

BRICS Challenges: Economic Position, Tourism and Environmental

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To cite this article

Doaa Mohamed Salman Abdou, Nadeen Sherif El Adawy. BRICS Challenges: Economic Position, Tourism and Environmental. *International Journal of Environmental Monitoring and Protection*. Vol. 5, No. 3, 2018, pp. 64-72.

Received: September 5, 2018; **Accepted:** September 18, 2018; **Published:** October 26, 2018

Abstract

This paper compares Brazil, Russia, India, China and South Africa (BRICS) by over viewing various aspects answering the question of whether there is a relation between economic growth, tourism and environmental conditions of a country. First, we review the literature concerning the tragedy of common resources by analysing and criticizing Hardin article "The tragedy of the commons". The literature emphasises on the negative impacts of tourism on the environment and how that affects the country common resources in each country. Last but not least, a comparison between the five countries of BRICS by overlooking the economic position, importance of tourism, role of tourism and the major environmental issues of each country and their consequences. It was concluded that all the countries in BRICS are showing positive economic growth and tourism plays a role in that and it is predicated that they will have a massive economic power over the world, however the countries suffer from vital environmental issues. India, China and South Africa are the lowest three countries in BRICS in terms of environmental quality and pollution.

Keywords

BRICS, Economic Position, Tourism, Environmental Position

1. Introduction

The economic position of any country in the world is affected by various variables; in fact, there is a strong relation between economic growth, tourism and environment. Tourism is divided into two main categories, the international tourism and the domestic tourism. International tourism is travelling across borders of nations for various reasons, and it became more popular as a result of the growth of globalization. There are countless types of tourism, for instance medical tourism, adventure and leisure tourism, religious tourism, cultural tourism, business tourism or sports tourism. Another type of tourism that has been on the rise nowadays is the ecotourism. Ecotourism is type of tourism that is concerned with the environment and it combines conservation, communities and sustainable travel. Domestic tourism plays a vital role in any economy as money spent by domestic tourists is much more than by international tourists and more constant as citizens

travel within the borders of the country. In the majority of developed countries, the greater revenues generated from tourism comes from domestic tourism not international.

The acronym BRICS was first mentioned by the economist Jim O'Neill in 2001 in his report "Building better Global Economic BRICs". O'Neill was referring to Brazil, Russia, India and China because those four nations were the fastest growing economies at that time. Later the four nations started to act and meet as a group till 2010 when South Africa was introduced to the group and the acronym changed to BRICS. Since then the five nations have been meeting annually for a formal summit.

BRICS countries are considered the leading economies in the world as they are expected to cause a global economic shift and have power more than Europe economies and US in the near future. Four of the BRICS nations are among the highest 11 GDPs in the world, with China ranking the second place, India the eighth, Brazil the ninth and Russia the eleventh. Those five countries have about 43 percent of the

whole world population and the GDP of the countries account to about 25 percent of the total world GDP. Throughout this research paper, literature review will analyze Garrett Hardin article "tragedy of the commons" and a clear relation between the tragedy of the common resources and tourism will be done. Then, a comparative analysis between BRICS countries will be done by taking into consideration the economic position, tourism of the country and the environmental issues the country is facing.

2. Literature Review

2.1. Tragedy of Common Resources

Tragedy of common resource is a condition where individuals in an economy use shared resources, and each individual act and take the decision based on their best interest which leads to depleting the resources of a country. The term common is actually a metaphor meaning anything that is shared by people and is affected negatively if it is overused. The resources can be shared among individuals in a country, competing industries, regions or even nations worldwide. This concept was first developed by William Forster Lloyd a British economist in 1833. He published a pamphlet which was mainly concerned with population and it stated an example of how people overuse the common resources. The example was based on a land shared between herders that are trying to feed their animals in a village, it was concluded that as a herder increase the number of cattle on this piece of land he/she would be using more of the common resources shared with all the other herders. When the number of animals feeding on the grass of the land increase, the land would be overgrazed as the number of animals exceeded its maximum capacity. Thus, as each herder increase the number of cattle he/she owned, the self-benefit would increase as it would lead to higher profits, however the rest of the herders benefiting from this land will be harmed as the resource may be destroyed by the action of that greedy herder [5].

Then the American ecologist and philosopher Garrett Hardin continued the ideas of Lloyd and published an article about this issue called "The tragedy of commons" in 1968. Hardin main argument in his article was that the population growth is resulting in depleting in the earth's resources. He was against the concept that technology improvements will result in more creative solutions to the critical issue of common resources, in fact he believed that as the technology become more advanced the population would grow more and deplete more resources, thus the solutions would be very short term and the issue would not be solved [3].

