International Journal of Advanced Research and Review

www.ijarr.in

ONE BELT - ONE ROAD - ONE PLANET (OBOROPL): A REPORTON HUMAN'S ENVIRONMENTAL IMPACT

Chariton Sarl Chintiroglou

School of Biology, Department of Zoology, Faculty of Sciences, Aristotle University Thessaloniki, TK 54636 Thessaloniki Greece

ABSTRACT

The purpose of the current review is the investigation of hypotheses of independence among various economical, educational and environmental footprint indices of the countries involved in the suggested OBOR and MSR routes. Data from National Footprint Accounts (2018) edition (Data Year 2014); Building on World Development Indicators, The World Bank (2016); and U.N. Food and Agriculture Organization rankings were collected and analyzed.

INTRODUCTION

For as long as 4 billion years, the diversity of life has gradually increased, following the geomorphological changes of the Earth's crust. The water mass of the planet as a whole has played a decisive role in the expansion of all forms of life including that of our own species, *Homo sapiens*. The cultural footprints of the human species, within every facet of a cultural continuum, are being discovered one by one. Recently, new prints of port facilities were discovered in the Gulf of Suez, which are estimated to be older than 2,600 BC(1). In modern human history we have been witnesses to unfolding events that not only concern the survival of the human species, but also of the planet that hosts us. And this is the kind of challenge where the water element appears to play a determining role.

Lately, the "Belt and Road Initiative" or BRI, an acronym that refers to the Silk Road Economic Belt and the 21st Century Maritime Silk Road has attracted worldwide attention (2). The review of international literature can confirm that the definition and purpose of OBOR have been discussed extensively since the mid 2010's.In its essence, this is all about the trade routes between the great regions West-East and East-West which are in constant evolvement in the past 7,000 years (Leroi-GourthanA. 1911-1986). During this historical period dynasties and empires have emerged (China, Persia, Alexandrian, Roman, Byzantine, Ottoman etc.) that sometimes boosted and sometimes obstructed trade (e.g. the Ottoman expansion after the fall of Constantinople in 1453).

The main characteristics of our time are undoubtedly the human overpopulation (estimated over 7.5 billion people) and the environmental impact by the overconsuming of natural resources. Therefore, there is a growing necessity for trade modernization, in the regard of rational management of the natural environment and equal distribution of global wealth. The new policy of China [One Belt One Road (OBOR)] which can stimulate the economic growth of about 60% of the world population is a complicated but yet a visionary effort (3). Beyond its complexity, there is an enormous interest in the challenge to establish these modern trade routes within a new framework of economic globalization and sustainable development (4).

RESULTS AND DISCUSSION

The purpose of the current review is the investigation of hypotheses of independence among various economical, educational and environmental footprint indices of the countries involved in the suggested OBOR and MSR routes (4) (Tables 1, 2). The ultimate aim is to compare the total ecological footprints of the countries-states participating in OBOR and MSR, on the field of a broader concern for the prosperity of Eurasia.

The implementation of statistical analyses revealed significant results of rejection of independence between certain variables that showed either negative or positive values (Tables 3 and 4). For example, indices GDP PP *vs* Biocapacity Gha show a negative value in both MSR and OBOR zones (Rs= -0,82 p.=0.00, Rs= -0,66 p.=0.002 respectively). In other words, each time the income per capita increases the Bioc.Gha index shows a significant decrease ($p.<0.05$). These negative correlations show that richeras GDP PP countries have a heavier impact on the environment.

An approximate comparison of the environmental footprint of these geographical zones (OBOR and MSR) during the current period shows that the land route countries (N. Eurasia) accumulate a larger amount of wealth as GDP PP (*see* Table 1 and 2). However, larger GDP PP values are not independent from environmental pressures. Moreover, the correlations between GDP PP and SDG4a and SDG4b values, as educational profile indices,are different in the two geographical zones (N.Eurasia and S. Eurasia). In Table 3,GDP PP index is positively correlated with the values of SDG4bindex (Rs=0.84) of MSR – S.Eurasia, whereas in N.Eurasia – OBOR zone (Table 4) itis positively correlated to SDG4aindex(Rs=0.63). In the former case (MSR) it appears that GDP PP has a positive influence on the mean schooling time, while in the latter the index affects positively the mean percentage of elementary schooling of the population of OBOR countries. The non-independence of GDP PP *vs*SDG4b (Rs=0.84) and GDP PP *vs*SDG4a (Rs=0.63) is the result of the intention of the states for sufficient and basic elementary education and, on the other hand, of the desire of their citizens for education. In both cases, the absence of independence implies at rend of evenness.

