

Making one's own map using Inkscape – A Tutorial

Inkscape is professional quality vector graphics software that runs on Linux, Mac OS X, and Windows desktop computers. It is free and open-source and this software can be used to create or edit vector graphics such as illustrations, diagrams, line arts, charts, logos, and complex paintings. I have however been using it to design e.g. the maps and the banknotes of my fictional countries. Go to <https://inkscape.org/> for more information. – Bernard (2019)

Layers

Inkscape works with layers, which means that elements such as land, sea, roads, city symbols, borders, etc. can be considered separate drawings that are put on top of each other to make it look like one picture. Unlike in e.g. Paint, where everything is added to the same picture, this means that if you are not happy about one element, the entire drawing isn't 'destroyed'; you can simply go to the layer in which you added the element you want to change without needing to affect the rest of your project.

Normally the layer menu will appear automatically in the right corner when you start Inkscape. If not: press Shift+Ctrl+L. To add layers, click +; to move them in the order you want, use the green arrows. Layers consist of a little eye, a little lock, and a name. By clicking on the eye, you can make the layer visible or invisible, opening or closing the lock will open or close the layer for modification. The name of a layer can be changed into something useful so that you know what's in it. The content of the first layer will appear on top and cover items in lower layers.

A second useful menu is Fill and Stroke (Shift+Ctrl+F), which allows you to change the shape and colour of the lines and objects that you will draw.

Base drawing

You can either draw the shape of an original map straight away either using the yellow pencil or the blue fine liner in the menu on the left side, or you can import an original drawing by clicking 'File' and then 'Import'.

It gives you the options of either importing the file completely or making a link to the location of the drawing in your computer. Adding it completely will make your Inkscape file larger and heavier and therefore slower to handle, whereas linking it will need you to keep the original picture on the same place in your computer permanently (or at least until you won't need it anymore); if you move the picture to another folder, Inkscape won't be able to find it anymore.

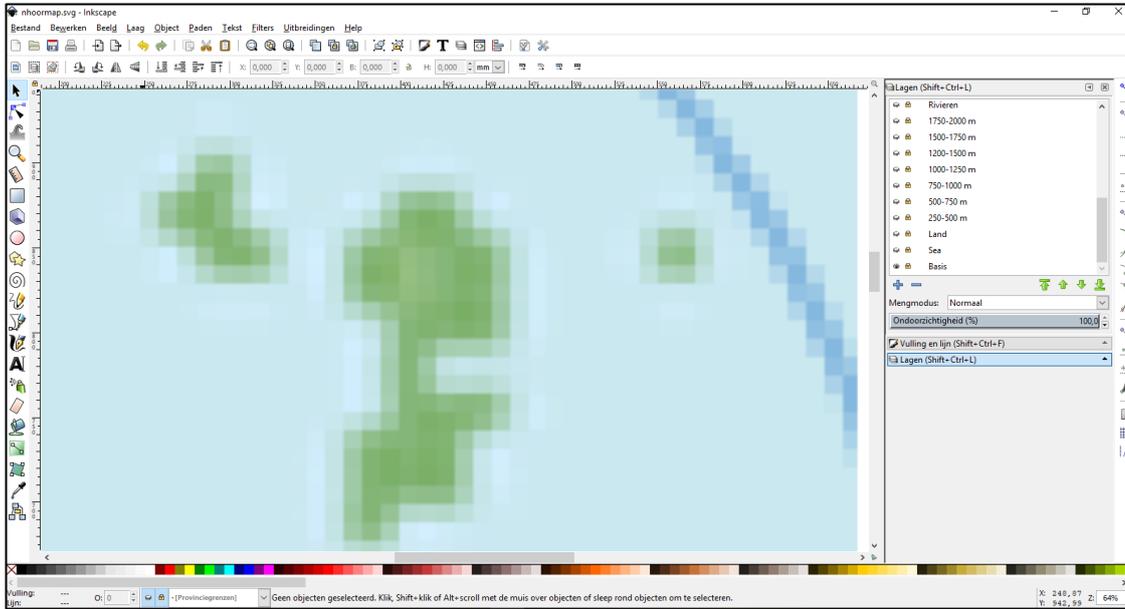
(There are ways to show Inkscape to the new location btw, but that's less important information to tell you so if you choose the linking option, best keep your original pictures where they are.)