Hardin stated in his article that there is an enormous difference between maximum population and optimum population. According to Hardin, the maximum population is the situation were the earth would have the maximum number of people possible, while the optimum population is concerned with the quality of life and natural resources per capita. Thus, the countries with fastest growth in population nowadays are the countries that are most miserable, because

number of people increase and the common recourses per person decrease. Based on Adam Smith theory of invisible hand, Hardin assumed that people will control their birth rate to reach a stable society with no government intervention, however if this condition was not satisfied then a government intervention through social controls is a must [3].

The concept of tragedy of the commons was illustrated by Lloyd in 1833, as Hardin cited Lloyd work in his paper in 1968. Lloyd portrayed a pasture land open to everyone as the common resource, and people sharing this common where the herdsmen living nearby the piece of land. Based on Lloyd theory every herdsman will try to maximize his share of animals in the pasture to feed on the grass. If the number of animals were below the carrying capacity of the land all the herdsmen were benefiting, till each one of them start to think about his self-interest and overcrowded the area with more cattle to increase his profits. Therefore, as each herdsman start to increase the number of animals eating the grass in the land, the tragedy begins because the land starts to get destroyed as it is overcrowded with animals. Thus, the freedom of using common recourses in a society and the freedom of choices by human beings to reach their own self-interest often lead to damage and depleting of commons which is considered a miserable tragedy.

The tragedy of commons is spotlighted by pollution, as a rational decision maker carry cost-benefit analysis he/she would find that getting rid of wastes in expense of common resources is cheaper than spending huge amount of money on technologies to be able to purify the wastes before getting rid of them. Based on that fact, water gets polluted by the sewage, chemical and radioactive wastes being thrown in to it, air gets polluted by the dangerous and harmful fumes that are not being purified before reaching the air, and even the line of sight get polluted by the distractive billboards and signs. Another pollution incidence, in maritime countries people tend to overfish and destroy the ecosystem of certain species and may result in the extinction of some species which lead to imbalances. Hardin acknowledged that the effect of pollution on the tragedy of commons is triggered by the growth of the population. As the population growth increase, the burden and pressure on the commons increase and the share for each individual decrease [3].

According to Hardin families' ability to have the number of children they desire should be regulated. He criticized the right for a family in deciding how many children they have. As everyone in the society must have equal rights and share in commons, the number of people in the society should be restrained to prevent disasters and ensure a good quality of life to the whole population. For instance, families with many children may not be able to support all the children financially and provide the proper healthcare which may lead to their death. The concept of "double bind" was developed by the anthropologist Gregory Bateson, which states that when group of people are sent conflicting messages that may end up canceling each other's, the people will respond wrong despite what is their answer or action. Making people always feeling guilty about their decisions often lead to anxiety and

mental health issues as they are asked to act and respond against what they believe in or their own interest.

Hardin thought that in order to change people's behaviour to attitude toward something, it is never done by force or making them feels guilty. In order to make people limit their family sizes it must be done by mutual coercion, even though he knew that the word "coercion" is not accepted by many people he intended to use it because it is powerful in supporting his idea about mutual coercion among the majority of people that are affected. To support his point, he used bank robbery and taxes as examples, robbing a bank are completely prohibited because of the morality of the issue, while taxes are corrective measure to prevent people from depleting common resources.

Hardin article is biased and he used very harsh wordings. Hardin terminology is aiming only a certain segment of people that have the same depth and knowledge as he has, which is shown with his constant referencing to scholarly works and papers. Moreover, he used the term "breeding" which is used for animals to refer to reproduction of human. Hardin assumed in his article that the tragedy of commons is extremely hard to stop and people will be trapped in such issue forever, despite the fact that many researches had found out that this assumption is not valid and only apply in hypothetical world.

2.2. Impact of Tourism on the Environment

2.2.1. Water

Fresh and clean water is often used in the tourism industry in an inefficient way, as they overuse water to fill swimming pools and to fulfil the personal needs of tourists. The water in any country is considered a common resource, and the tourism segment is one of the users of water. When tourism segment overuses the water when the tourism increases in the area, other users that share the right of using clean water are harmed. For example, an average golf course uses water as much as sixty thousand villages. Thus, the main issue here is the usage rate by the tourism sector in any country. Furthermore, hotels and recreational areas accelerate sewage being thrown in water which causes pollution. As some people are not ethical, they get rid of their wastewater in seas, rivers or even lakes. These unethical actions lead to the growth of algae which prevent the sun from reaching the coral reefs, which work as filter to the water that is a habitat for various species. Thus, it threatens the health of marine animals and the health of humans [2].