From the matrices of Tables 3 and 4 one can observe differentiations in the environmental and educational efforts of the states in the two geographical zones. In the northern part of OBOR there is a stabilization trend in the land countries, whereas the environmental variables in S. Eurasian regions appear problematic (Sachs et al., 2018). More than 30% of the marine resources in that region are subject to overfishing, while the biodiversity conservations policies of most countries are inadequate (Fig. 1, Table 1 and 2). The correlations, however, between the SDG1*vs*Bioc./Ghavalues in the northern states are negative, while in the southern states (MSR) are positive. Even though these correlations demonstrate the complexity of the whole system, one has to admit that the SDG1 values in the North improve at expense of the environment, in contrast to the situation in the South where the SDG1 values are supporting the Bioc./Gha values.

As regards the cultural environmental inheritance, the OBOR countries with 136 M.N.H. seem to own a much greater potential on the field of environmental awareness in comparison to the MSR countries with 118 M.N.H. (*see* Table 1 and 2). According to Krishtalka & Humphrey (2000) M.N.H. are the fundamental observatories of life on our planet which analyze and correlate a history of 3.8 bn years with the current times. It is high time that M.N.H. played a substantial consulting role in the management of the future of life as well (5).

Considering that the OBOR-MSR initiative, due to its focus towards development and the consequential growth of per capita GDP, is negatively correlated with Bioc./Gha, we conclude

that economic growth must occur in conjunction with environmental – educational policies that will present an inhibiting factor to environmental burden. This way we can avoid the risk of turning the OBOR-MSR initiative into another resource-exhausting developmental project for the countries along the two zones, and instead exploit it as a pattern of collaboration in the field of sustainable development. Of course, this notion will remain a bet that we will constantly have to strive to win.

CONCLUSION

The doctrine of OBOR-MSR has a developmental economic orientation. But it should be done with parallel environmental and educational policies. This will reduce the environmental impact. This initiative can be a global model for sustainable development cooperation. Of course, this notion will remain a bet that we will constantly have to strive to win.

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ACKNOWLEDGEMENTS

I would like to thank Dr. P. Spanos for the detailed comments and for the critical revision of the manuscript.

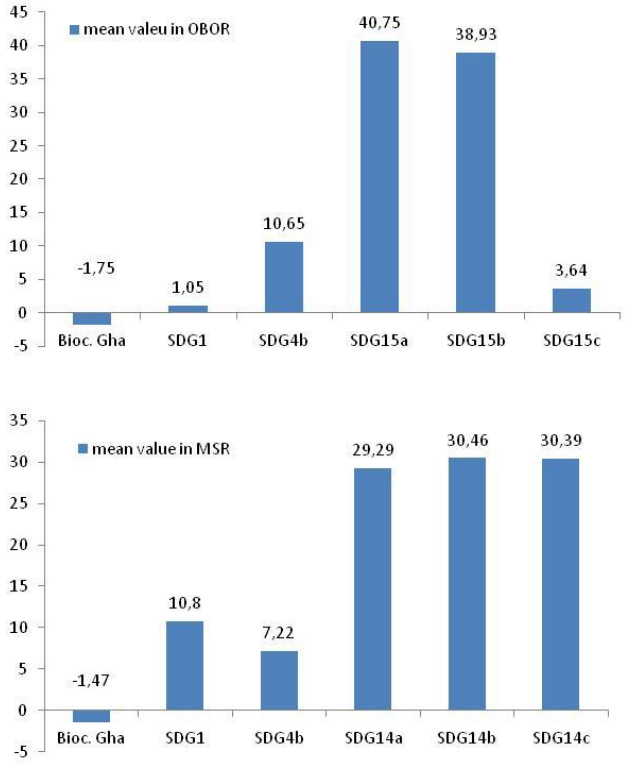

Figure 1. Mean value of the indices SDG and Bioc./Gha of OBOR and MSR countries.