The picture will show up in Layer 1, which you can rename to e.g. 'Base Map' or 'Original' or something similar (see **Example 1**). Lock this layer so that you won't e.g. select and move it by accident.

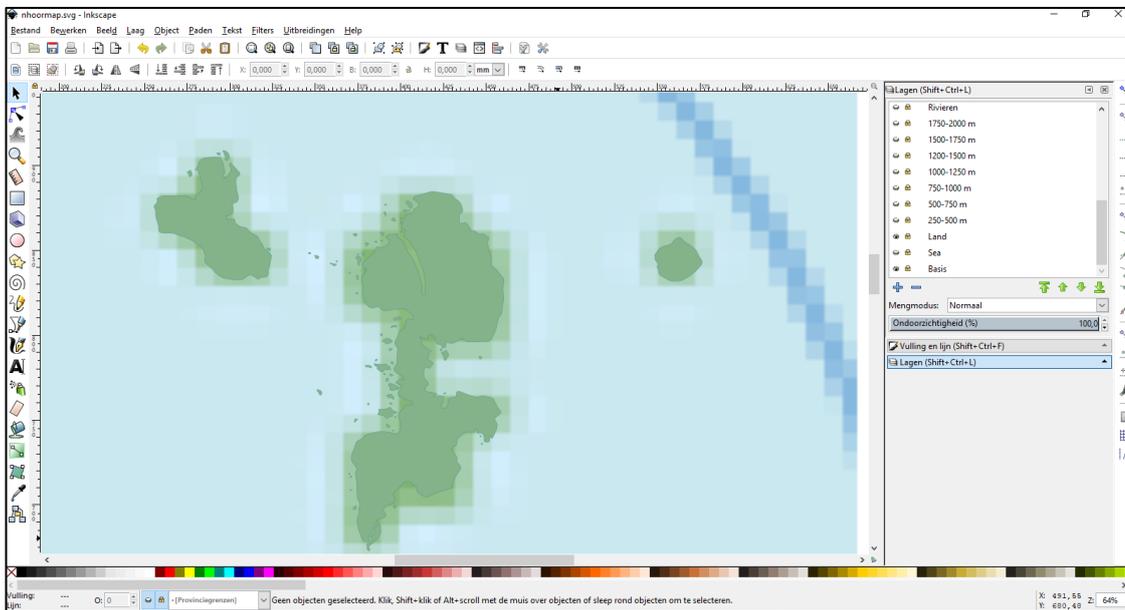
Create a second layer by clicking on the + and name it e.g. 'Land'. Now comes a bit of a tedious part: using the yellow pencil or the blue fine liner in the menu on the left side, draw over all the outlines of the original picture: the main land mass, any islands that you may have, etc. Make sure that all circles are closed. If your original picture contains part of a larger land mass that isn't completely in the picture, you need to draw over the border of the picture.

Once you have done this, select all the items you created (Ctrl+A) and go to the Fill and Stroke menu. By clicking on the first square on the left under the tab 'Fill', you can give all items the same colour (if you plan to add layers for different altitudes later, you can make everything in this layer e.g. a darkish shade of green as it will be the lowest altitude). In the other two tabs in this menu you can alter the colour, size, and shape of the outer borders.

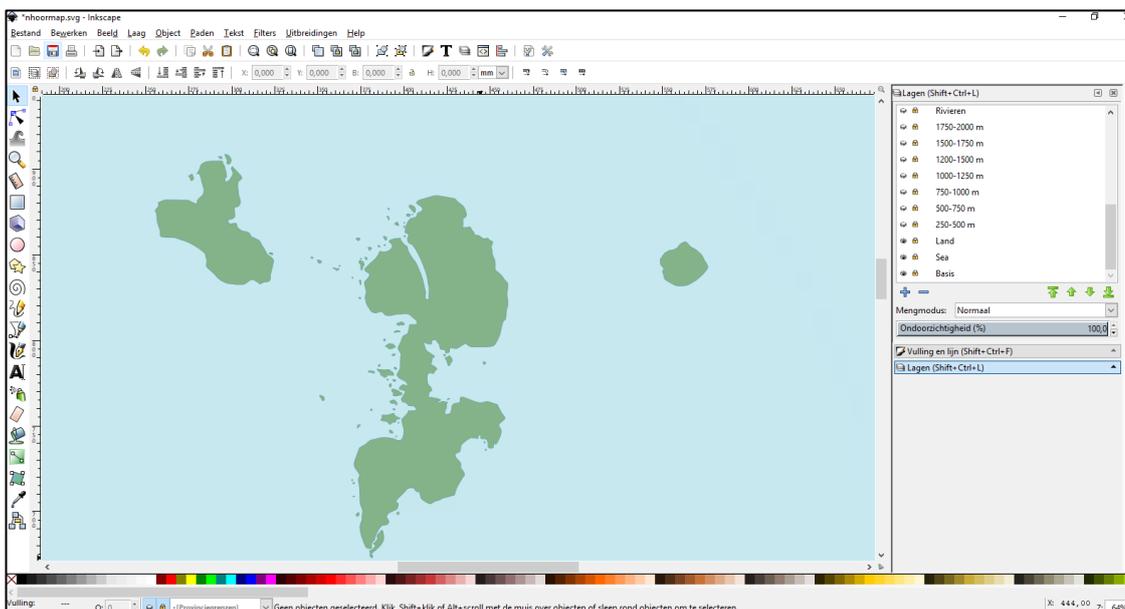
You have now created the basic outline of your country (see **Example 2**). This looks a bit weird though, so we create a new layer, which we call 'Sea' and put it above the base map layer but below the Land layer. The easiest is to just select the square in the menu on the left and draw a large square around everything you have drawn so far. Go to the menu Fill and Stroke to give it a more sea-ish colour (a light shade of blue will do the trick). See **Example 3** to see what this may look like.



Example 1: (part of) the base map



Example 2: base map + the basic outline drawn on top of it



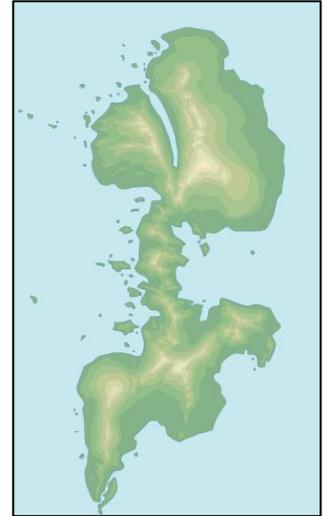
Example 3: land and sea

Further items

It depends a little bit what you want with the map what should be on it. Possible items could be the following; for every type of item you can create separate layers.

Natural items

- **Altitude:** create several more layers like the land layer (above the land layer), but always smaller than the previous layer you drew; change the filling colours of each layer so that it looks like on a real altitude map (see **appendix A**). Be realistic about this: if you have only a small island, it is unlikely that there will be e.g. a mountain as large as the Mount Everest on it. The example on the right goes to 2000 m/6561.68 ft.
- **Mountains:** create a layer for the mountain symbols. With the yellow pentangle/star in the menu on the left you can create a triangle. Make it e.g. black or dark brown (Fill) and drag it to the place on the map where you want to have it. Copy+paste to create more of them.
- **Rivers:** These are just lines which you can make the same way as you did the land mass, but without closing the circuit. Rivers tend to flow down, so draw lines from the highest points towards the sea or towards other rivers. Rivers do not flow from coast to coast. Please also note that although rivers tend to flow into each other, it is rather rare that a river splits in two (*bifurcation*), although it is not unheard of (especially in deltas this is a thing).



Select all rivers and make them blue (Stroke colour). You can make larger rivers a little bit fatter than smaller rivers and streams (you can even create separate layers for differently sized rivers, but that's up to you).

- **Lakes:** draw a lake where you would like to have one. Like the sea, lakes are usually coloured blue; it's up to you if you make them the same colour as the sea or a little bit darker etc.
- **Islands in lakes:** There are two solutions for this one:
 1. Create an extra layer 'Islands in lakes' above the Lake layer and add the islands there, giving them the same colour as the directly surrounding altitude layer. This solution may however cause certain problems with other layers (e.g. layers to give your provinces/states etc different colours), so there's also the following option:
 2. Draw an island or several islands in a lake. Select both the islands and the lake together. Go to 'Path' in the menu on top of the page and select 'Exclude'. The shape of the island(s) will now have been cut out of the lake.

Borders

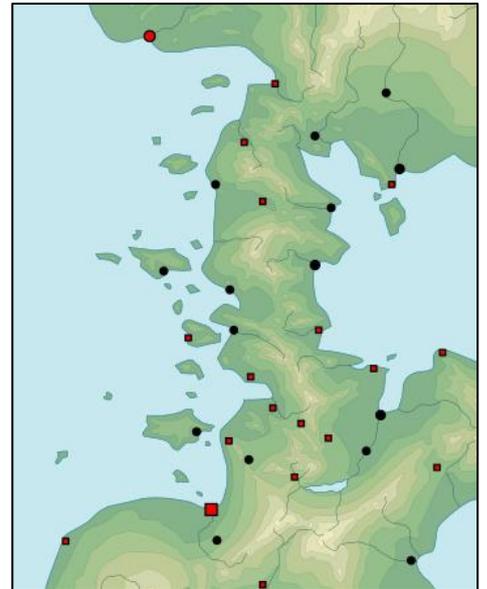
- **Country borders:** if your country has land borders with other countries, you can add them following the same method that you used to draw the rivers. Under the third tab under Fill and Stroke there is a possibility to add various shapes of dotted lines. Borders tend to be black, dark grey, or (dark) red on borders, but this is up to you of course.

"Help! I don't know anymore where my borders are because everything that I have drawn so far is covering my base map!" Indeed! So, click on the eyes of all layers and make them invisible, draw the borders, and make the layers visible again. If the borders aren't neatly on the land now, you can select the 'node button' in the menu on the left (just below the arrow), select a border and move nodes to more acceptable positions.
- **Provincial/state/district borders:** the same as above. These borders are slightly thinner in general.
- **Borders that follow rivers:** open the River layer, select the river that serves (partially) as a border, copy it, go to the border layer, click on 'Edit' in the menu above and select 'Paste in place'. Lock the River layer again (you can even make it invisible just for the duration of this procedure). Select the river that is now in the border layer and give it the same size and colour as the other borders in that layer.

If only part of the river is a border, click on the node button in the menu on the left, select the border and delete the nodes that you don't need.
- **Border visibility:** Depending on whether you want borders to be visible in lakes, you can position the border layer(s) above or below the Lake layer.
- **Sea borders:** borders at sea can be rendered entirely closed (covering all maritime territory of a country) or consist just of a line where it is not clear e.g. to which province or country an island belongs. You can make them the same size and shape as land borders or a little bit less prominent; up to you!

Cities

Many maps have different symbols for differently sized settlements. You can opt to create different layers for each different size (this can come in handy if ever you need to mass edit them later) or put all of them together in one layer. Using the square and circle in the menu on the left, you can create the shapes that you will use for your cities: the largest cities will have the largest shapes, etc. Like with the mountain symbols: copy and paste them on the locations where you want them (see example on the right for an impression). Alternatively, you can 'clone' them (look under 'Edit' in the menu above), which will take less memory space.



Infrastructure

- **Roads:** Roads (and railroads) consist of a combination of layers. Motorways are created by creating the layers 'Motorway 0', 'Motorway 1', and 'Motorway 2', with 2 on top. Draw a line in Motorway 0 between two larger cities. Select and copy the line and past it to Motorway 1 using the Paste in Place function (under 'Edit'). Select the line in Motorway 1, make it slightly smaller and change its colour to one that contrasts the colour of the line in Motorway 0. Repeat this process for the third layer in Motorway 2; here the top line will be much thinner, again contrasting the colour of the line just below it. The development of the result should look like this (you can adapt of course the colours to your own liking; as long as the line in Motorway 1 contrasts with those in Motorway 0 and 2):

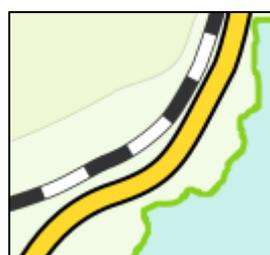


Main roads/provincial roads/primary roads are done the same way, but you need only two layers for this one: e.g. a 'Primary Road 0' and a 'Primary Road 1'; the middle line of Motorway 2 isn't necessary here. Repeat the steps above. Remember that these roads are less large and important than motorways, so they should be a little bit thinner. The result could look like this:



Smaller roads (secondary roads, local roads etc) are done as main roads, but still smaller and with less prominent colours (white or something like that).