Another aspect that harms the water is recreational activities in countries with seas, oceans or even rivers. In order to attract tourists' countries, provide recreational activities such as diving, snorkelling, yachting and fishing harms the creatures living in the water and may cause distortions in their environment and ecosystem. The marine tourists' activities always take place around extremely fragile ecosystems, and those activities lead to degradation of the ecosystem [4].

2.2.2. Air Quality

A positive and steady increase in temperature of Earth has been noticed lately, this increase is a result of the increase of

greenhouse gasses in the air and atmosphere. Greenhouse gasses are gasses that absorb the infrared radiation that comes from the sun, which cause global warming. Global warming would increase the levels of the sea which may submerge island and coastal regions, melt mountain snow destroying any sort of tourism related activities that might have been held there. Main source of tourist related air pollution is automobiles emissions, as automobiles emit carbon monoxide and carbon dioxide gases. However, automobiles are not the only source of greenhouse gases, in fact air craft's, marine vehicles, tour buses and even trains emit high amounts of those dangerous greenhouse gases [7]. Passenger's planes are contributing with great percent of total greenhouse gasses emissions, and as the tourism is increasing world-wide the use of planes is increasing and the emissions are increasing too. In addition, as number of tourists in a country increase the demand of transportation methods increase, which increase the level of harmful emissions. According to WTO (World trade organization), tourism contributed in 2008 to about 8% of total world emission of greenhouse gases [2].

On the other hand, several tourism activities and construction emit ozone depleting substance (ODSs). For example, air conditioners refrigerators and propellants in aerosol spray which is used heavily in hotels and tourism industry as a whole. Also, planes emit some ODSs [2].

2.2.3. Noise Pollution

The issue of noise pollution is considered a minor issue yet it could lead to serious damages. Noise by the tourism sector is generated from the air craft's, tour busses and recreational vehicles. Moreover, tourists often travel in groups which increase their noise, and that affects the wildlife as some animals cannot stand loud noises and it causes them pain [2].

2.2.4. Solid Wastes and Littering

The tourists leave but the rubbish stays, it has been a common world-wide problem that has been threatening countless eco-systems. Tourists tend to be interested in some appealing areas in a country, such as mountains, landmarks, beaches and many other things. In fact, it was found that in such areas where there is high number of tourists the issue of waste disposal arises, as people leave their garbage behind in such important places. Thus, the shoreline, water and parks are left with bad appearance as a result of unethical actions by tourists. Also, in marine tourism the ships often get rid of the wastes in the sea/river which destroy the marine life and kill animals. It was estimated that Caribbean cruise ships produce about 70,000 tons of wastes each year [2]. Such practices by tourists and tourism sector are depleting the common resources of countries. In a nut shell, the issue of leaving behind wastes is a matter of culture and morality of tourists.

2.2.5. Local Resources

Tourism put strains and pressure on the available resources within a country, such as food, raw materials, water and energy. As the resources are shared by all segments in the country, when the tourism sector overuses the resources all the other sectors will be negatively affected specially in times

of the year were the tourism is peaking. Rainforests, coastal areas and mountains are considered a resource of a country, thus any change in those resources affects the biodiversity of the whole area and may cause it to lose its attractiveness to further tourists [4].

3. BRICS Economic Position Overview

3.1. Economic Growth

The most common thing between all the five countries of BRICS is that they are experiencing a rapid economic growth. Also, according to the heritage foundation all of them are mostly not free economies according to the economic freedom index. The Brazilian economy has been showing improvements in the economic position over the past two decades which lead Brazil to be one of the fastest growing economies and the leading economies in the world despite the great contraction in its GDP that started in 2014, this recession in 2014-2016 has been the deepest and the longest in the Brazilian history, however an improvement was noticed in 2017 and the GDP started to increase [6].

Russia was stacked by two shocks in 2014, the first is the massive drop of oil prices, as more than 60% of Russia exports are oil and gas and that contribute to almost 30% of the country total GDP. As oil is essential for the Russian trade when the international prices of oil collapsed the Russian currency Rubles declined massively in terms of the US dollar. Thus, the purchasing power of Russians dropped too which was reflected on the GDP of the country. Furthermore, the standards of living decreased and domestic products become extremely expensive as the currency devaluated. The second incident was the economic sanctions that were against Russia during the Ukrainian crisis, which caused a drop in the investment in Russia as people lost confidence in the country and as a result the currency devaluated further. In fact, the foreign direct investment (FDI) inflow into Russia has been decreasing rapidly since 2014 however they started to increase again in 2016 reaching 37.7 billion US dollars as a result of the privatization of an oil company in Russia called 'Rosneft' yet the investments were

not stabilized. The financial crisis Russia has been going through affected inflation rates, unemployment and many other economic indicators.

