

How Marine Tourism Promote Financial Development in Sustainable Economy: New Evidence from South Asia

Liu Li ([✉ 2141755620@qq.com](mailto:2141755620@qq.com))

North Minzu University

Baijun Wu

Chengde Medical University

Ataul Karim Patwary

Universiti Utara Malaysia

Research Article

Keywords: Ocean economy, Financial development, marine tourism, South Asia's economic activities, sustainability

Posted Date: July 8th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-645827/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Version of Record: A version of this preprint was published at Environmental Science and Pollution Research on August 4th, 2021. See the published version at <https://doi.org/10.1007/s11356-021-15709-1>.

1 **How Marine Tourism Promote Financial Development in Sustainable**
2 **Economy: New Evidence from South Asia**

3
4

5 **Liu Li¹***, **Baijun Wu²**, **Ataul Karim Patwary³**

6
7 ¹ Lecturer, North Minzu University, China
8 ² Lecturer, Chengde Medical University, China
9 ³ School of Tourism, Hospitality and Event Management, Universiti Utara Malaysia, Malaysia

10
11

12 **Corresponding author:** Liu Li (2141755620@qq.com)

13
14

15 **Abstract**

16 The ocean economy and marine tourism policies are global economic concerns being looked
17 at from a deeply holistic viewpoint. For South Asian countries, the ocean economy and marine
18 tourism have successive socio-economic importance. The quantification of the ocean economy
19 and marine tourism also poses some major challenges and these challenges pose limitations for
20 policymaking by the government and other relevant agencies. The study has used the newly
21 developed Hidden Panel Cointegration test and Nonlinear Panel Autoregressive Distributed
22 Lag (NPARDL) model for a relationship between economic growth and tourism is assessed.
23 This study offers consistent and reliable results of co-integration by incorporating the findings
24 of four approaches to co-integration. The empirical results illustrate the asymmetric
25 relationship between ocean and marine tourism and economic growth. The findings showed
26 that 1% increase in long term tourism economic growth is adjusted by 2.95% annually. This
27 research paper aims to provide a policy related to South Asia's economic activities and ocean
28 and marine tourism economic significance. Protecting local marine protected areas (MPAs)
29 will improve the economic benefits of the ocean and the marine economy. The policy suggests
30 that there should be a law ensuring that marine tourism is of high quality and environment

31 friendly. This paper provides a guideline for further research with a strong emphasis on ocean-
32 and marine-related economic development and tourism.

33 **Keywords:** Ocean economy, Financial development, marine tourism, South Asia's economic
34 activities, sustainability

35 **1.Introduction**

36 The economic living of 3 billion people depends on the ocean economy out of which a
37 vast majority lives in developing countries. Marine industries such as fisheries and tourism are
38 important job and income provider industries (tourism and experience 2016). However, climate
39 change, pollution and insufficient consideration of environmental and social sustainability may
40 threaten marine resources, hampering the socio-economic benefits that oceans bring to future
41 generations (Iqbal et al. 2020; Nawaz, Seshadri, et al., 2021). Enlargement of the marine sector
42 and sustainable investment in the ocean economy such as offshore renewable energy and
43 marine biotechnology will promote job creation, energy supply, food security and
44 infrastructure. Understanding how the international community can fill the gap in the
45 development of ocean economy and marine tourism through their expertise, creativity, capacity
46 and funding to prevent developing countries from lagging in the sustainable marine economy
47 (Nawaz & Hassan, 2016a, 2016b). Coastal and marine tourism is an important part of a
48 sustainable blue economy, creating 6.5 million jobs. The worldwide growth of the ocean
49 economy and marine tourism is expected to reach 3.5 percent (Anser et al. 2018), (Anser 2019)
50 and (Anser et al. 2020d).

51 By 2030, marine and coastal tourism will become the largest value-added component of
52 the marine economy, hitting 26 percent of total production (Tourism Tasmania 2018) and
53 (Khokhar et al. 2020). Regions such as the Caribbean (whose economic growth and well-being
54 depend heavily on tourism) and other regions (such as Southeast Asia) are likely to benefit
55 from this development. Nature is the foundation of the tourism industry as travelers around the

56 world are willing to pay a premium for ocean-view quarters like beaches, coral reefs and
57 panoramic views of the sea (Abbas et al. 2020). The fish and seafood items produced by coastal
58 ecosystems are one of the favorite worldwide economic activity provide foods in restaurants
59 and a source of livelihoods for the poorest coastal communities(Hou et al. 2019),(Yumei et al.
60 2021). Over three billion people depend on marine and coastal businesses for their livelihood.
61 So, 30 percent of the world's fish stock, however, is over-exploited, bringing the stock level
62 below the optimal sustainable yield (Chien, Sadiq, et al., 2021). Ocean and seawater also
63 consume 30 percent of human-generated CO₂ emissions in everyday life. There is a troubling
64 marine waste situation as about 13,000 bits of plastic litter are found on each square kilometer
65 of the ocean. Policies related to marine, maritime tourism, and ocean economy are being
66 approached with an inclusive outlook in this new era. Particularly in South Asia (World Travel
67 & Tourism Council 2016) the increasing socio-economic importance of the marine economy
68 and marine tourism is gradually evident.

69 Ocean economic development in South Asia is becoming increasingly concerned (The
70 World Travel & Tourism Council 2015). Policymaking is the process of engaging various
71 organizations and individuals to work with their self-and social benefits for mutual benefit.
72 This paper deals with the policy-making of the ocean economy including marine tourism. The
73 aim of developing an ocean economy and marine tourism policy is to investigate the
74 relationship between the ocean economy and its economic and environmental benefits, along
75 with providing guidance for further development (Nepal Tourism Board 2018) and (The World
76 Travel & Tourism Council 2015). Research carries out those economic activities which include
77 employment, salaries and output. Data analysis reveals that the ocean economy generates 2
78 percent of employment and 1.7 percent of GDP. The ocean economy is opening up new
79 directions for job and output improvements (2014), (Liu and Wu 2019) and (Iqbal et al. 2019b).
80 (OECD 2017) describes that one of the biggest sectors of marine and coastal tourism is the

81 marine economy. A source of human economic activity is this marine and coastal tourism
82 industry. Nevertheless, there is a debate about marine and coastal tourism's environmental
83 impact. Naval and coastal tourism not only promises economic growth but also social
84 sustainability. Additionally, the focus of marine and coastal tourism along with the idea of
85 ecotourism is on nature conservation and economic welfare enhancement (Iqbal et al. 2019a).

86 Coastal and marine spaces provide a human being with a wide range of economic
87 activities and services closely related to coastal and marine tourism. The maritime economic
88 sector provides economic advantages but it also threatens the climate. MSP "Marine Space
89 Planning" must be introduced, a strategy for reducing the environmental degradation caused
90 by marine and coastal tourism (Khokhar et al. 2020).

91 Southeast Asia claims ownership of nearly 30% of the world's coral reefs, 35% of
92 mangroves, and at least 18% of seagrass meadows (Prideaux et al. 2020) and has a coastline of
93 173,000 km that borders some of the world's most economically and ecologically rich ocean
94 areas (Ansor et al. 2020c). The marine economy is important for several states in the region.
95 Southeast Asia is also home to six of the world's top 25 busiest container ports and two of the
96 world's top ten shipbuilding economies (Klain et al. 2018) and (Baloch et al. 2020). MSP
97 ensures to address marine and coastal tourism related management and development issues to
98 improve environmental conditions for the development of the marine and coastal tourism
99 industries, enhance the efficiency and facilities of the seascapes and ecosystems, climate-
100 compatible steps, to continue spatial control so as not to overwhelm tourism facilities and
101 activities and improving economic and human development to the optimum level (Shair,
102 Shaorong, Kamran, Hussain, & Nawaz, 2021; Zhuang et al., 2021).

103 Therefore, the purpose of this study is to systematically describe activity within South
104 Asia's maritime economy and fully recognize its contribution to Asia. This approach uses
105 analysis to assess the size and structure of the maritime economy, making extensive use of gray

106 literature to distinguish marine and non-marine activities. The work focuses specifically on
107 contributing to the economic production and employment of exotic air and marine recreation,
108 including activities that rely on the material and local use of the marine environment but also
109 its aesthetics

110 **2 Background and Literature Review**

111 The income of small coastal fishermen mainly depends on marine resources
112 (Hadjimichael 2018). Consequently, they usually use and occupy areas with high marine
113 biodiversity (Lenzen et al. 2020). If they use it indiscriminately without protection, then the
114 ecosystem could be endangered, affecting the economic well-being of local communities.
115 Therefore, marine protected area (MPA) has become a universal tool for maintaining high
116 biodiversity area (Ranasinghe et al. 2020). The MPAs have different types and size, vary in
117 level of protection and safety focus. Therefore, protecting marine resources from misuse is an
118 important goal. However, the setting up of MPA may expose the poor to greater risk of
119 unemployment. It is important to develop alternative livelihood programs to help drive coastal
120 communities out of the fishing industry without compromising their livelihoods.

121 Countries around the world usually use tourism as a livelihood strategy, and it is also used
122 for biodiversity conservation in protected areas (OECD 2020) (Mohsin et al. 2020b), (Mohsin
123 et al. 2018) and (Mohsin et al. 2021). In particular, it aims to increase the well-being of peoples
124 and transform traditional income-generating activities in the region. The ultimate objective is
125 to reduce poverty and eliminating threats to biodiversity. In the past decade, much research has
126 been conducted on the role of tourism in protected areas. The empirical and theoretical
127 literature provides contradictory answers to solve this problem ranging from negative to
128 positive. Many scholars believe that tourism can help improve the income and living standards
129 of residents by creating job opportunities . Although a large amount of literature shows that
130 tourism has a positive impact on development and protected areas, others believe that tourism

131 projects in MPA may be difficult to implement (Gössling et al. 2020). In addition, such projects
132 cannot compete with fishing revenues (Prideaux et al. 2020), and they can increase income
133 inequality (Dellink et al. 2019), create consumer conflicts (Hadjimichael 2018), and result in
134 the elimination of cultural values (Suhel and Bashir 2018). Tourism was soon introduced and
135 identified as an important means of generating alternative livelihoods to compensate for lost
136 opportunities in societies, and hence the MPA's focus on marine resources. The similar works
137 has been done one energy, economic and environment (Mohsin et al. 2019b), (Mohsin et al.
138 2020a) and (Mohsin et al. 2021).

139 World Travel & Tourism Council (2018) described tourism as a ' clean industry ' and does
140 not cause any degradation to the environment. The research also accounts for activities related
141 to tourism that collect aquatic and terrestrial ecosystems. Community snuggle resides in non-
142 tourist places as well as tourist sites and beaches with lower organic carbon characteristics,
143 lower densities and lower diversity (Min et al. 2016; Nawaz, Hussain, et al., 2021). Small
144 Island is a tourist destination that attracts tourists because of its natural beauty, foreignness and
145 diversity. Spots of these tourists have clean, fresh and appealing water. Tourism becomes a
146 source of boosting the economy because of the boundless characteristics of destination tourism.
147 However, because of the construction of new buildings and tourism-related activities, tourism
148 is one of the major factors of environmental degradation and depletion (Mohsin, Kamran,
149 Nawaz, Hussain, & Dahri, 2021). Tourism is a development tool that boosts a country's
150 economy (Mulok et al. 2012) and plays an important role in the global industry.

151 The classification of the Marine economy according to is as follows:

152 **2.1 Marine Protected Area**

153 Areas that include rivers, estuaries, and oceans are marine protected areas. These marine
154 areas can be hideaways in many forms from marine and wildlife. Commonly marine protected
155 areas are closed to public access and are maintained for purposes of study and conservation.

156 Such MPAs incorporate flora and fauna are of historical and cultural importance (Wasif
157 Rasheed and Anser 2017), (Xu et al. 2020) and (Ahmad et al. 2020). Min et al.(2016) stated as
158 other industries are growing rapidly in the world so the marine and coastal tourism industries
159 are also one of the fastest growing industries in the world. Nonetheless, people are not fully
160 aware of the economic and environmental value of marine and coastal tourism (Ma et al. 2015).
161 This research paper, as supported by the United Nations Environment and Social Commission
162 for Asia and the Pacific (ESCAP), elaborates key points for encouraging marine and coastal
163 tourism include well-established coastal management practices, Healthy and safe coastal
164 ecosystem, Resorts and beaches establishment and a worthy marine habitat and wildlife
165 protection.

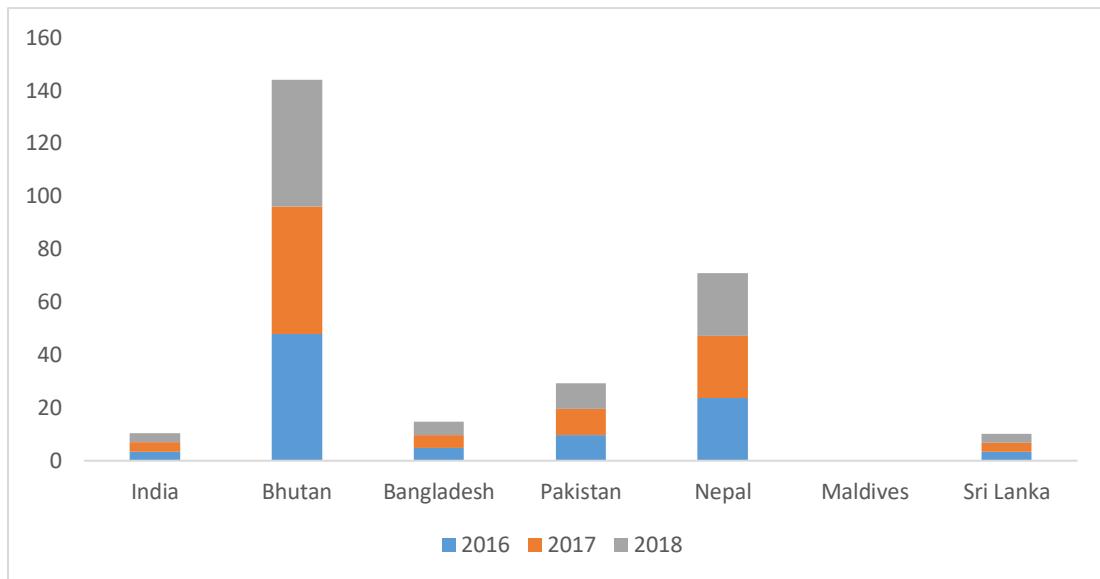
166 **Table. 1 Marine Protected Areas (% of terrestrial water) from 2016 to 2018**

| Year | India | Bangladesh | Pakistan | Maldives | Sri Lanka |
|------|----------|------------|----------|----------|-----------|
| 2016 | 0.170692 | 5.35694 | 0.766351 | 0.048693 | 0.074707 |
| 2017 | 0.170706 | 5.35719 | 0.766529 | 0.051505 | 0.074626 |
| 2018 | 0.170706 | 5.35719 | 0.766529 | 0.051505 | 0.074626 |

167 Source: (World Bank 2018)

168 **2.2 Terrestrial and Marine Protected Area**

169 Terrestrial protected areas are an area of about 1,000 hectares which is completely or
170 partially covered which includes national parks, beaches, natural and cultural monuments,
171 hideaways of animals, and habitats protected (see figure 1). Such areas are covered under the
172 direct supervision of federal or provincial governments (Kreishan 2010) and (Songling et al.
173 2019). Such areas are a source of attraction for tourism too. These areas include leisure and
174 recreational tourism, cultural tourism, cruise and marine tourism (Pratt 2015) mentioned the
175 character of the economy's terrestrial surface water ecosystem. The author clarified that the
176 terrestrial surface water environment has clear importance for industrial and agricultural use,
177 for use in the generation of hydropower and tourism and aquatic goods.



178
179 **Figure 1. Terrestrial and Marine Protected Areas (% of Total Terrestrial area) (World Bank 2018)**

180 **3. Data and Methodology**

181 **3.1. Analytical framework**

182 The empirical research presented in this paper is based on the standard Cobb–Douglas
 183 production function with constant returns in the neoclassical system with Hicks neutral
 184 technical methods.

185
$$Y_t = A_t K_t^\alpha \quad (1)$$

186 Among them, Y_t is the economic growth (real GDP per capita), A_t represents total factor
 187 productivity, and K_t^α represents capital per capita. The literature on economic growth can
 188 extends this production function in several ways. Researchers believe that inbound tourism,
 189 trade openness inflation and capital stock are all factors that affect economic growth.
 190 However, it is possible to assume growth function as follows:(2)

191
$$A_t = f(T, Z_t) \quad (2)$$

192 where Z_t is a vector of growth-enhancing variables such as tourism indicators, capital stocks,
 193 trade openness, inflation, and other macroeconomic policies, and T is the time dynamics.

194 Tourism is a significant determinant of economic growth, as we discussed in the previous
 195 section. Along with tourism, there are a number of other factors that could influence economic

196 growth. In the theoretical and empirical literature of economics, the relationship between trade
197 openness and economic growth has long been debated. For example, and claim that trade
198 openness has a negative impact on individual countries, whereas Harrison (1996) claims that
199 trade openness has a significant and positive impact on economic growth. Lee (1993) and
200 Edwards (1998), for example, show that average tariff rates and economic growth have a
201 negative relationship. Because the results were inconclusive, the implications of trade openness
202 for Pakistan could not be generalized. As a result, in order to quantify its impact in Pakistan,
203 we include it in our growth regression.

204 Another key element of economic growth, as per neoclassical growth theory, is capital
205 stock. The majority of studies found that capital stock and economic growth have a positive
206 and significant relationship. Similarly, the discussion of inflation and economic growth is
207 contentious. Inflation has a contrasting impact on economic growth when measured over time.
208 Inflation has a negative effect on output growth rates in the short run, but it has no effect on
209 GDP growth rates in the long run. Importantly, in the case of Pakistan, a moderate inflation
210 rate is required for the economy's health, whereas a moderate and low level of inflation is
211 detrimental to output growth. These contradictory findings lead us to believe that the inflation
212 indicator should be included in growth regression.:

$$213 \quad GDP_{ti} = \alpha + \beta_1 TouE_{it} + \beta_2 Trade_{it} + \beta_3 capital_{it} + \beta_4 M_Supply_{it} + \beta_5 Ex_Rate_{it} + \\ 214 \quad \beta_6 F_Development_{it} + \mu_{it} \quad (3)$$

215 where GDP_{ti} is the economic growth variable of country i at time period T, $TouE_{it}$ is
216 international tourism receipt of country I at time period t, $capital_{it}$ represents the per capita
217 capital invested of each country, M_Supply_{it} indicates the total supply of each country in a
218 specified time period, Ex_Rate_{it} is the exchange rate of each country against the USA dollar
219 and $F_Development_{it}$ indicates the financial development of each country and μ_{it} is the
220 Gaussian error term

221 **3.2 Econometric Model**

222 As we mentioned in the literature review section, much of the tourism growth literature is
223 based on the cointegration techniques of Engel and Granger (1987), Johnson (1991), and
224 Johnson and Usserius (1990). On the other hand, using the same method with the same
225 variables, there is no chance to make an original contribution, because over time this will only
226 increase the number of conflicting results, and we have serious questions about tourism
227 management policies. To avoid this problem, we use an autoregressive distributed lag (ARDL)
228 model. To the best of our knowledge, there are no available studies in Pakistan that use ARDL
229 estimates to test the link between tourism and growth, (Anser et al. 2020e), (Anser et al. 2020d),
230 (Anser et al. 2020b) and (Anser et al. 2020f) and (Anser et al. 2020a).

231 Pesaran and Shin (1999) and Pesaran et al. (2001) proposed the ARDL cointegration
232 technique (2001). The ARDL estimator is being used by the researchers because of its many
233 benefits. It does not, for example, require that all data series under consideration have the same
234 integration order, and it works regardless of whether the regressors have an I(0) or I(1) order
235 of cointegration. According to Pesaran and Shin (1999), ARDL estimators produce true
236 parameters in small sample sizes when compared to Johansen and Juselius's cointegration
237 technique, and ARDL estimators' coefficients are super consistent. As a result, in our case, with
238 40 annual observations, this is more relevant. In addition, because the ARDL framework is free
239 of residual correlation, endogeneity is less of an issue (Asif et al. 2020), (Sarker et al. 2020),
240 (Iram et al. 2020a; Sun et al., 2020; Tehreem et al. 2020). The ARDL method, according to
241 Pesaran and Shin (1999), can differentiate between explanatory and dependent variables. The
242 assessment is possible even when the explanatory variables are endogenous (Pesaran and
243 Pesaran, 1997, Pesaran et al., 2001). This is a critical issue in the tourism and growth nexus, as
244 the literature shows a mixed picture of the causality between tourism and economic growth. As
245 a result, this study uses ARDL modeling. The ARDL is presented as follows in equation 4:

$$\begin{aligned}
246 \quad & \Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \Delta \ln GDP_{t-i} + \sum_{i=1}^p \alpha_2 \Delta \ln TouE_{t-i} + \dots + \sum_{i=1}^p \alpha_3 \Delta \ln Trade_{t-i} + \\
247 \quad & \sum_{i=1}^p \alpha_4 \Delta \ln capital_{t-i} + \sum_{i=1}^p \alpha_5 \Delta \ln M_Supply_{t-i} + \sum_{i=1}^p \alpha_6 \Delta \ln Ex_Rate_{t-i} + \\
248 \quad & \sum_{i=1}^p \alpha_7 \Delta \ln F_Development_{t-i} + \lambda_1 GDP_{t-i} + \lambda_2 \ln TouE_{t-1} + \lambda_3 \ln trade_{t-1} + \\
249 \quad & \lambda_4 \ln capital_{t-1} + \lambda_5 M_Supply_{it} + \lambda_6 Ex_Rate_{it} + \lambda_7 F_Development_{it} + \mu_{it} \quad (4)
\end{aligned}$$

250 The expression from λ_1 to λ_7 on the right-hand side depicts the long-run relationship between
251 the variables, whereas the expression from α_1 to α_7 with the summation signs depicts the short-
252 run dynamics of the variables. In contrast, 0 denotes the drift constant, and t denotes Gaussian
253 white noise. ARDL bounds testing yields complete results for short-run and long-run dynamics
254 after a series of steps and procedures. In the first step, Eq. (4) will be estimated using the
255 ordinary least square (OLS) method, and an F-test will be used to determine whether the
256 variables in Eq. (4) have a long-term relationship (3) (Liu et al. 2020), (Lin et al. 2020) and
257 (Jun et al. 2020).

258 Pesaran et al. provided upper and lower critical values, which are compared to the
259 calculated F-statistics value (2001). Regardless of whether the variables are I(0) or I(1), if the
260 calculated F-value exceeds the upper critical value, the null hypothesis of no cointegration is
261 rejected (1). The R2 criterion, Hannan Quinn Criterion, Akaike Information Criterion (AIC),
262 and Schwarz Criterion will be used to estimate long run relationships using the selected ARDL
263 model in the second step (SBC). In the third step, we calculate the following error correction
264 model.

$$\begin{aligned}
265 \quad & \Delta GDP_t = \beta_0 + \sum_{i=1}^p \delta_1 \Delta GDP_{t-i} + \sum_{i=1}^p \gamma_2 \Delta TouE_{t-i} + \dots + \sum_{i=1}^p \theta_3 \Delta Trade_{t-i} + \\
266 \quad & \sum_{i=1}^p \theta_4 \Delta capital_{t-i} + \sum_{i=1}^p \rho_5 \Delta M_Supply_{t-i} + \sum_{i=1}^p \varphi_6 \Delta Ex_Rate_{t-i} + \\
267 \quad & \sum_{i=1}^p \omega_6 \Delta \ln F_Development_{t-i} + \alpha ECM_{it-1} + \mu_{it} \quad (5)
\end{aligned}$$

268 3.3 Variable Selection

269 **Dependent variable:** the dependent variable in this study is GDP. Tourism industry should
270 have an impact on the quantitative measure of the economic development, gross domestic

271 product (GDP) and other economic indicators. As a result, a specific literature should need to
272 developed in order to measure the impact of tourism upon GDP to deal with measuring how
273 tourism contributes to economic growth so that the policy makers and government
274 representatives should design the policies to facilitate the tourist from all over the world.

275 **Independent Variable:** (a) GDP: (a) Tourism Earning: During the past few years, the traveling
276 business has practiced continuous growth and excavating variation, becoming one of the
277 depraved rising financial sectors at international level. Contemporary traveling is thoroughly
278 associated with the growth and contains progressively new destinations of travelers. These
279 forces have made tourism the main driver of economic and social advancement. The data for
280 tourism earning is collected from world bank (Yousaf et al. 2020), (Tehreem et al. 2020),
281 (Wasif Rasheed and Anser 2017) and (Xu et al. 2020). Trade: the data for total volume of trade
282 is collected from world bank and statistical year book of each country. (c) Exchange Rate: The
283 exchange rate is determined autonomously of the economic growth rate. The exchange rate
284 will affect financial growth and similarly the economic growth rate will affect the exchange
285 rate, (d) Financial Development and Money Supply: In short, tourism and financial
286 development are positively correlated and statistically important in relative to economic
287 growth. In other words, the increase in tourism and financial development will ensure the rise
288 in financial growth in the long run. (e) Money supply: Money supply bring up the amount of
289 money accessible in the host country, which may have a complex association with financial
290 development, customer spending, and finally traveling demand. Further, the data for each
291 variable is collected from world bank data source and statistical year book of each south Asian
292 courtiers from 2000 to 2017.

293 **4. Results and Discussion**

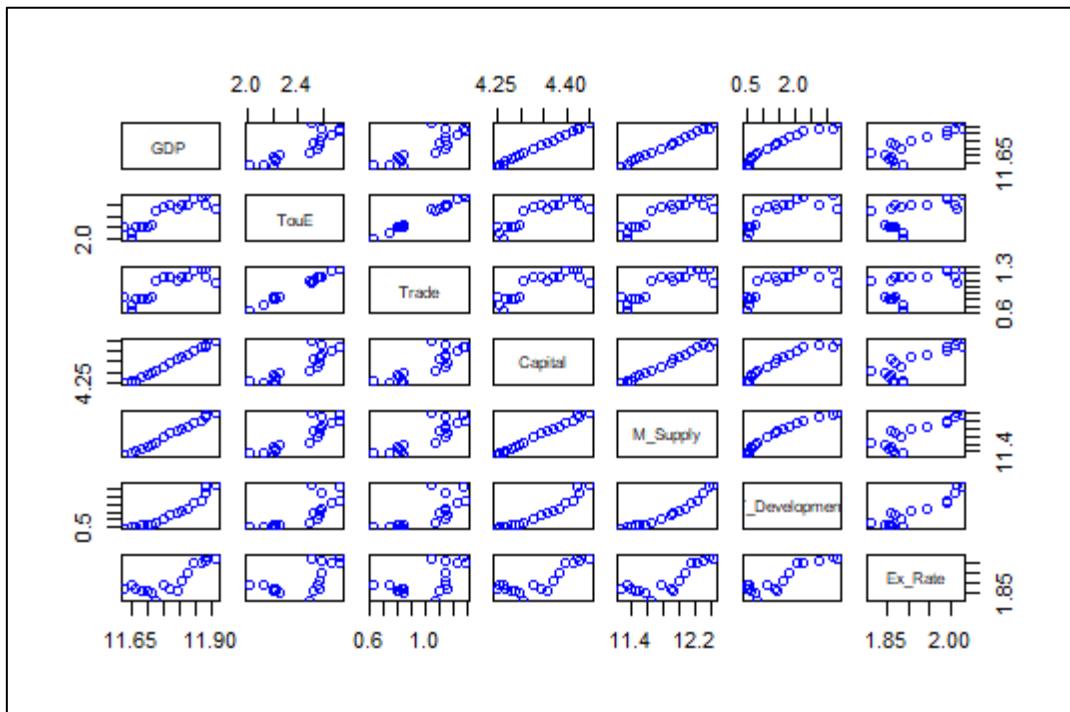
294 Table 2 provides the descriptive statistics of the selected variables. Marine tourism
295 connected with ocean and coastal conservation is one of the major issues that need to be

296 addressed immediately. Tourism is inherently contentious about its cost and benefits. Eco-
297 Marine tourism is a new trend that is suitable for sustainability. This paper provides an
298 argument that adds fuel to the idea that marine tourism needs careful policy analysis,
299 preparation and public education (Siegel 2011). Figure 2 provides the correlation among the
300 selected variables. The comparative analysis and review of their effectiveness in stimulating
301 and promoting technological innovation in the marine sector across the industry is required
302 (Chien, Pantamee, et al., 2021). The role of central and regional governments in cluster
303 innovation activities can be studied particularly from the following perspectives:

304 **Table 2. descriptive statistics**

| Variable | Mean | S.Dev | Min | Max |
|----------|-------|-------|-------|-------|
| GDP | 11.76 | 0.09 | 10.62 | 19.92 |
| TouE | 2.44 | 0.23 | 2.01 | 2.74 |
| Trade | 1.01 | 0.2 | 0.62 | 1.28 |
| Capi | 4.34 | 0.07 | 4.25 | 4.45 |
| MSupply | 11.83 | 0.39 | 9.29 | 12.44 |
| FDev | 1.43 | 0.95 | 0.46 | 3.33 |
| ExR | 1.91 | 0.07 | 1.81 | 2.03 |

305



306

307

Figure 2. Correlation matrix of the selected variables

308

309

An international network began to be established to exchange views and experiences in the fields of cross-industry maritime technology, setting up centers of excellence, innovation incubators, etc., with a particular focus on key general purpose and enabling technologies. In general, these tasks are carried out by the same "Coastal Flood Protection" organizations (such as universities and research institutions): development and maintenance activities designed to protect coastlines from coastal erosion and floods caused by increases in the sea level. Strictly speaking, this is not an ocean-based operation that benefits or supports the marine industry and is therefore not commonly included in the marine economy concept. The rising influx of tourists is struggling to cope with numerous tourist hotspots. Residents in cities like Amsterdam, Venice and Barcelona have expressed fear and increasing anti-tourist sentiment. Tourism-driven upsizing can put pressure on local communities' lives and livelihoods, drive up property prices, overcrowd tourist destinations and exacerbate coastal erosion from coastal tourism activities.

321 Threats to our oceans require cross-border and regional cooperation but the most
322 important thing is multi-stakeholder global involvement. It is essential to empower the public
323 and private sectors to reduce plastic waste, create a circular economy and build strategic
324 partnerships for sustainable and resilient communities. Alliances between the world's largest
325 packaging manufacturers, such as the Global Commitment to the New Plastics Economy, are
326 critical to developing creative collective action and strategies to reduce pollution in order to
327 save the planet support economic growth and stimulate sustainable opportunities to protect our
328 oceans is crucial. The ocean appears to be endless, but we are all in the same boat and need to
329 find common solutions to tackle the waves. Transatlantic seas required cruise ships by the mid-
330 20th century, but air travel had made crossing seas cheap and fast. A plane can cross the
331 Atlantic in a couple of hours instead of the week most cruise ships need. Cruise lines can no
332 longer provide their means of traveling to and from holidays, thus failing to improve their level
333 of service. Because the demand for cross-sea cruise ships is small, cruise ship operators have
334 to adopt different operating methods. During holidays they started changing the concept of the
335 cruise itself. Ships began sailing abroad and provided additional facilities and operations.
336 Marine tourism has significantly boosted the economic development of countries that are
337 popular cruise travel destinations. Every year almost 8 million people travel by boat in the
338 United States. Cruise ships contribute roughly \$18 billion annually to the US economy. More
339 than 25,000 Americans are employed directly by the cruise line. The cruise industry in the
340 United States offers an estimated 250 000 jobs. In many parts of the world, like the Cortez Sea
341 off Mexico's coast, the number of large prey species has been dwindling, probably due to
342 overfishing. Several nations, including the US, have laws regulating the number, form and size
343 of game fish that may be captured and retained to reduce harm to fish stocks. More than 350
344 million people go to the coast of coral reefs worldwide each year (Balogh and Jámbor 2017).
345 The coral reef tourism industry's annual production value is valued at US\$ 36 billion.

346 **4.1 Unit Root Test**

347 The main advantage of the ARDL estimator is that it can be used without considering
 348 friction cointegration or I(0), I(1) data sequences. However, Ouattara (2004) proved that, due
 349 to the views of Pesaran et al. (2001) ARDI estimates may not be applicable to any data sequence
 350 generated by I(2) processing or higher. explicitly mentioned the hypothesis, assuming that the
 351 order of the hypothesis variable for the ARDL boundary test is (0) or (1) integer. Therefore, it
 352 is still necessary to test the smoothness. To this end, the enhanced Augmented Dickey-Fuller
 353 (ADF) estimator is applied to check the stationary process of the data series. The findings of
 354 the ADF test are shown in Table 3. It is obvious from the Augmented Dickey-Fuller findings
 355 that some data sets are integrated through I(0) or I(1). The important thing is that all data
 356 sequences are not I(2) or higher. Therefore, we have reason to use ARDL estimator.

357 To establish the long-run relationship between economic growth and tourism, we can use
 358 ARDL bounds testing procedures because the unit root test confirms that none of the series are
 359 integrated of I(2). For this, we use the OLS estimation procedure to estimate Eq. (4) and
 360 compute joint F-statistics. Table 3 displays the computed F-statistics as well as the critical
 361 values proposed by Pesaran et al. (2001) for various levels of significance. The F-statistics is
 362 well above the critical value at a 5% level of significance. As a result, there is evidence that the
 363 variables have a strong long-term relationship. When the ADF test is performed using the first
 364 difference, the insignificant supposition is generally rejected at a significance level of 1% or
 365 5%, implying that the data converts into a stationary shape with the first difference. In general,
 366 non-stationary series exist at the conventional time level, despite the fact that all series are
 367 stationary at the first difference.

368

Table 3. Unit root tests

| | ADF test | k | | ADF test | K |
|-------|-----------------|----------|--------|-----------------|----------|
| GDP | – 1.173 | 0 | ΔGDP | – 4.143 | 0 |
| TouE | – 1.273 | 1 | ΔTouE | – 5.253 | 1 |
| Trade | – 2.997 | 1 | ΔTrade | – 3.967 | 2 |

| | | | | | |
|------|---------|---|---------------|---------|---|
| Capi | - 0.937 | 1 | Capi | - 2.927 | 2 |
| MSup | - 1.37 | 2 | Δ MSup | - 5.317 | 1 |
| FDev | - 1.273 | 1 | Δ FDev | - 2.927 | 2 |
| ExR | - 2.997 | 1 | Δ ExR | - 3.097 | 1 |

369 **Source:** authors calculation

370 **4.2 Econometric Estimation**

371 **4.2.1 Long Run Test**

372 The long run estimates of Eq. (4) are then estimated using the ARDL co-integration
 373 technique. In order to find the coefficient of the level of variables, we estimated the model
 374 using various criteria such as the criterion, Hannan Quinn Criterion, AIC Criterion, and SBC
 375 Criterion. All models produced nearly identical long and short run results. As a result, we only
 376 show the results of models that were chosen based on the AIC criterion, as (Akadiri et al. 2019)
 377 demonstrated that AIC outperforms other criteria when the time span is less than 60
 378 observations in a Monte Carlo experiment.

379 Table 4 shows the results of the long-run estimates. The findings indicate that all the
 380 variables are statistically positive at 1% significant level. The tourism earning is statistical
 381 statistically positive at 1% significant level. It means in the long run, a 1% increase in
 382 international tourism earning leads to a 0.22 percent increase in economic growth (GDP). The
 383 finding supports the tourism-led growth hypothesis, which states that improvements in inbound
 384 tourism can lead to increased economic growth. Our findings are consistent with those of recent
 385 empirical studies (Sokhanvar 2018; Kumar 2019; Ranasinghe et al. 2020). This finding
 386 confirms the early co-integration between tourism and economic growth and shows the pace
 387 of adjustment from a short- to long-term equilibrium path. The results show that tourism has
 388 a statistically significant positive impact on economic growth. According to the model the
 389 principle of the minimum SBC value, we choose the ARDL (1, 0,1) model and the long-term
 390 impact estimation is shown in Table.4. Obviously, our model fits very well with the statistically
 391 significant independent arguments of the data.

392 Further the study used important control variables such as international trade, capital
 393 invested, money supply, financial development and exchange rate. Table 5 shows the results
 394 of control variables, the coefficient of trade is positive and statistically significant at 1%
 395 significant level. It shows that 1% increase in international trade leads to 0.31% increase in
 396 economic growth. Our results are in line with (Akadiri et al. 2019), they find that the
 397 improvement in the international trade will lead to higher level of economic growth. Next the
 398 coefficient of capital implies that 1% increase in helps to 0.24% rise in economic growth. Further
 399 money supply, financial development and exchange rates have positive impact at 1%
 400 significant level. The 1% increase in the money supply, financial development and exchange
 401 rates leads to 0.02%, 0.45% and 0.34% rise in economic growth.

402 **Table 4. Long Run Estimates from ARDL Model**

| Variable | Coefficient | Standard Error | T-Ratio |
|-------------------------------|-------------|----------------|----------------|
| TouE | 0.2134* | 0.0548 | 43.544[0.000] |
| Trade | 0.3100* | 0.0218 | 4.5432 [0.000] |
| Capi | 0.2343* | 0.3423 | 4.543[0.000] |
| MSupply | 0.0295 | 0.0453 | 4.484 [0.000] |
| F_Dvlp | 0.0425* | 0.2644 | 3.4321[0.000] |
| ExR | 0.3332* | 0.0332 | 2.3254 [0.000] |
| Constant | 3.6688* | 0.0778 | 5.3375 [0.000] |
| χ^2 (serial correlation) | | | 0.7386 |
| χ^2 (functional form) | | | 0.1644 |
| χ^2 (normality) | | | 0.4282 |
| χ^2 (heteroscedasticity) | | | 0.5848 |

403 **Source: Author's own calculation by using E-Views 5**

404 Note. * indicates significant at the 1 percent level.

405 **4.2.2 Short Run Test Estimation**

406 Table 5 shows the short run analysis results as well as the coefficient of error correction
 407 terms. When compared to the long run, the short run results are nearly identical in terms of

408 signs and are consistent with a priori expectations. Short-run estimates, on the other hand, have
 409 smaller magnitudes than long-run estimates. This result suggests that the variables we chose
 410 have a greater long-term impact on economic growth.

411 Table. 5 Short Run Estimates from ARDL Model

| Variable | Coefficient | Standard Error | T-Ratio |
|------------------------|-------------|----------------|------------------|
| Δ TouE | 0.4332*** | 0.0398 | 3.3382 [0.002] |
| Δ TouEPC | 0.3110*** | 0.0421 | -1.34206 [0.150] |
| Δ Capi | 0.2134*** | 0.2144 | -4.6796 [0.000] |
| Δ MSupply | 0.2893*** | 0.0444 | 1.2335[0.010] |
| Δ F_Dvlp | 0.0324*** | 0.2354 | 4.4525 [0.100] |
| Δ ExR | 0.4131*** | 0.0339 | 1.7386 [0.000] |
| <i>Diagnostic test</i> | | | |
| R-squared | | | 0.908 |
| F-Statistics | | | 8.0323 |
| Durbin-Watson's | | | 1.9070 |
| CUSUM | | | Stable |
| CUSUMSQ | | | Stable |

412 Source: Author's own calculation by using E-Views 5.

413 The calculated values of the F statistics given in the last row of Table 6 are statistically
 414 significant at the 1% significance level. This means that the overall adaptability of the model
 415 used is good. For this model, the results of Durbin-Watson's statistic value is less than 2, which
 416 indicates that there is no autocorrelation problem. In addition, the R square value is 0.908,
 417 which indicates that these independent individuals can expand economic growth change
 418 information in a short period, and other factors can be interpreted as 66%. In addition, due to
 419 structural changes in the country, Nepal's macroeconomic series may have witnessed structural
 420 breakthroughs. This result corroborates a similar finding of (Ohlan 2017).

421 The ARDL analysis indicates that the short-term difference in the long-term equilibrium
 422 of economic growth is adjusted by 2.95% annually. It can be seen that tourism is also the engine
 423 of economic growth in the short term. Further 1% increase in Per capita international tourism

424 income has increased by GDP (per capita) has increased by 4.25%, and other conditions have
425 remained unchanged. In the short run, the financial development coefficient can be ignored
426 (Gautam 2008), (Iram et al. 2020b),(Alemzero et al. 2020b),(Sun et al. 2020a) (Alemzero et al.
427 2020a).

428 In this manner, the national travel industry needs a stable political, legitimate and
429 monetary framework inside which it can work, which will give the travel industry exercises
430 authenticity (Korstanje and Tarlow 2012). Universal vacationers become progressively on edge
431 about the well-being and security while their occasion as opposed to residential travelers since
432 they do not have a place with the nation they visit. A cataclysmic event causes the declination
433 of vacationer landings in the affected zone and made the negative picture to the guest and
434 pushing them away from the goal (Massé 2016). Political insecurity is significant in the travel
435 industry. There are not many investigations that have exhibited the negative effect of fear
436 mongering on the travel industry. Hitchcock and Wesner (2008) found that political
437 unsteadiness significantly affects the travel industry request in both created and creating
438 nations. The outcomes showed that the travel industry in nations with less hazard inconstancy
439 isn't hurt by the hazard. Then again, chance impacts entries in poor and rich nations, its effect
440 on returns in rich nations is more than poor on.

441 **4.2 Linear Shipping Connectivity Index**

442 Linear shipping connectivity index (LSCI) is a global shipping network connectivity index
443 (Bartholdi et al., 2016). This index has five components: (I) the number of ships (ii) the
444 container carrying capacity (iii) the size of the vessel (iv) the number of services provided by
445 ships (v) the number of companies with containers available for execution (Balogh and Jámbor
446 2017). The connectivity index is calculated by the value of each component separated by the
447 base year 2004 for the maximum value of each component. Likewise, the average value of each
448 variable is obtained and divided by the base year 2004 overall average value, and multiplied

449 by a value of 100. Table 6 presents the results of LSCI, among south Asian countries, LSCI
 450 value of Sri Lanka is (47.21) while India is at second position and Pakistan at third. The U.N.
 451 Conference on Trade and Development (UNCTAD) reports this shipping link index. (Mihalic
 452 2016) analyzes the effect of the LSCI and port facilities on inland Caribbean freight levels. The
 453 study found close links between the facilities of liner shipping, port infrastructure and freight
 454 rates.

455 Table. 6 Liner Shipping Connectivity Index

| Year | India | Bangladesh | Pakistan | Maldives | Sri Lanka |
|------|-------|------------|----------|----------|-----------|
| 2004 | 34.14 | 5.20 | 20.18 | 4.15 | 34.68 |
| 2005 | 36.88 | 5.07 | 21.49 | 4.08 | 33.36 |
| 2006 | 42.90 | 5.29 | 21.82 | 3.90 | 37.31 |
| 2007 | 40.47 | 6.36 | 24.77 | 4.75 | 42.43 |
| 2008 | 42.18 | 6.40 | 24.61 | 5.45 | 46.08 |
| 2009 | 40.97 | 7.91 | 26.58 | 5.43 | 34.74 |
| 2010 | 41.40 | 7.55 | 29.48 | 1.65 | 40.23 |
| 2011 | 41.52 | 8.15 | 30.54 | 1.62 | 41.13 |
| 2012 | 41.29 | 8.02 | 28.12 | 1.60 | 43.43 |
| 2013 | 44.35 | 7.96 | 27.71 | 8.12 | 43.01 |
| 2014 | 45.61 | 8.40 | 27.50 | 7.79 | 53.04 |
| 2015 | 45.85 | 9.31 | 32.33 | 7.59 | 54.43 |
| 2016 | 58.21 | 10.95 | 34.82 | 7.97 | 61.21 |
| 2017 | 56.90 | 11.87 | 34.86 | 3.45 | 70.62 |
| 2018 | 59.90 | 12.07 | 38.20 | 7.76 | 72.46 |
| Mean | 44.84 | 8.03 | 28.20 | 5.02 | 47.21 |

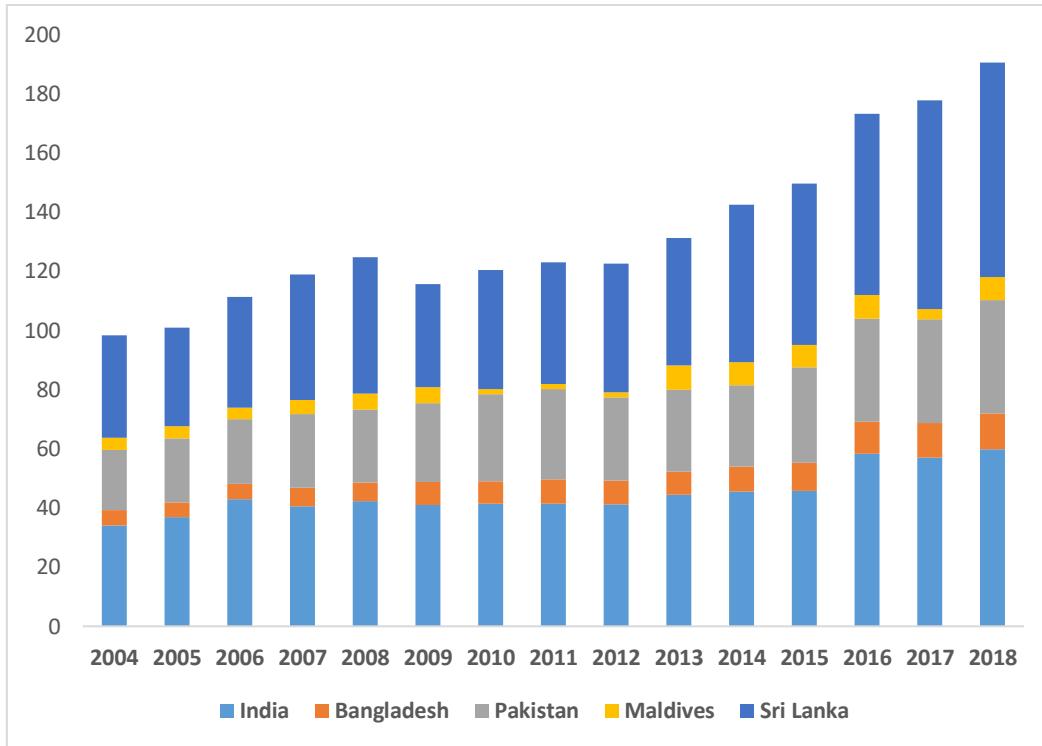
456
 457 This paper explores the reduction in freight rate due to developed port infrastructure that
 458 includes the length of the berth, storage capacity and port areas (figure 3). The study also found
 459 that numbers of ports are taking more advantage of their geographic location. Few other
 460 measures, such as reducing transport costs and improving shipping services, could improve
 461 transport connectivity and competitiveness in trade. (Gao et al. 2019) analyzed the effect of

462 liner shipping connectivity on short-term and long-term bases of trade flows in the South
463 African economy. With 142 trading partners this work takes into account factors such as trade
464 sailing distances, GDP and direct air distance. This study concludes that the positive effect of
465 the common direct connection number and the level of competition on the trade flows is
466 significant. However, the number of transshipment and sailing distance has a negative impact
467 on both short and long-term trade flows (Khan et al. 2019) and (Jansen and Jonker 2018).

468 One of the noteworthy findings that emerge from this research study is that countries do
469 not need to plan ever larger ships or vessels for their competition in foreign trade. This index
470 comprises different dimensions including regional integration, trade and investment,
471 infrastructure and connectivity, value chain of the region and free movement of people. While
472 other dimensions include money and finance and institutional and social integration. This
473 study concludes that Asia is found to be well integrated into communication, commerce and
474 free movement of people while Asia lags in institutional and social dimensions (Susanto 2019)
475 and (Jermsittiparsert and Chankoson 2019).

476 According to (Gössling et al. 2018) biological sciences can be used to study the evolution
477 of ocean star clusters. Changes in the performance and composition of maritime clusters reflect
478 their various roles in different regions and periods, so four types of maritime clusters can be
479 identified: (i) In the first category, maritime activities within the cluster are concentrated in
480 Port (cargo handling) function and transportation function. In global regional supply chains,
481 maritime clusters have a special role because they can process and distribute information.
482 Offshore clusters are considered hubs of the supply chain in the global or regional economic
483 and commercial markets. The best examples of such maritime clusters are in Rotterdam, Hong
484 Kong and Singapore (Horng and Tsai 2012) and (Wong et al. 2008). The fourth-generation
485 cluster appeared in the 1990s and is physically separate but interconnected via a common
486 operator or department for management. This is due mainly to the vertical and horizontal

487 integration which transport operators have adopted. These are service centers (ship financing,
488 maritime law, marine insurance, ship registration, ship leasing, shipbrokers) and can support
489 very remote customers, a good example is London (Yeung et al. 2004) and (Khan et al. 1990).



490

491 **Figure 3. Liner Shipping Connectivity Index of each country**

492 A Commitment to Sustainable Growth in the Caribbean," and in the process helped shape
493 new policies and investments in the region. We are beginning to see many good examples of
494 these companies investing directly in the health of coral reefs that they know can support their
495 businesses. The number and size of the fish within this reserve has increased significantly,
496 supporting coral reefs around the surrounding island (Sun et al. 2020b). Its economic value as
497 well as the value of fish processing, carbon stockpiling and coastal protection. By revealing
498 where and how revenue is generated, MOW's graphs and tools can help companies fully
499 understand the natural systems that support their business and make new investments (Mohsin
500 et al. 2019b).

501 The idea of focusing on nature is not a new concept, but MOW's comprehensive and
502 focused experience provides the travel and tourism industry with an opportunity to lead the

503 private sector and institutionalize natural values into business practices and corporate
504 sustainability. Once we know when we need it, we will take advantage of the business
505 opportunities that exist and begin a wider campaign for innovation and sustainable
506 development. The ocean occupies more than two-thirds of the earth's surface, provides food,
507 and resources, produces oxygen, absorbs greenhouse gases, tracks climate change, establishes
508 weather patterns and temperatures, and serves as a highway for international maritime trade.
509 In fostering sustainable development, economic growth and livelihoods, the ocean will play an
510 important role (Mohsin et al. 2019a). It is aimed at expanding coastal States' economic borders
511 beyond their territories. The marine economy includes a sustainable economy that targets the
512 marine environment, associated biodiversity, ecosystems, species and genetic resources,
513 including marine organisms (from fish, algae to micro-organisms) and offshore natural
514 resources while ensuring their sustainable use. The value of the global marine economy is
515 estimated to be between 3-6 trillion US dollars per year and more than 3 billion people depend
516 on the oceans for their livelihood.

517 UNCTAD supports developing countries in identifying opportunities and challenges that
518 the marine economy may present. It also supports national trade and other competent
519 authorities in the design and creation of an enabling policy and regulatory environment to
520 promote the development and development of the sustainable marine economic sector through
521 the definition and implementation of national and regional marine economic and trade
522 strategies. The strategy's goal is to achieve convergence and reinforcement of various linkages
523 and phases of selected value chains at the national level to enter domestic, regional, and
524 international markets. The content of the draft strategy and action plan was based on feedback
525 obtained in 2018 during the first national workshop for stakeholders. The draft action plan will
526 include a set of strategic steps aimed at executing the strategy, a list of key participants and
527 stakeholders, an implementation timeline and an estimation of the required resources.

528 Following debate, review and approval of the OETS report and action plan, UNCTAD and
529 DOALOS will collaborate with the Commonwealth Secretariat to obtain Belize's support for
530 the implementation of 1-2 identified priority measures within their mandates. Everything
531 lessons learned in Belize and other recipient countries (Costa Rica and Barbados) will be
532 discussed at the fifteenth UNCTAD regional event in 2020, likely in Barbados.

533 **4.3 International inbound tourists**

534 The overall number of visitors who fly to a destination country other than their regular
535 residence are foreign inbound tourists (see table 7). The visitors' visit to the place of destination
536 does not exceed 12 months. And the object of the visit is a non-earnings and remuneration
537 operation. A measure of the same-day tourists, cruise and air passengers and cruise participants
538 is used as a number of tourist arrivals when there is a lack of data availability. Large data are
539 gathered from tourism accommodation facilities. In different countries, however, the number
540 of arrivals and their calculation is different (Hamilton et al. 2015). The number of arrivals is
541 generally not considered to be the number of people who fly. Every time a person who is
542 supposed to make multiple trips to a particular country within a given period is counted as a
543 new arrival. There's no hard distinction between current industries and new ones. In some
544 countries, coastal aquaculture is already mature, but on an industrial scale, it has become a
545 high-tech and technology-intensive operation and hopes to expand more offshore activities;
546 huge advances in satellite

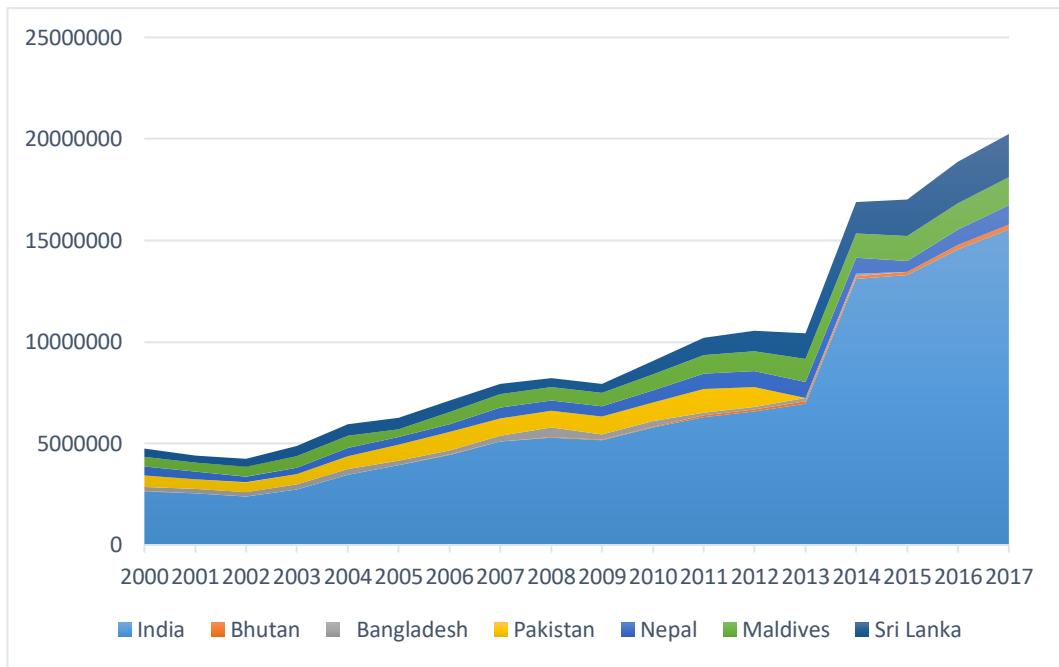
547 The cruise industry is focusing on new destinations like the Arctic and Antarctica. The
548 division into mature and emerging industries nonetheless provides a pragmatic and manageable
549 approach to the project. The structure of the global shipping sector will experience major
550 changes in the coming decades. This is partly because of global economic growth and
551 increasing demand. For example, container shipments tend to continue to grow rapidly in the
552 shipping sector and container shipments could triple by 2035. While aquaculture will be the

553 main driver of total production, global fisheries output is expected to increase by around one-
 554 fifth over the next decade. Although it has improved in recent years, due to the lack of strict
 555 management strategies to restore fisheries to biologically sustainable productivity levels, there
 556 is little or no space for further expansion of the wild fish captured (see figure 4). The aging
 557 population, rising incomes and relatively low transport costs would render coastal and marine
 558 areas more attractive in tourism. At the same time, as temperature, changes in ocean acidity
 559 and rising sea levels affect the movement of fish stocks, new trade routes, port structures, and
 560 the creation of new tourist attractions and attractions, climate change will also affect the
 561 development of traditional marine industries while destroying other people (Chen et al. 2018).

562 **Table. 7 Number of Tourists Arrivals**

| Year | India | Bhutan | Bangladesh | Pakistan | Nepal | Maldives | Sri Lanka |
|------|----------|--------|------------|----------|--------|----------|-----------|
| 2000 | 2649000 | 7600 | 199000 | 557000 | 464000 | 467000 | 400000 |
| 2001 | 2537000 | 6400 | 207000 | 500000 | 361000 | 461000 | 337000 |
| 2002 | 2384000 | 5600 | 207000 | 498000 | 275000 | 485000 | 393000 |
| 2003 | 2726000 | 6300 | 245000 | 501000 | 338000 | 564000 | 501000 |
| 2004 | 3457000 | 9200 | 271000 | 648000 | 385000 | 617000 | 566000 |
| 2005 | 3919000 | 13600 | 208000 | 798000 | 375000 | 395000 | 549000 |
| 2006 | 4447000 | 17300 | 200000 | 898000 | 384000 | 602000 | 560000 |
| 2007 | 5082000 | 21000 | 289000 | 840000 | 527000 | 676000 | 494000 |
| 2008 | 5283000 | 28000 | 467000 | 823000 | 500000 | 683000 | 438000 |
| 2009 | 5168000 | 23000 | 267000 | 855000 | 510000 | 656000 | 448000 |
| 2010 | 5776000 | 41000 | 303000 | 907000 | 603000 | 792000 | 654000 |
| 2011 | 6309000 | 66000 | 155000 | 1161000 | 736000 | 931000 | 856000 |
| 2012 | 6578000 | 105000 | 125000 | 966000 | 803000 | 958000 | 1006000 |
| 2013 | 6968000 | 116000 | 148000 | ----- | 798000 | 1125000 | 1275000 |
| 2014 | 13107000 | 133000 | 125000 | ----- | 790000 | 1205000 | 1527000 |
| 2015 | 13284000 | 155000 | ----- | ----- | 539000 | 1234000 | 1798000 |
| 2016 | 14570000 | 210000 | ----- | ----- | 753000 | 1286000 | 2051000 |
| 2017 | 15543000 | 255000 | ----- | ----- | 940000 | 1390000 | 2116400 |

563



564

565 Figure 4. Total number of tourist's arrival and environment

566 Ahmad et al. (2019) drew up tourism as a double-edged sword that contributes to economic
 567 growth. But this significant portion of tourism has the opportunity cost of destroying the
 568 climate. The study results indicate that tourism has adverse environmental consequences for
 569 two countries, Indonesia and the Philippines (Hendijani, 2015). A healthy ocean is important
 570 not only to our environmental health but also to promote economic growth, job creation and
 571 poverty eradication (Li et al., 2021; UN Environment, 2017). Recognizing the great potential
 572 of the blue economy, world leaders and scientists conducted a strategic discussion on the future
 573 of our oceans at the first Sustainable Blue Economy Conference held in November 2018 in
 574 Nairobi, Kenya (EU Commission Maritime Affair, 2015; Mayer et al., 2016; Potgieter, 2018).
 575 The planet should improve the health of the seas, and the oceans, lakes, rivers and habitats they
 576 sustain are rapidly under pressure and global decline(Focardi et al. 2006). Marine economic
 577 activity management must be put in the physical environment in which it operates: a flowing,
 578 buoyant three-dimensional environment that covers two-thirds of the earth's surface (Yang et
 579 al. 2021), (He et al. 2020) and (Mohsin et al. 2020b).

580 The obvious (in some cases less apparent) variations between land and sea are significant in
581 how to handle human activities in two distinct environments. Nonetheless, although these
582 differences affect the environment and marine operational outcomes, many of the concepts and
583 technologies used in marine planning and management are often borrowed from land practices.
584 Marine industry the sectorial scope of the marine economy in marine economic research varies
585 greatly from country to country (Ikram et al. 2019a), (Sun et al. 2019) and (Ikram et al. 2019b).
586 Those sectors may be removed from the marine economy in one country but not in another.
587 The definitions of the classifications and divisions used, however, vary greatly from country to
588 country. There are no definitions and statistical terms agreed internationally for marine
589 activities (Park, 2014). In 2010 the maritime industry directly contributed about 31 million full-
590 time jobs, accounting for about 1 percent of the global workforce (about 1.5 percent of global
591 active employment).

592 **5. Conclusion and Policy Implication**

593 The objective of this paper is policy-based analysis of ocean and marine economy and
594 tourism of south Asia through ARDL regression analysis over the period of 2000 to 2017. The
595 findings of the study reveal that tourism earning is statistically positive at 1% significant level,
596 which indicate in the long run, a 1% increase in international tourism earning leads to a 0.22
597 percent increase in economic growth (GDP). The finding supports the tourism-led growth
598 hypothesis, which states that improvements in inbound tourism can lead to increased economic
599 growth. Further the findings showed that the short run results are nearly identical in terms of
600 signs and are consistent with a priori expectations. Short-run estimates, on the other hand, have
601 smaller magnitudes than long-run estimates. This result suggests that the variables we chose
602 have a greater long-term impact on economic growth. A recent study published in the Journal
603 of Ocean Policy by the Ministry of Oceans and Oceans shows that coral reefs around the world
604 support 70 million trips a year and make these reefs a strong tourism driver. Overall, coral reefs

605 are bringing \$36 billion annually in economic value to the world. Of this \$36 billion, \$19 billion
606 is real "on-reef" tourism, such as diving, snorkeling, glass bottom boating, and watching
607 wildlife on the reef. The remaining \$16 billion comes from tourism in the "close coral reefs,"
608 which involves other activities from admiring beautiful views and beaches to local seafood,
609 boarding paddles and sheltering the surrounding reefs.

610 Through protecting the local ocean and marine resources, economic benefits of coastal
611 and marine economy and marine tourism can be achieved. Sustainable marine tourism will help
612 protect the environment and contribute significantly to sustainable economic growth Ocean
613 economy and tourism policy implications also include ensuring that every person abides by the
614 same law in protecting marine resources. Ensure rules that hotels, businesses and residents are
615 not contributing to littering and polluting the marine environment. MPAs are the tourist
616 destinations of greatest attraction. Tourists enjoyed visiting endangered species and beautiful
617 beaches inside well-managed MPAs. Tourists would charge a visit fee that would support local
618 communities in their protection and wellbeing. Another way of increasing the economic
619 benefits of the ocean and marine economy and tourism is by pursuing "self-governance in the
620 environment."

621 **Policy Implication**

622 It is clear that when tourists leave the fishing or aquaculture industries, they cannot
623 accommodate the locals in terms of economic well-being. Therefore, it is imperative that when
624 the tourism industry is offered and prioritized by the community, the people dependent on this
625 resource will be made habitable and eligible. Security measures were not taken before the risky
626 aspects of the society and full tourism was arranged and a step had to be taken before designing
627 measures for the development of tourism. The ecosystem is more valuable if the two industries
628 work together. But, in most communities, self-deprecation measures have to be limited. It is
629 experienced that, with low literacy levels, poor organization, communication is impaired and

630 problems need to be understood and communicated. Thus, assistance from the government is
631 needed in the early stages. For fishermen and aquaculture people, there was no difference
632 between training programs (wildlife care or hospitality training) in which they were part of the
633 tourism manpower. Such a curriculum not only makes it difficult for locals to take advantage
634 of the difficulty of fasting but also enables them to preserve awareness of natural information.

635 It is not just a demonstration of tourism but also a regional economy that seeks to diversify
636 the economic well-being and employment prospects of local villagers. This requires proper
637 planning, monitoring, and implementation. For example, the MPA's decision on land-bound
638 fishermen may not be of any use to the fishermen's consensus. In other words, if there is a
639 history of tourism promotion, the traditional activity stores do not know anything about the
640 priority of this, but it is important to mention that other resource-based consumers are also
641 involved in promoting it.

642 This work regularly describes the economic activities that take place in the marine
643 environment, and separates these activities from South Asia's national accounts, and estimates
644 that the activities in the maritime economy affect the Asia economy. Become a big part. That's
645 the ratio that was previously thought. Therefore, this article demonstrates the feasibility of the
646 maritime economy and has many important implications for maritime policy.

647 First, the estimate could provide a "blue" region for growth measures and maritime
648 industrial strategy. Adopting this systematic approach for the next edition of tourism will
649 provide a global comparison of economic activity in these sectors while using this approach to
650 include emerging maritime sectors in future estimates.

651 Second This finding is important in light of South Asia's strategic initiative to produce
652 low-carbon energy. However, many offshore wind farms are still being built and it is expected
653 that technologies will be rapidly acquired in these areas, so the ongoing impact of offshore
654 winds on the economy should be constantly monitored.

655 Third, this estimate can form the basis of the view of marine natural capital because the
656 economic sector is not separate, therefore economic activities have to be linked to aspects of
657 marine natural capital. The natural capital approach links the state of environmental assets to
658 the socio-economic benefits they can provide to society, and are essential for policy-making in
659 Asia. Emerging research linking the economy to natural capital can reflect the effects of policy
660 on the environment and the economy and is expected to improve understanding of trade
661 relations between the economy and the environment. The implementation of the natural capital
662 approach is still in its early stages, although there are plans to issue natural capital accounts for
663 the maritime area, which would enable a link between the natural capital accounts and the
664 maritime economy sectors.

665 Fourth, this assessment may add to the evidence used in maritime planning and
666 environmental impact studies. Baseline assessments are currently used in marine projects for
667 employment and maritime planning. However, certain departments have low levels of
668 confidence, and basic research recognizes that detailed studies of marine economic activities
669 will explain the involvement and connections between maritime planning departments.
670 Therefore, our systematic approach can be used to improve the basic estimate of maritime
671 projects by providing the latest estimate of multiplication. The Marine table developed here
672 can also be scaled up to specific areas of Asia. therefore, the production in and coastal project
673 areas. Can be estimated. So that it can be used as an economic basis. The economic sectors
674 described in this study have been mapped for those used for maritime planning and are included
675 in the additional material.

676 Finally, our method of purposefully assessing the impact of economic activities on the
677 maritime sector can help strengthen maritime policy and evidence. Despite its limitations, this
678 estimate can help policymakers and planners better understand the economic impact of
679 maritime activities. At the same time, continued use of this method may help assess the impact

680 of changing structures on the marine economy and determine its impact on employment. Future
681 research may improve or update this estimate, apply it at the regional level, or incorporate the
682 result into a natural capital model to investigate the trade relationship between the economy
683 and natural capital production. There are also extensive contributions to other locations found
684 in this study that are based specifically on the need to reach activity store trips. Future local
685 offerings must mobilize local people to participate in support programs and tourism activity
686 stores should be the style of their events.

687

688 **Compliance with ethical standards**

689 **Competing interests:** The authors declare that they have no competing interests.

690 **Author Contribution:** Conceptualization, methodology, **Liu Li**; review, visualization: **Baijun**
691 **Wu**; data curation, supervision, visualization, editing; **Ataul Karim Patwary**; writing of draft,
692 software and editing:

693 **Data availability:** The data that support the findings of this study are openly available on
694 request.

695 **Funding:** This research did not receive any specific funding from public, commercial or non-
696 profit sector funding agencies.

697 **Ethical approval and consent to participate:** We declare that we have no human participants,
698 human data or human issues.

699 **Consent for publication:** We do not have any individual person's data in any form.

700

701 **References**

- 702
- 703 Abbas Q, Nurunnabi M, Alfakhri Y, et al (2020) The role of fixed capital formation, renewable
704 and non-renewable energy in economic growth and carbon emission: a case study of Belt
705 and Road Initiative project. Environ Sci Pollut Res. <https://doi.org/10.1007/s11356-020-10413-y>
- 707 Ahmad M, Li H, Anser MK, et al (2020) Are the intensity of energy use, land agglomeration,
708 CO₂ emissions, and economic progress dynamically interlinked across development
709 levels? Energy Environ. <https://doi.org/10.1177/0958305X20949471>

- 710 Akadiri S Saint, Alola AA, Akadiri AC (2019) The role of globalization, real income, tourism
711 in environmental sustainability target. Evidence from Turkey. *Sci Total Environ* 687:423–
712 432. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2019.06.139>
- 713 Alemzero DA, Iqbal N, Iqbal S, et al (2020a) Assessing the perceived impact of exploration
714 and production of hydrocarbons on households perspective of environmental regulation
715 in Ghana. *Environ Sci Pollut Res*. <https://doi.org/10.1007/s11356-020-10880-3>
- 716 Alemzero DA, Sun H, Mohsin M, et al (2020b) Assessing energy security in Africa based on
717 multi-dimensional approach of principal composite analysis. *Environ Sci Pollut Res*.
718 <https://doi.org/10.1007/s11356-020-10554-0>
- 719 Anser MK (2019) Impact of energy consumption and human activities on carbon emissions in
720 Pakistan: Application of stirpat model. *Environ Sci Pollut Res*.
721 <https://doi.org/10.1007/s11356-019-04859-y>
- 722 Anser MK, Alharthi M, Aziz B, Wasim S (2020a) Impact of urbanization, economic growth,
723 and population size on residential carbon emissions in the SAARC countries. *Clean
724 Technol Environ Policy*. <https://doi.org/10.1007/s10098-020-01833-y>
- 725 Anser MK, Hanif I, Alharthi M, Chaudhry IS (2020b) Impact of fossil fuels, renewable energy
726 consumption and industrial growth on carbon emissions in Latin American and Caribbean
727 economies. *Atmosfera*. <https://doi.org/10.20937/ATM.52732>
- 728 Anser MK, Iqbal W, Ahmad US, et al (2020c) Environmental efficiency and the role of energy
729 innovation in emissions reduction. *Environ Sci Pollut Res*.
730 <https://doi.org/10.1007/s11356-020-09129-w>
- 731 Anser MK, Yousaf Z, Nassani AA, et al (2020d) International tourism, social distribution, and
732 environmental Kuznets curve: evidence from a panel of G-7 countries. *Environ Sci Pollut
733 Res*. <https://doi.org/10.1007/s11356-019-07196-2>
- 734 Anser MK, Yousaf Z, Usman B, et al (2020e) Management of water, energy, and food
735 resources: Go for green policies. *J Clean Prod.*
736 <https://doi.org/10.1016/j.jclepro.2019.119662>
- 737 Anser MK, Yousaf Z, Zaman K, et al (2020f) Determination of resource curse hypothesis in
738 mediation of financial development and clean energy sources: Go-for-green resource
739 policies. *Resour Policy*. <https://doi.org/10.1016/j.resourpol.2020.101640>
- 740 Anser MK, Zhang Z, Kanwal L (2018) Moderating effect of innovation on corporate social
741 responsibility and firm performance in realm of sustainable development. *Corp Soc
742 Responsib Environ Manag*. <https://doi.org/10.1002/csr.1495>
- 743 Asif M, Khan KB, Anser MK, et al (2020) Dynamic interaction between financial development
744 and natural resources: Evaluating the ‘Resource curse’ hypothesis. *Resour Policy*.
745 <https://doi.org/10.1016/j.resourpol.2019.101566>
- 746 Baloch ZA, Tan Q, Iqbal N, et al (2020) Trilemma assessment of energy intensity, efficiency,
747 and environmental index: evidence from BRICS countries. *Environ Sci Pollut Res*.
748 <https://doi.org/10.1007/s11356-020-09578-3>
- 749 Balogh JM, Jámbor A (2017) International Journal of Energy Economics and Policy
750 Determinants of CO₂ Emission: A Global Evidence. *Int J Energy Econ Policy* | 7:217–
751 226
- 752 Chen C, Dai J, Li S (2018) Research on dynamic distribution and prediction of inbound tourists
753 in China. In: Proceedings of the International Conference on Electronic Business (ICEB).
754 pp 795–799
- 755 Chien, F., Pantamee, A. A., Hussain, M. S., Chupradit, S., Nawaz, M. A., & Mohsin, M. (2021).
756 Nexus between financial innovation and bankruptcy: Evidence from information,
757 communication and technology (ICT) sector. *The Singapore Economic Review*, 1-22.
758 doi:<https://doi.org/10.1142/S0217590821500181>
- 759 Chien, F., Sadiq, M., Kamran, H. W., Nawaz, M. A., Hussain, M. S., & Raza, M. (2021). Co-

- 760 movement of energy prices and stock market return: environmental wavelet nexus of
761 COVID-19 pandemic from the USA, Europe, and China. Environmental Science and
762 Pollution Research, 1-15.
- 763 Dellink R, Lanzi E, Chateau J (2019) The Sectoral and Regional Economic Consequences of
764 Climate Change to 2060. Environ Resour Econ 72:309–363.
765 <https://doi.org/10.1007/s10640-017-0197-5>
- 766 Focardi S, Corsi I, Mazzuoli S, et al (2006) Integrating remote sensing approach with pollution
767 monitoring tools for aquatic
768 ecosystem risk assessment and management: A case study of Lake Victoria (UGANDA).
769 Environ Monit Assess. <https://doi.org/10.1007/s10661-005-9180-7>
- 770 Gao J, Xu W, Zhang L (2019) Tourism, economic growth, and tourism-induced EKC
771 hypothesis: evidence from the Mediterranean region. Empir Econ.
772 <https://doi.org/10.1007/s00181-019-01787-1>
- 773 Gautam BP (2008) Economic Impact of Tourism Finance in Nepal. Econ Rev 62–73
- 774 Gössling S, Hall CM, Scott D (2018) Coastal and Ocean Tourism. In: Handbook on Marine
775 Environment Protection. pp 773–790
- 776 Gössling S, Scott D, Hall CM (2020) Pandemics, tourism and global change: a rapid assessment
777 of COVID-19. J Sustain Tour. <https://doi.org/10.1080/09669582.2020.1758708>
- 778 Hadjimichael M (2018) A call for a blue degrowth: Unravelling the European Union's fisheries
779 and maritime policies. Mar Policy. <https://doi.org/10.1016/j.marpol.2018.05.007>
- 780 Hamilton JR, Tee S, Prideaux MC (2015) Inbound event tourism attendees: A group qualities-
781 values approach at destination. TQM J 27:197–212. <https://doi.org/10.1108/TQM-10-2014-0092>
- 783 He W, Abbas Q, Alharthi M, et al (2020) Integration of renewable hydrogen in light-duty
784 vehicle: Nexus between energy security and low carbon emission resources. Int J
785 Hydrogen Energy. <https://doi.org/10.1016/j.ijhydene.2020.06.177>
- 786 Hitchcock M, Wesner S (2008) The “SHIP” approach and its value as a community-based
787 research method in Bali, Indonesia. Curr Issues Tour 11:84–100.
788 <https://doi.org/10.2167/citMP011.0>
- 789 Horng JS, Tsai CT (2012) Exploring Marketing Strategies for Culinary Tourism in Hong Kong
790 and Singapore. Asia Pacific J Tour Res 17:277–300.
791 <https://doi.org/10.1080/10941665.2011.625432>
- 792 Hou Y, Iqbal W, Shaikh GM, et al (2019) Measuring energy efficiency and environmental
793 performance: A case of South Asia. Processes 7:325. <https://doi.org/10.3390/pr7060325>
- 794 Ikram M, Mahmoudi A, Shah SZA, Mohsin M (2019a) Forecasting number of ISO 14001
795 certifications of selected countries: application of even GM (1,1), DGM, and NDGM
796 models. Environ Sci Pollut Res. <https://doi.org/10.1007/s11356-019-04534-2>
- 797 Ikram M, Sroufe R, Mohsin M, et al (2019b) Does CSR influence firm performance? A
798 longitudinal study of SME sectors of Pakistan. J Glob Responsib 11:27–53.
799 <https://doi.org/10.1108/jgr-12-2018-0088>
- 800 Iqbal W, Altalbe A, Fatima A, et al (2019a) A DEA approach for assessing the energy,
801 environmental and economic performance of top 20 industrial countries. Processes 7:902.
802 <https://doi.org/10.3390/PR7120902>
- 803 Iqbal W, Fatima A, Yumei H, et al (2020) Oil supply risk and affecting parameters associated
804 with oil supplementation and disruption. J Clean Prod 255:.
805 <https://doi.org/10.1016/j.jclepro.2020.120187>
- 806 Iqbal W, Yumei H, Abbas Q, et al (2019b) Assessment of wind energy potential for the
807 production of renewable hydrogen in Sindh Province of Pakistan. Processes.
808 <https://doi.org/10.3390/pr7040196>
- 809 Iram R, Anser MK, Awan RU, et al (2020a) Prioritization of Renewable Solar Energy to

- 810 Prevent Energy Insecurity: An Integrated Role. Singapore Econ Rev.
811 <https://doi.org/10.1142/S021759082043002X>
- 812 Iram R, Zhang J, