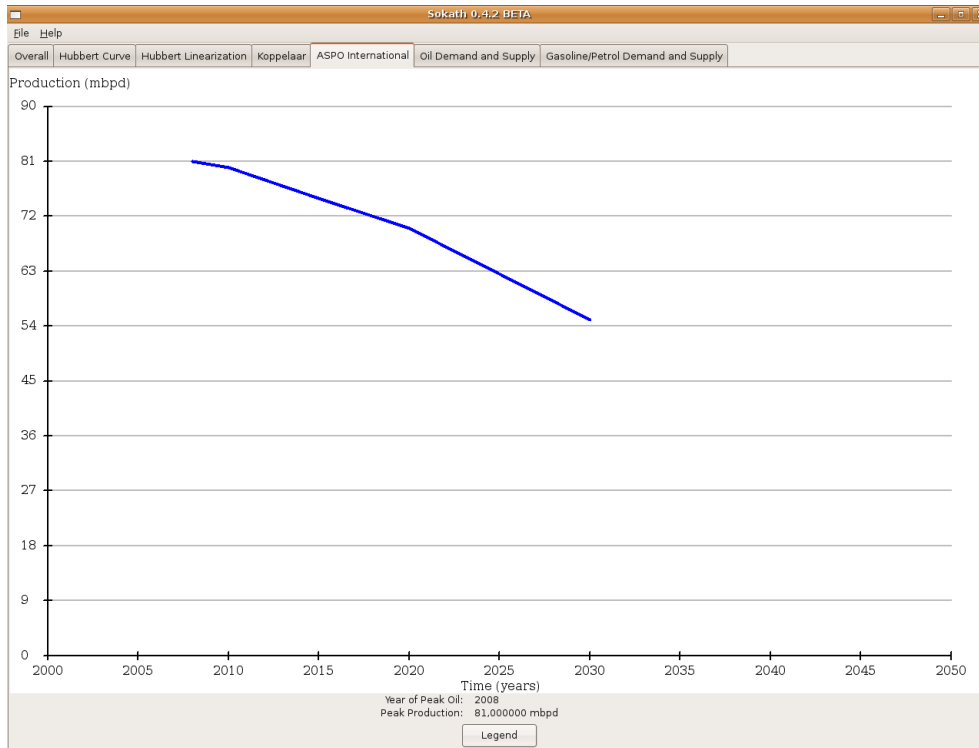


Figure 8: ASPO Panel

The panel contains the following user interface components:

- **Year of Peak Oil** - This line of text shows the year in which Peak Oil occurs. Please mind that the number is the result of ASPO's bottom-up analysis and it may not reflect real life.
- **Peak Production** - Maximum oil production of the selected scenario.
- **Legend** - Click this button if you want to see the legend.

There is no example of the usage of this panel, because it only shows graphs and it doesn't calculate anything.

## 9 Oil Demand and Supply Panel

This panel is used for making predictions about oil prices.

### 9.1 Prices View

This view focusses on oil prices. You can influence the prices using the user interface components below the graph.

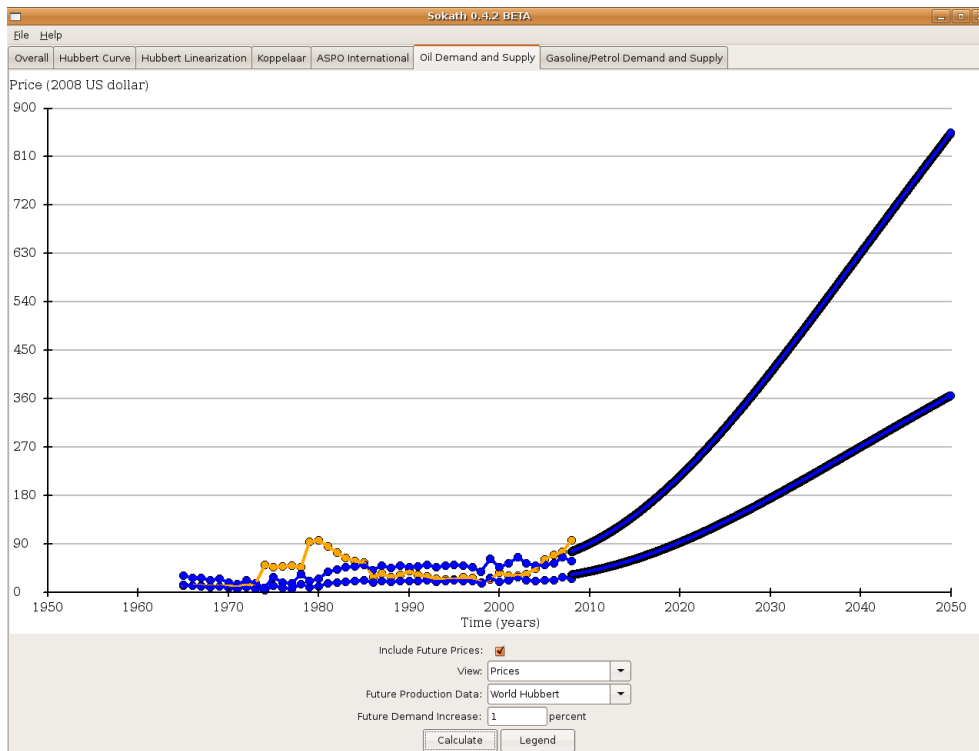


Figure 9: Oil Demand and Supply Panel - Prices

The panel contains the following user interface components:

- **Include Future Prices** - Tick this box if you want to include or exclude future price predictions.
- **View** - With this box you can select different views associated with demand and supply (e.g. Prices, demand and supply and difference between them). The scale of the y-axis may change upon clicking.
- **Future Production Data** - With this box you can select the future production base used for predicting prices. Changes in the World

Hubbert Curve and the selection of the Koppelaar scenario will have influence on the predictions.

- **Future Demand Increase** - You can input a new demand growth percentage (per year) in this box. After you have pressed calculate, you can see the results immediately in the Overall Panel and you can see the effect on the future prices in this panel.
- **Calculate** - Click this button if you want to calculate a new prediction. The scale of the y-axis may change upon clicking.
- **Legend** - Click this button if you want to see the legend.

## 9.2 Demand and Supply View

This view focusses on the demand and supply of oil. The graph represents oil demand and supply versus the price. Time is not important in this view. It is recommended to turn off "Include Future Prices" if you want to have a good view of the graph.

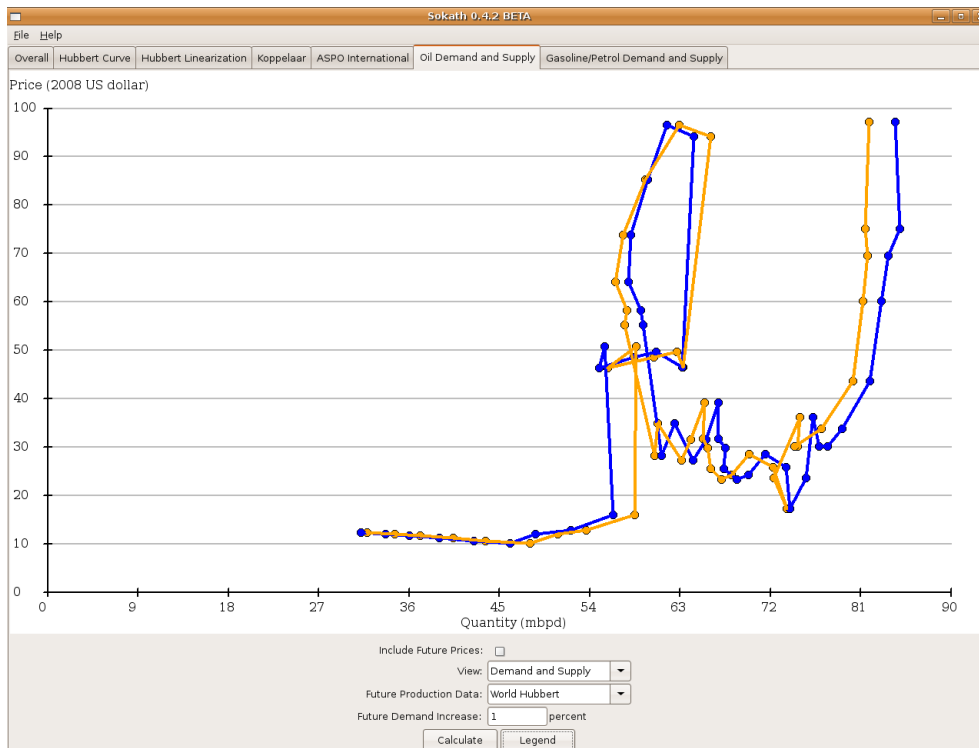


Figure 10: Oil Demand and Supply Panel - Demand and Supply



### 9.3 Differences between Demand and Supply View

This view focusses on the differences between demand and supply of oil. The data in this view is used to make a good formula for the predictions. The graph represents the differences versus the price. The blue line is the result of the determined formulas given the differences as input. Time is not important in this view. It is recommended to turn off "Include Future Prices" if you want to have a good view of the graph.

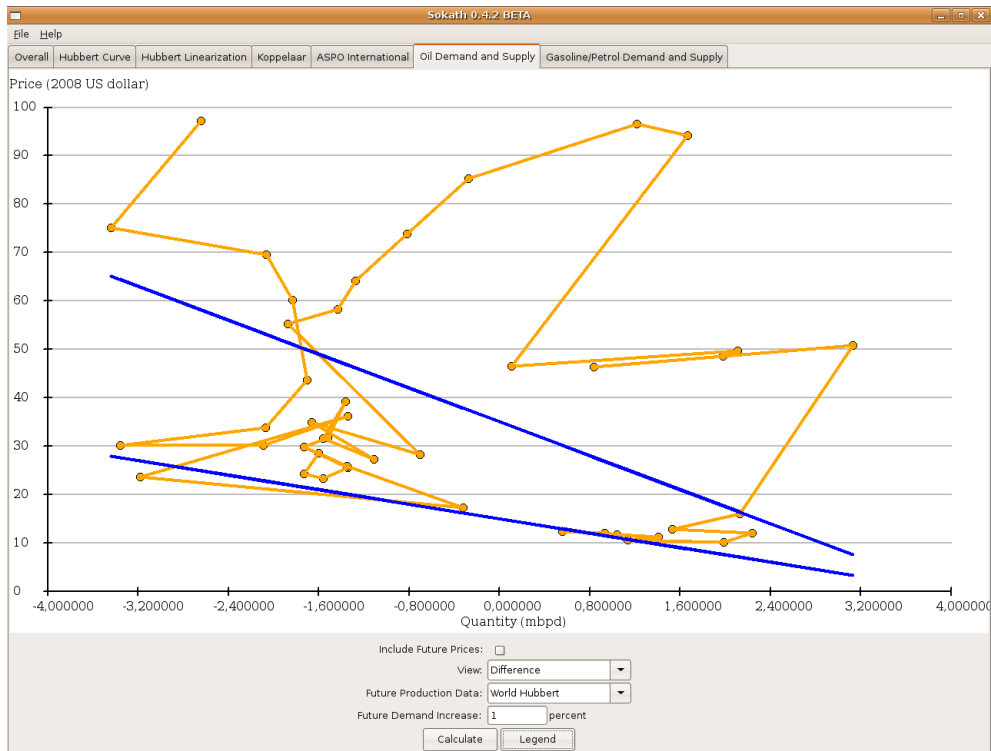


Figure 11: Oil Demand and Supply Panel - Differences between Demand and Supply

## 10 Gasoline/Petrol Demand and Supply Panel

This panel is used for making predictions about gas prices.

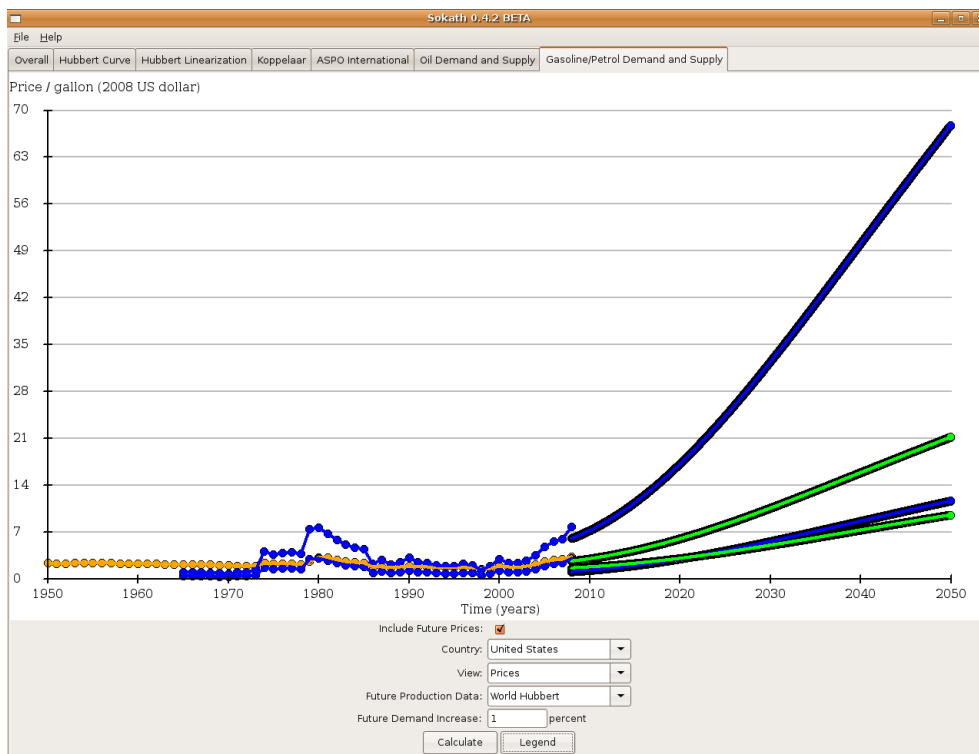


Figure 12: Oil Demand and Supply Panel

The panel contains the following user interface components:

- **Include Future Prices** - Tick this box if you want to include or exclude future price predictions.
- **Country** - With this box you can select different countries if you want to take a look at foreign gas prices. **Note:** This panel is under construction. You can only select United States at this time.
- **View** - With this box you can select different views associated with demand and supply (e.g. Prices, demand and supply and difference between them). The scale of the y-axis may change upon clicking. **Note:** This panel is under construction. You can only select prices at this time.

- **Future Production Data** - With this box you can select the future production base used for predicting prices. Changes in the World Hubbert Curve and the selection of the Koppelaar scenario will have influence on the predictions.
- **Future Demand Increase** - You can input a new demand growth percentage (per year) in this box. After you have pressed Calculate, you can see the results immediately in the Overall Panel and you can see the effect on the future prices in this panel.
- **Calculate** - Click on this button if you want to calculate a new prediction. The scale of the y-axis may change upon clicking.
- **Legend** - Click on this button if you want to see the legend.