Table 1. Indicators of economy, education, environmental pressures and populations of the OBOR States used in independence tests (Abbreviations and **Data Sources:** National Footprint Accounts 2018 edition (Data Year 2014); Building on World Development Indicators, The World Bank (2016); U.N. Food and Agriculture Organization)

MSRCountries	Populations	GDP PP[1]	Bioc. Gha[2]	SDG1[3]	SDG4a[4]	SDG4b[5]	SDG14a[6]	SDG14b[7]	SDG14c[8]	Ab.M.N.H.[9]
China	1,415,045,928	6,108	-2.7	0.4	N/A	7.6	18.8	8.6	60	15
Vietnam	96,160,163	1,596	-0.7	0.9	98	8	40.8	1.6	64	1
Cambodia	16,245,729	973	-0.2	0.1	92.8	4.7	0.0	44.9	61.4	0
Thailand	69,183,173	5,590	-1.2	0	89.6	7.9	N/A	55.6	17.7	35
Malaysia	32,042,458	10,398	-2	1.4	98.9	10.1	25.1	23.5	47.4	2
Indonesia	266,794,980	3,693	-0.3	5.3	90.9	7.9	30.3	21.7	36.9	0
Myanmar	53,855,735	1,266	0.4	10	99.5	4.7	6.6	19.7	46.9	0
Bangladesh	166,368,149	922	-0.4	4.4	90.5	5.2	34.5	1.7	15.6	0
India	1,358,137,719	1,647	-0.6	5.2	92.3	6.3	31.0	12.4	10.2	9
SriLanka	20,950,041	2,559	-0.8	0.4	98.9	10.9	37.9	18.2	35.8	1
Yemen	28,915,284	1,093	-0.2	86.0	83.1	3.0	30.8	0.1	8.2	0
SaudiArabia	33,554,343	21,183	-5.6	0.1	97.4	9.6	20.9	26.5	17.9	0
Kenya	44,863,584	1,076	-0.5	29.0	81.8	6.3	40.3	32.4	8.0	2
Somalia	15,181,925	-	0.0	52.6	N/A	2.1	0.0	25.4	10.4	0
Djibouti	985,690	1,508	-2.1	14.8	59.1	4.1	0.0	N/A	N/A	0
Eritrea	5,187,948	-	1.1	38	42.4	3.9	0.0	10.7	N/A	0
Sudan	41,511,526	1,837	-0.1	17.8	55.4	3.5	87.5	39.2	2.0	0
Egypt	99,375,741	2,608	-1.5	0.7	97.5	7.1	56.0	27.4	34.5	2

[1]*Gross Domestic Product Per Person (GDP PP)*
[2]Global hectares are the accounting unit for the Ecological Footprint and biocapacity accounts = Bioc.Gha
[3]Poverty headcount ratio at$1.90/day (% population)
[4]Net primary enrolmentrate (%)data UNESCO 2018
[5]Mean years of schooling (years) data UNESCO 2018
[6]Mean area that is protected in marine sites important to biodiversity (%) data Birdlife International et al. (2018)
[7]Percentage of Fish Stocks overexploited or collapsed by EEZ (%)
[8]Fish caught by trawling(%)
[9]Abundance Museums of Natural History

Israel	8,855,000	32,661	-4.5	0.4	96.7	12.8	N/A	N/A	52.3	5
Lebanon	6,093,509	7,447	-3.1	0.0	82.2	8.6	13.4	N/A	10.0	1
Syria	18,284,407	-	-1	N/A	63.2	5,1	0.0	N/A	22.0	0
Turkey	81,916,871	13,312	-1.7	0	94.9	7.9	4.6	79.7	33.8	5
Cyprus	1,189,085	26,978	-3	0.1	97.4	11.7	47.9	66.6	N/A	0
Greece	11,142,161	22,566	-2.7	1.4	93.6	10.5	71.8	48.6	21.8	11
Italy	59,821,064	33,626	-3.4	1.1	97.3	10.9	75.5	75.1	51.8	29
SUM	**3,950,676,523**	**200,647**	**-37**	**270**	**1993**	**180**	**674**	**640**	**669**	**118**
Mean	**164,611,522**	**9120**	**-1**	**11.0**	**87.0**	**7.0**	**29.0**	**30.0**	**30.0**	**5,0**

Table2. Indicators of economy, education, environmental pressures and populations of the OBOR States used in independence tests (**Data Sources:** National Footprint Accounts 2018 edition (Data Year 2014); building on World Development Indicators, The World Bank (2016); U.N. Food and Agriculture Organization)

OBORCountry	Populations	GDP PP	Bioc. Gha	SDG1	SDG4a	SDG4b	SDG15a[10]	SDG15b[11]	SDG15c[12]	Ab. M.N.H.
China	1,415,045,928	6,108	-2.7	0.4	-	7.6	52.1	41.6	5.0	15
Kazakhstan	15,010,919	5607	0.2	0	86.2	11.7	16.3	17.4	1.3	0
Uszbekistan	29,469,912	1744	-1.3	9.6	96.2	12	16.2	10.8	1.1	1
Turkmenistan	4,501,419	2381	-0.2	0	N/A	9.9	14.6	13.1	4.6	0
Iran	82,011,735	6,161	-2.6	0.1	99.3	8.8	48.6	40.4	0.2	7
Turkey	81,916,871	13,312	-1.7	0	94.9	7.9	2.3	4.1	3.9	5
Ukraine	45,165,212	3,160	-0.6	0.1	92.4	11.3	23.3	16.9	7.2	8
Russian	143,367,344	11,616	1.2	0	97.0	12	27.2	27.4	6.5	11
Germany	80,646,264	45,023	-3.3	0.1	98.7	13.2	78.7	81.4	4.5	45
Netherland	16,868,020	50,497	-4.9	0.2	97.3	11.9	90.8	90.4	3.3	15
Italy	59,821,064	33,626	-3.4	1.1	97.3	10.9	78.2	84.7	2.4	29
SUM	1,973,824,688	179,235	-19.3	11.60	859	117	448.3	428.2	40.0	136
Mean	179,438,608	16,294	-1.75	1.05	95.48	10.65	40.75	38.93	3.64	12.36

[10]Mean area that is protected in terrestrial sites important to biodiversity (%)
[11]Mean area that is protected in freshwater sites important to biodiversity (%)
[12]Annual change in forest area (%)

Table 3. Spearman Rank Order Correlations (Rs), marked correlations are significant at p <0,050 (abbreviations in Tables 1)

MSR Countries	Population	GDP PP	BIOC/Gha	SDG1	SDG 4a	SDG4b	SDG14a	SDG14b
Population								
GDP PP	0,03							
BIOC/Gha	0,14	**-0,82**						
SDG1	-0,08	**-0,66**	**0,61**					
SDG4a	0,25	0,32	-0,21	-0,33				
SDG4b	-0,01	**0,84**	**-0,78**	**-0,66**	0,38			
SDG14a	0,24	**0,53**	-0,3	-0,25	0,05	**0,52**		
SDG14b	**-0,48**	0,39	**-0,53**	-0,29	-0,27	0,29	0,05	
SDG14c	-0,23	0,16	-0,2	-0,21	0,28	0,27	-0,19	0,05

Table 4. Spearman Rank Order Correlations (Rs), marked correlations are significant at p <0,050 (abbreviations in Tables 2)

OBOR Countries	Populations	GDP PP	BIOC/Gha	SDG1	SDG4a	SDG4b	SDG15a	SDG15b
Populations								
GDPPP	0,30							
BIOC/ Gha	-0,15	**-0,66**						
SDG1	0,09	0,04	**-0,65**					
SDG4a	0,25	**0,63**	-0,50	0,26				
SDG4b	-0,27	0,15	0,10	0,07	0,40			
SDG15a	0,16	**0,70**	**-0,61**	0,37	**0,74**	0,41		
SDG15b	0,18	**0,70**	**-0,69**	0,41	0,51	0,17	**0,91**	
SDG15c	0,29	-0,03	0,16	-0,21	-0,51	-0,14	-0,08	0,00