- **Railroads:** are done as main roads (using layers Railroad 0 and Railroad 1) but use colours that you haven't used for the main roads, e.g. (dark) grey and white. The line in Railroad 1 is slightly thinner than the one in Railroad 0, but make it dotted, like this:

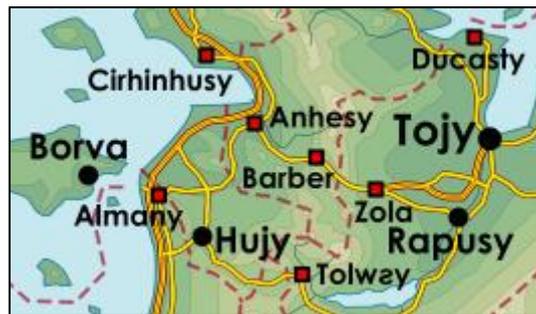


Names

Naming your cities, provinces, countries, seas, lakes, and mountains is next. For each set of names, you can add new layers. Try to be consistent: e.g. use max. two different fonts for everything or the map may look too chaotic. Size is also important: for e.g. cities, the size of the text can be bigger than their corresponding symbols, but not too much.

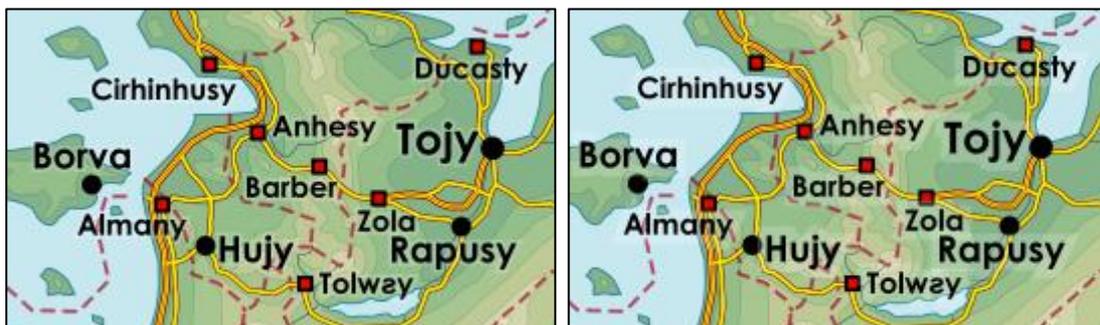
- **Cities:** using the text function (the large 'A' in the menu on the left) you can add text. For each place symbol that you created, create a corresponding text example; each different symbol can have a differently sized text. Names of cities larger than 500,000 or 1,000,000 inhabitants can be capitalised, but that is up to you. Copy and paste a name that you have already created to add a new name; if you create an entirely new text field, the font and size settings may not have been saved by Inkscape, so you'd have to change that again first; copying and pasting does the trick more quickly.

You may need to experiment by moving place names around a little bit to make everything fit and to make it clear which name refers to which symbol. Also: try to avoid placing names over infrastructure unless you have no other option. The result may look like this:

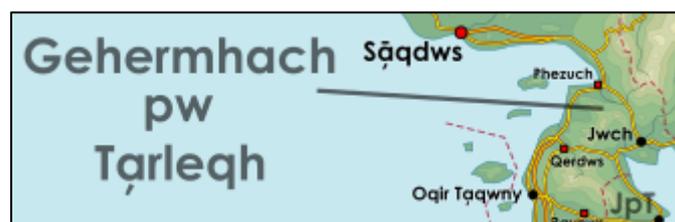


- **White background:** to make place names better readable, it is possible to add a white 'shadow' around it. Create a new layer 'Place Names shadow' or something like that below the Place Names layer, copy all place names and paste them in this new layer using the Paste in Place function. Select everything in the Place Names shadow layer, go to the Fill and Stroke menu and add a Stroke around the letters, which you make white (T 0, V 0, L 255, A 50) and semi-transparent. Change the size of the stroke according to your preference to make the shadow more prominent.

