#### Case study 2: Economic Inequalities in the World

Step	Identify a topic / story that is going to be told / explored using GIS	Other
	Teaching WITH and ABOUT GIS	
	Economic inequalities in the world	V
	Curriculum context: Sustainable development goals (K12 -compulsory education- topic) It is possible to adapt to K8 and K9	
	Target age group: K11-K12 – 16 – 18 years old/ and GCSE – 14 – 16 years old	
LOs	Learning objectives	
	<ul> <li>Observe economic inequalities in the world with the aim to see now it would be possible to reduce them.</li> <li>Define and describe indicators related to inequalities.</li> <li>Interpret the same indicators mapped in different viewers.</li> <li>Explain how changing the intervals on a map can contribute to providing different results using the same data (critical thinking)</li> <li>Can link to SDGs especially:</li> <li> <b>9</b> NOUSTRY, INNOVATION <b>10</b> REDUCED <b>10</b> INCLUSTRY <b>10</b> INCLUSTRY <b>10</b> INCLUSTRY </li> </ul>	
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# Which is the most appropiate SDG for the aims?





#### Main steps



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## **Check prior learning**

0 Step 0: Retrieval (e.g. quiz to check prior learning)			
	<ul> <li>How much do you know about economic inequalities in the world? Let's see with Kahoot.</li> <li>Teachers should go to kahoot.it and connect to the pin that the teacher gives you. If you are using the Open version go to</li> <li>https://play.kahoot.it/#/?quizId=cdc77d82-fc41-49ae-90c8-1a8b1ac86b59</li> <li>As it is an open Kahoot, you can go to https://create.kahoot.it/ as a teacher, log in, and save this public Kahoot to your own space before the lesson:</li> <li>https://create.kahoot.it/share/world-disparities/cdc77d82-fc41-49ae-90c8-1a8b1ac86b59</li> <li>S9 Use the classic view.</li> <li>It is also possible for teachers to save the activity to their own space and add their own statistics.</li> <li>This Kahoot may seem difficult at the beginning for the lesson. Teachers will make it possible to repeat at the end of the lesson the same. It should be easier. This is a way to</li> </ul>		
<u>_@</u>	See learning progression / evaluation.         Check student understanding /         The overall results of the answers to the Kahoot can be observed after the Kahoot has been completed.         This question allows you to advance your understanding of the Kahoot: List at least three indicators of economic inequalities in the world. Knowing that one example of an indicator is unemployment.		





# **Economical** dimension

**Objective 10.** Reduce inequality within and among countries

**Indicator 10.1.1**. Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population.

United Nations:

https://undesa.maps.arcgis.com/apps/MapSeries/i ndex.html?appid=48248a6f94604ab98f6ad29fa182 Also. the **AROPE rate/ indicator** At Risk efbd

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-10.0 to -6.0 More than 0.0 to 0.5. More than -6.0 to -4.0 More than 0.5 to 2.0 More than -4.0 to -2.0 More than 2.0 to 4.0 More than -2.0 to -0.5 More than 4.0 to 6.0 More than -0.5 to 0.0 More than 6.0 to 10.0 O No data



Annualized per capita growth rate of income of the bottom 40 per cent of the population compared to the total population, 2011 - 2016 (percentage)



# Annualized average growth rate in per capita real survey mean consumption or income, bottom 40% of population (%)

World Bank, Global Database of Shared Prosperity ( GDSP ) ( worldbank.org/en/topic/poverty/brief/global-database-of-sharedprosperity ).





https://data.worldbank.org/indicator/ SI.SPR.PC40.ZG?view=map

#### ArcGIS ▼ Economic inequalities

#### Abrir en Map Viewer Modificar mapa 🙎 Iniciar sesión



#### https://arcg.is/1qinaS





# Ask questions to improve observation

- Which continent seems to have the lowest economic status/ level?
- Identify and list five countries with relatively low economic development.
- Identify and list five countries having a high economy.
- What criteria did you take into account in making your choice?
- Look for differences between the different groups of countries and between the continents. Explain them in your own words.







- The **GDP** measures the monetary value of final goods and services—that is. those that are bought by the final user—produced in a country in a given period of time (say a quarter or a year) (IMF).
- If GDP is divided by midyear population for the same period. it will be obtained the **GDP per capita**
- **Purchasing Power Parity (PPP)** is the unit that allows countries comparisons in a accurate way.

More information on purchasing power parity (PPP) and FAQs on the IMF web site: <u>https://www.imf.org/external/pubs/ft/weo/faq.htm#q4d</u>







# Ask questions and check students understanding



There are different ways of explaining things. see this questions and find the information on the WB. IMF and other materials to reply:

- Do we live in a rich or a poor country? See your GDP
- Are all people living in countries with equal GDP equally rich? See the GDP per capita
- Do all countries with the same GDP per capita have identical living standards? See the GDP per capita PPP
- What differences are observed in the world in relation to Gross Domestic Product (GDP)? Name the most significant ones.





#### Adding other layers



#### https://arcg.is/1qinaS









# Modelling the individual exploration

From the World Bank's graph on percentage change in GDP growth (1961-2021) <u>https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?view=chart</u>.

- Find a year of growth and a year of decline and view both maps by clicking on the chosen year and selecting the Map tab.
- Compare them with the 2021 map.
- Observe the most significant differences by continent and by country.
- Compare the world GDP evolution with your own country. Make a small forecast of the future.
- You will need to know the concepts from the previous exercise. and the following: annual rate of change of GDP in percentages.







data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG?end=2020&start=1961&view=map&year=1961  $\hat{\mathbf{D}}$ 

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# Scaffolding

Look at the previous graphs and base maps from which to derive the others. and also at the evolution of GDP in your country (annual variation rates published by the National Institute of Statistics).

## Do the titles clearly define the content of the graphs and maps?

Look for a graph about GDP variations for your own country / region. you can see the annual variation rate. And the most recent patterns





# Obtain a high success rate

 Having analysed some indicators and in view of what has happened to GDP before. during and after the COVID pandemic. write in two paragraphs (300-500 words) the findings and share with your colleagues how you foresee the future.





#### Guide the student's practice YA

a) Search ArcGIS Online for other data layers that show indicators (see Step 3). such as the Gini Coefficient or the **Ecological Footprint:** 

• "Continued economic growth" from zwarti. which uses the Gini Coefficient.

• Ecological Footprint by AlejandroPeq. which contains the Ecological Footprint.

Try to find other layers with indicators related to inequalities in the world. such as the Human Development Index (HDI) (if you don't know what HDI is you can watch the following video for GCSE

https://www.youtube.com/watch?v=IEIJbtTYtuM). For High Education would be more adequate this link:

http://hdr.undp.org/en/content/human-development-index-hdi or https://youtu.be/HwgZQ1DqG3w

b) You can change the intervals of the maps by following this example: - Go to the link: <u>https://arcg.is/1qinaS</u>. which contains the map with the Gross Domestic Product (GDP) per capita data in current international dollars. purchasing power parity (PPP) (2016) (Source: International Monétary Fund).

- Log in to your ArcGIS Online account and save it as a new map.
- Go to Change style
- Select drawing style
- Classify data: quantile. standard deviation. equal interval. natural breaks. manual (see concept section at the end of the document).
- Select the method and number of classes or intervals to divide the data into.
- It is possible to round the classes using the manual method.
- Observe the result. look for patterns and review the questions studied.

You can follow the steps here https://youtu.be/wxOK7F38JNg

You can also change the intervals in QGIS https://youtu.be/9I3P0LFMbwM Note that the distance between numerical data takes on different meanings depending on the interval chosen and that you should know how each interval works: equal intervals. guantiles. Jenks natural breaks and standard deviation.

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https://pro.arcgis.com/en/pro-app/latest/help/mapping/layer-properties/data-

classification-methods.htm

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#### Check for successful completion

Look at these two ways of setting intervals on the change in GDP per capita in current PPP dollars between 2015 and 2017 and say which of the two maps might be more accurate and why.



What would be the disadvantages of rating GDP as high. medium (the figures embedded within the red box) and low in each of the range systems? Discuss with your classmates and write down the results for each of the interval systems.





	4	Step 4: Review - discussion	50 m (1 session)
	<b>*</b>	Check student understanding (klasleergesprek): Why do economic inequalities exist and could we reach the same conclusions if we used other indicators? Check by choosing at least one indicator from the World Bank data that you have not worked with before <u>https://data.worldbank.org/indicator</u> <u>https://databank.worldbank.org/reports.aspx?source=world-development-indicators</u> Describe the indicator chosen and how it shows the differences between the most advanced or leading countries and the least developed.	
-		Review of <i>Step 3: Individual exploration turns to a further audience</i>	
	5	Step 5: Problem-solving	Homework
e **** * * *	<b>x-</b> ₩-1-¥	<ul> <li>Independent practice Recall the GDP maps you have worked on and those of the sources proposed in the resources and think of yourself as a UN official concerned with achieving the Sustainable Development Goals (SDGs), so you should consider in depth the following options for working to reduce economic inequalities, before discussing them with your peers: <ul> <li>Which socio-economic measure would be the most appropriate to overcome or reduce these inequalities? Consider the pros and cons of each.</li> <li>a) develop industry in the countries of origin on the basis of their own raw materials; <li>b) organise a micro-credit bank for entrepreneurs;</li> <li>c) to bring in multinationals so that new jobs can be created;</li> <li>d) develop sustainable tourism;</li> <li>e) others that you consider meet the objective of reducing inequalities.</li> </li></ul></li></ul>	







# Check students' understanding

Educational conversation. Use some assessment technique that requires interaction between students.

This can be done in two ways:

a) Using the same Kahoot they did on World Disparities at the start. to analyse progress (advisable for ESO students). You can see how much you understood the topic by repeating the same Kahoot. <u>https://play.kahoot.it/#/?quizId=cdc77d82-fc41-49ae-90c8-1a8b1ac86b59</u>

b) By means of a blind peer review.