India has been growing and moves up the list of the world's greatest economies, as it is ranked the seventh greatest economy in the world in 2017. The growth of India was a result of privatization of various parts of the economy, the introduction of taxes on goods and services and the removal of some restrictions to facilitate the foreign investments.

China experienced a shocking economic growth during the last years, and that economic growth made it the second greatest economy in the world after US. Like the rest of the world the Chinese economy was affected by the global financial crisis in 2008 and adopted loose monetary policies however starting from 2012 they started to fully recover. The sectors that are booming in the Chinese economy are the high-tech sector and foreign-investment-driven private sector. China is considered the world manufacturing hub and the economic growth of it depends mainly on the exports, after the financial crisis in 2008 the demand on China's exports has dropped and the advantage that China had of low cost of production was no longer applicable as other countries started to have lower costs. In 2015 in order to stay competitive and maintain their exports, China reduced their currency exchange rate against the US dollar several times in short period, which led to disruption worldwide because China is the second greatest country in the world nowadays so anything that happens there affects the whole world. As the new Xi-Li administration took power in 2012, the main aim and target was to reach sustainable growth model with the willingness to accept lower growth rates in order to keep the economic reforms moving forward. The Chinese economy is trying to shift from an exporting driven economy that is dependent on manufacturing to an economy that consumes and increases the service sector, therefore the manufacturing and infrastructure sectors are starting to decline. It is clear from figure 1 that the economic growth of South Africa dropped in 2009 as a result of the global financial crisis; however, it recapped and started to grow again and became almost stable. South Africa's business and consumer confidence has been increasing which is reflected on the economic growth of the country.

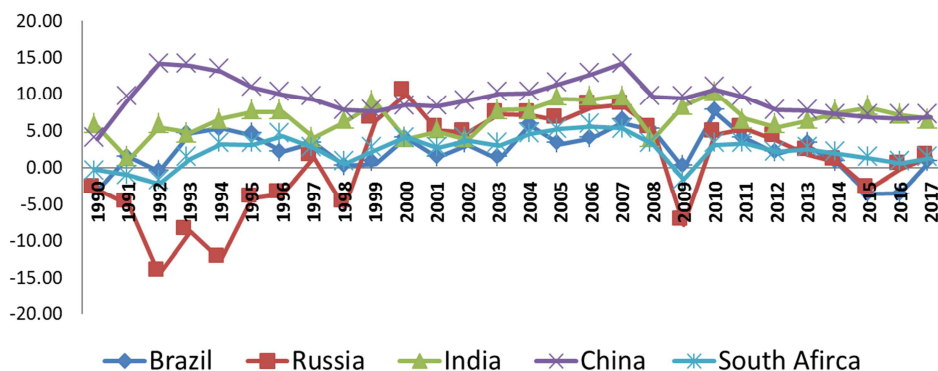


Figure 1. GDP Growth of BRICS Countries 1990-2017.

Source: World Development indicators – The World Bank.

As shown in figure 1, it is clear that all countries were showing a positive trend before 2009 and the economic growth was increasing, then in 2009 all economies dropped as a result of the world financial crisis. Moreover, in 2014-2015 Russia and Brazil had a drop in the economic growth and the reasons for that was mentioned above.

3.2. Inflation

Brazil’s inflation has been low and steady after the excessive hike in 2003, yet in 2015 the prices started to noticeably increase in Brazil. While in Russia the inflation rate started to increase from 2014 peaking at 2015 because the Ruble became weak against the US dollar. As the inflation rate increased the purchasing power of Russian

citizens dropped. It is clear from figure 2 that the last inflation hike was during the world financial crisis. Moreover, the poverty rate has been declining over the years till 2012 then it increased again in 2016 as a result of the economic incidents that were happening. In India the prices increased in 2013 and inflation increased as the food and fuel prices were increasing, yet as shown in figure 2 the inflation decreased till 2016. China unlike all the world and BRICS countries, it had deflation in 2009 while all other countries were suffering from high levels of inflation. China was less affected by the financial meltdown than other countries, due to its more closed financial system. Last but not least, the inflation of South Africa has been low for seven years; however, it is expected to increase in 2018-2020.

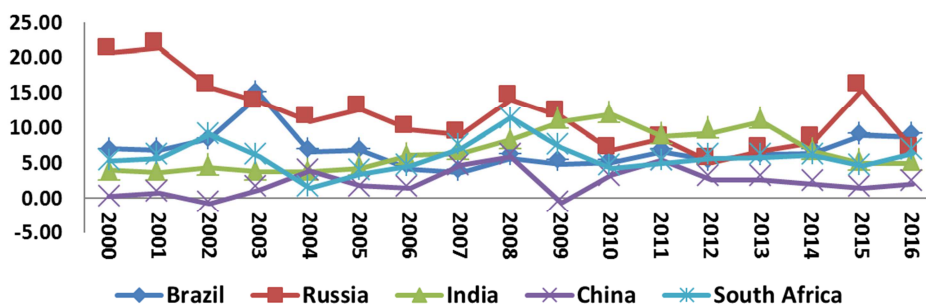


Figure 2. Inflation annual percentage of BRICS Countries 2000-2016.

Source: World Development indicators – The World Bank 2000-2016.

3.3. Unemployment

It is clear in figure 3 that Brazil, Russia, India and China have relatively low unemployment and percentage of unemployment in all of them is close. However, South Africa rate of unemployment is much higher than the others. The reason behind this is the poor educational system in South

Africa, the number of skilled and educated labour is less than the demand on them. Despite the fact that there have been various economic improvements the unemployment rate remained high, which affects mainly the young citizens as they are not qualified enough to find jobs as a result of the poor quality of education.

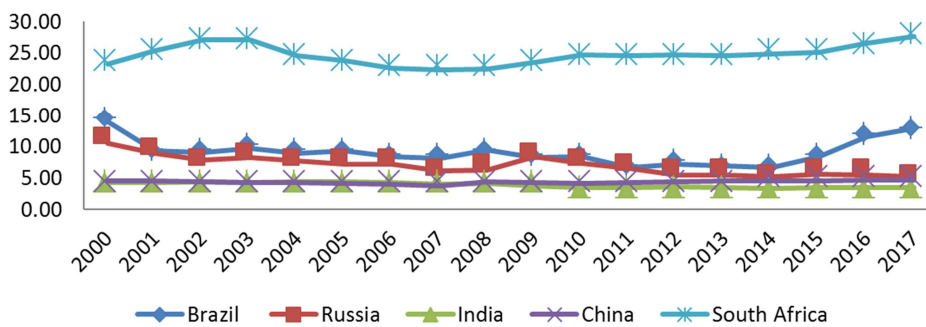


Figure 3. Unemployment rate BRICS countries 2000-2017 (ILO).

Source: World Development indicators – The World Bank 2000-2017

3.4. Tourism

Some of the greatest countries nowadays are heavily dependent on revenue generated from tourism. As tourism sector act as a source of income, employment and booster for GDP, also it is a great way to show off a country’s history, heritage and culture to the whole world. Tourism brings

benefits and costs to a country, some countries rely on the money tourists pay to. Moreover, it is a direct source of employment to various people, which increase the standards of living of people in the country. However, on the other hand, it causes enormous environmental issues and pollution which affect the original residences of the country negatively.

Table 1. Indicators of travel and tourism sector of BRIC 2017.

Indicator/country	Brazil	Russia	India	China
GDP US\$ (Direct contribution)	59.6bn	19.5bn	91.3bn	402.3bn
GDP (total contribution)	163bn	76.1bn	234bn	1,349.3bn
Employment: direct contribution (number of jobs)	2,337,000	854,500	26,148,000	28,250,000
Employment: total contribution (% of total employment)	7.3%	4.5%	8.0%	10.3%
Travel and tourism investment	6.1% of total investment	2.0% of total investment	6.3% of total investment	3.0% of total investment
Leisure spending (% of contribution to GDP)	87.9%	80.5%	94.6%	80.5%
Business spending (% of contribution to GDP)	12.1%	19.5%	5.4%	19.5%
Foreign visitors spending (% of contribution to GDP)	5.7%	25.6%	12.8%	13%
Domestic spending (% of contribution to GDP)	94.3%	74.4%	87.2%	87%

Source: WTTC – 2018.

Like any country Brazil has both international and domestic tourism. According to World Travel and Tourism Council (WTTC), it was found that domestic tourism contributes with about 93.5% of GDP generated from tourism in 2017 while international tourism contributes with only 6.5% [9]. The Brazilian government and authorities are encouraging the domestic tourism as it is considered the driving force of the whole industry. Domestic tourism overcomes the issue of seasonality because they travel at any time of the year unlike international tourists. Moreover, domestic tourists favour different destinations than international tourists, which improve the distribution of tourism in the country. Tourism in Brazil increased in 2014 as it was hosting the FIFA World Cup and in 2016 it was hosting the Summer Olympics, both such events attracted people from all over the world to go there. Furthermore, tourists are attracted to Brazil for waterfalls, wetlands filled with wildlife, and the untouched wilderness of the Amazon rainforest and more importantly the amazing sandy beaches.

Russia has been experiencing massive improvements in the tourism sector, first by the increase in the domestic tourism then the international tourism. Russia is an amazing country that is rich with various cultural heritage and variety of natural places which makes it one of the most desired destinations in the world. In 2017, the tourism industry in Russia contributed in the total GDP of the country with \$76.1 billion and the number is expected to hike by the end of 2018 as a result of Russia hosting the FIFA World Cup. Moreover,

it created about 3,246,500 jobs to Russian citizens. As mentioned before that tourism is divided into domestic and international tourism, the domestic receipts contribute to about 74.4% of the GDP generated from tourism and the remaining 25.6% is from international tourism [11].

India is attractive to various people to visit as it has the high mountains of the Himalayas, the tropical greenery of Kerala, the sacred Ganges to the sands of the desert and many more things. In fact, tourism plays a vital role and contributes with large amounts of money in the GDP of the country. The total travel and tourism contribution in GDP in India was \$ 234 billion and it created about 41,622,500 jobs in 2017. 87.2 percent was the contribution of domestic tourism in the GDP and the international was 12.8% [10]. China is interesting country for tourists to visit as it has massive ancient civilization, various natural places with different climates, modern metropolises and small provincial towns and breath-taking sandy beaches and mountains. Travel and Tourism sector in China contributed to the country GDP in 2016 with \$1,000.7 billion, which accounts to nearly nine percent of the total GDP. In addition, the industry in china created directly and indirectly total number of jobs of 69,527,500 jobs. China's case is similar to Brazil's as it has both domestic and international tourists however the contribution from travel and tourism sector in the GDP of China is 18% from foreign visitors and 82% from domestic visitors [12].

Table 2. Arrivals and Receipts of Tourism in BRICS 2010-2016.

		2010	2011	2012	2013	2014	2015	2016
Brazil	Arrivals (Thousand)	5,161	5,433	5,677	5,813	6,430	6,306	6,578
	Receipts (million)	5,522	6,370	6,623	6,784	7,405	6,254	6,613
Russia	Arrivals	22,281	24,932	28,177	30,792	32,421	33,729	24,571
	Receipts (million)	13,239	16,961	17,876	20,198	19,451	13,204	12,823
India	Arrivals (Thousand)	5,776	6,309	6,578	6,968	13,107	13,284	14,569
	Receipts (million)	14,490	17,708	18,340	19,042	20,756	21,472	23,111
China	Arrivals (Thousand)	55,664	57,581	57,725	55,686	55,622	56,886	59,270
	Receipts (million)	45,814	48,464	50,028	51,664	44,044	44,969	44,432
South Africa	Arrivals (Thousand)	8,074	8,339	9,188	9,537	9,549	8,904	10,044
	Receipts (million)	10,309	10,706	11,202	10,468	10,484	9,140	8,807

Source: World Development indicators – The World Bank

South Africa is rich with variety of animals and different species and one of the most famous parks there is Kruger National Park. Also, tourists love going there because Cape

Town has beautiful beaches with extremely high quality. Also, it is the perfect destination for someone seeking adventure in the sun, mountains, seas or even rivers. It also

has a massive cultural and heritage background and it's affordable. Tourism in South Africa contributed into the total GDP of the country with \$ 27.3 billion and provided 1,533,000 jobs in 2017. Unlike the rest of BRICS countries, the percentage of domestic and international tourism receipts are closer to each other's in fact domestic tourism contribute with 53.9 percent of total GDP generated from tourism while international 46.1%.

3.5. Environment

3.5.1. Environmental Performance Index

The environmental performance index aims to measure the environmental performances of countries, it is initiated by Yale university and Columbia university and they are both in collaboration with the world economic forum. The index measures the environmental performances of 180 countries by looking into 24 sub indicators to reach the final EPI ranking [1].

Table 3. EPI of BRICS 2018.

Country	Ranking	EPI	Environmental health	Ecosystem validity
Brazil	69	60.7	67.44	56.21
Russia	52	63.79	75.48	55.99
India	177	30.57	9.32	44.74
China	120	50.74	31.72	63.42
South Africa	142	44.73	36.81	50.01

Source: Environmental performance index [1].

The index main two categories are environmental health and ecosystem validity. The environmental health is composed of water sanitation which is measured by access to clean drinking water and proportion of population that are threatened by health risks from their access to sanitation. Second sub-indicator is air quality which measures Household solid fuel, PM2.5 exposure and PM2.5 exceed.

The third sub indicator is heavy metals which measures the lead exposure as it causes severe health effects. The second main category is the ecosystem validity which is divided into seven sub-indicators which are biodiversity and habitat, forests, fisheries, climate and energy, air pollution, water resources and agriculture

Table 4. Environmental health of BRICS countries 2018.

Country	Water and sanitation	Air Quality	Heavy metals
Brazil	45.91	78.78	49.19
Russia	63.93	79.99	86.2
India	15.8	5.75	16.77
China	68.24	14.39	38.02
South Africa	24.71	41.14	53.22

Source: Environmental performance index [1].

3.5.2. Water

Brazil has been blessed with abundant supply of water, only the north-eastern part of the country faced droughts and water issues. The issue started to become more series starting from 2012 when Brazil started to suffer from a water crisis as five million people can't have access to safe and clean water, and those with access to water started to suffer from shortages during some periods. About fifteen regions that are located in the federal district in Brazil suffer from daily water shutoffs while the rich citizens build water tanks to store water and buy water from the private companies with extremely high prices the poorest citizens can't cope with such issue. Moreover, during the Olympics in 2016 the light was spotted on the water pollution issue in Brazil as untreated sewage flows into seas and rivers all around Rio de Janeiro.

The most critical environmental issue in India is water pollution which is caused by the untreated sewage which is surged by urbanization. Polluted water is the main reason India has very low level of health because the consumption of polluted water causes various diseases such as cholera, dysentery, diarrhoea and tuberculosis. It is estimated that about 80% of total water in India is polluted which is an

alarming percentage for them to start taking actions.

Water pollution in China shows how much the government doesn't care about the environment but the incidence of thousands of pigs floating in the Shanghai River which is a small section of Huangpu River was a major contributor to the pollution of water. Furthermore, another incidence happened when a chemical accident causes the leakage of benzene into Huangpu River, and that chemical can cause cancer. More than half of China's surface water is so polluted it cannot be treated to make it drinkable.

In South Africa Cape Town has been going through water crisis, the core of the problem was the massive drought that this city was hit by in 2015. The issue was made worse by the growth of population, agricultural use of water, and the lack or restrictions. The city depends on six dams for the storage of water, despite the large number of dams they were filled with only quarter the capacity in 2018. The government has been urging people across the country to use water more wisely and cut consumption.

3.5.3. Air Pollution Effects

All five countries of BRICS face the global issue of air pollution; however, India is considered the most sever country in terms of air quality issue and air pollution. Air

quality in most of the Indian cities fails to meet the World Health Organization (WHO) safe levels, which is an indicator that the level of PM 2.5 and PM 10 and the concentration of sulphur dioxide and nitrogen dioxide are extremely high. As it is shown in table 3 according to the environment performance index (EPI) India was ranked the 177th country of 180 countries in comparison in 2017. According to the WHO, India has 9 out of the 10 most polluted cities in the world in 2018. The main causes of air pollution in India are the increasing number of cars, high percentage of coal powered thermal power plants, heavily depending on biomass in cooking and using kerosene as a source of energy

in various rural areas. All those actions are major sources of emissions of nitrogen dioxide, sulphur dioxide, black carbon soot and carbon dioxide. Air pollution is considered one of the major causes of death in India. The number of people that died as a result of air pollution in 2010 was 620,000. However, the government of India is trying to overcoming the issue by setting norms for the levels of emissions and regulating the usage of fuels. Also, they are trying to encourage people to use more advanced technologies and cleaner energy to fuel their cars in order to cut the amount of emissions that are produced by vehicles.

Table 5. Ecosystem vitality of BRICS countries 2018.

Country	Biodiversity and habitat	Forests	fisheries	Climate and energy	Air pollution	Water resources	Agriculture
Brazil	88.71	12.43	81.42	33.24	37.55	81.08	58.83
Russia	65.64	12.43	35.48	49.88	77.78	96.53	47.83
India	49.13	23.54	59.37	44.77	37.49	58.83	21.98
China	72.57	21.89	70.41	68.62	57.08	80.2	34.64
South Africa	64.24	0	59.24	44.63	34.67	87.80	47.46

Source: Environmental performance index [1].

Another major move was to start decreasing the use of biomass as a source of fuel in rural areas as it causes massive indoor pollution [8]. China has been also going through environmental crisis, as it became the factory of the world

there was consequences of manufacturing industries and Beijing's 5 million-plus cars all contribute to the city's air pollution, but most people blame the coal burning electrical plants that power China's breakneck economic growth.

Table 6. Sulfur oxide and Nitrogen oxide intensity in BRICS 2017.

Country	Sulfur oxide	Nitrogen oxide	Carbon dioxide	Methane emissions	Nitrous Oxide	Black carbon
Brazil	52.49	22.6	21.07	68.37	54.38	24.27
Russia	77.88	77.68	51.59	54.62	42.35	85.29
China	60.12	54.05	63.24	99	99.89	61.84
India	32.60	42.37	38.82	80.10	67.49	48.70
South Africa	31.66	37.68	46.34	59.48	52.60	34.42

Source: Environmental performance index [1]

Some villages in china are called cancer village because just living there can cause people cancer as a result of the extensive amount of pollution. It is clear from figure 4 that china has extremely higher emissions of carbon dioxide than

the other countries. South Africa rely heavily on coal as a source of energy and the opportunity cost of such action is the quality of air.

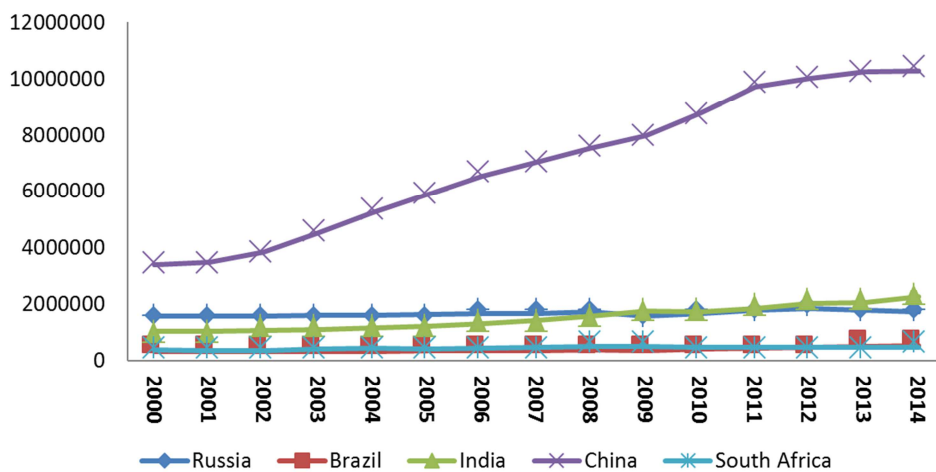


Figure 4. CO₂ emissions in BRICS.

Source: World Development indicators – The World Bank

4. Conclusion

Taking all the above into consideration, it became clear that BRICS have the leading countries in the world nowadays. With China being the second largest economy in the world after US, and the rest of the countries in the top 15 countries it shows good perspective. All the five countries were noticeably growing during the last ten years. However, it also became obvious that all the BRICS countries suffer from sever and vital environmental issues and that conclude that there is no strong relation between the environmental problems and the economic growth of a country. Furthermore, the tourism sector plays an essential role in the majority of the countries as it contributes with reasonable amounts in the GDP and it also provide various job opportunities to citizens of the country, which decrease the unemployment. Thus, as tourism of a country improves it affects the economic growth positively; however, tourism has negative impact on the environment. As the tourism in a country increase the negative effects on the environment increase which is a proportional relation that all countries are trying to overcome its consequences. It was concluded that India suffers from severe environmental issues compared to the rest of the countries of BRICS. The whole world is struggling to balance the economic growth, tourism and the environment impact and to trade off the least important variable to reach the country's targets and goals without damaging the natural resources available in the country.

References

- [1] EPI. (2018). 2018 Environmental Performance Index. *Yale University*.
- [2] GhulamRabbany, M., Afrin, S., Rahman, A., Islam, F., & Hoque, F. (2013). Environmental effects of tourism. *American Journal of Environment, Energy and power rechearch*, 1 (7), 117-130.
- [3] Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162, 1243-1248.
- [4] Lemma, A. F. (2014). Tourism Impacts: Evidence of Impacts on employment, gender, income. 1-22.
- [5] Lloyd, W. F. (1833). Two lectures on the checks to population. *Delivered before the University of Oxford*. Michaelmas: JH Parker.
- [6] OECD. (2018). OECD Economic Surveys Brazil. *OECD*, 1-57.
- [7] Sunlu, U. (2003). Environmental impacts of tourism. *In conference on relationships between global trades and local resources in the Mediterranean Region*, 263-270.
- [8] Swaniti Initiative. (2017). *Air Pollution in India Impact, policy analysis and remedial measures by governments*. Retrieved from www.swaniti.in
- [9] WTTC. (2017). Travel & Tourism Economic Impact 2017 Brazil. *WORLD TRAVEL & TOURISM COUNCIL*, 1-17.
- [10] WTTC. (2018). Travel & Tourism economic impact 2018 India. *World Travel and tourism council*.
- [11] WTTC. (2018). TRAVEL & TOURISM ECONOMIC IMPACT 2018 RUSSIAN FEDERATION. *World Travel and Tourism Council*.
- [12] WTTC. (2017). Travel and Tourism Economic impact 2017 China. *World Travel and Tourism Council*.