In the example below the shadow is very minimal on the left, larger on the right:



- **Provinces/states/districts and countries:** Make a new text example for the provinces. Country names can use this too, but bigger and/or capitalised. As some provinces may be bigger than others, you may have to be flexible with size. You can make the names transparent if you like. When placing them in their respective provinces, make sure that you don't cover any of the other names that are already there. Again, you may need to move names around a bit to make it fit. If there is no place in the province and your country is an island, you can also place the names next to it (with or without line) as in the example below:



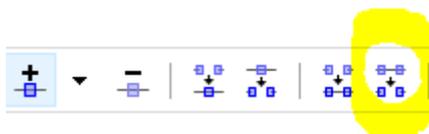
- **Sea/lakes:** as above, but names of water bodies tend to be cursive and dark blue on maps. Place them in the middle of a water body. Modify the size so that it fits. If e.g. a lake is too small for the name to be readable on the map, you may choose to leave it out.
- **Mountains:** as above; place them next to the triangles that you created before.

Coloured 'veils'

- **To make your country stand out between other countries:** If your country has land borders with other countries, putting a 'veil' over your neighbouring countries will make your country stand out more prominently on the map. This is however a tricky and rather complex operation which takes some time to execute. Create a layer 'Veil'. Open the 'Land' layer, copy the entire land mass (including all islands), and paste it in the Veil layer. Close the Land layer again.

Select the land mass in the Veil layer and remove the filling: only its contour should remain for now. We don't need however the parts of the contour that cover the coastlines of your country, so we need to remove them. First you can already delete the contours of your islands where there are no land borders with neighbouring countries.

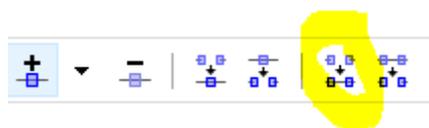
For the larger land mass part, we need to cut a part out of the contour. Click on the Node button in the menu on the left: all nodes of the contour will become visible. Zoom in on a part of the contour where the border between your country and your neighbour reaches the coast. Select the two nearest nodes around this point which will highlight. Go the menu on top of the page: you will see a series of options for nodes: click on the one that shows two connected nodes become separated (in yellow below):



The line between both nodes on your map should now disappear. In order to really cut them apart, go to 'Paths' in the menu on top of the page and click on 'Divide' (or 'Separate'; I'm using a Dutch version of the program so I'm not entirely sure what it says in English; shift+ctrl+K in any case). The line is now disconnected at that place. Repeat this at all other locations where the border between your country and your neighbour's country meets the coastline. Delete the parts along your coastline that you don't need.

Now, copy the country borders from your Border layer and paste them in place in the Veil layer. Close the Border layer again. With the Node button, remove all the parts of the borders that don't border your country, the same way as we removed the bit of redundant coastline earlier. When you have finished, you will have a series of lines that form a shape that can cover all countries except your own. We now need to combine these lines so that they can be filled up.

Zoom in to a spot where the ends of two lines meet. Click on the Node button so that the nodes become visible, select one node at the end of each line and in the menu, click on the one that shows two separated nodes become connected (in yellow below):



A line will appear between the two nodes. In order to really combine them, go to 'Paths' in the menu on top of the page and click on 'Combine' (ctrl+K). Repeat this step everywhere lines meet.

Once the circle is completely closed, go to the Fill and Stroke menu and fill the shape with a colour; make it transparent (e.g. A 50) so that your neighbouring countries remain visible but are of a slightly different darker shade than your own country. Make the border invisible.

- **To colour your provinces/states/districts:** The same as for the Veil thing above: create a layer for each province and copy any parts of borders and coastlines in it that you need. Combine all the lines and fill it up with a transparent colour; repeat with different colours for the remaining provinces.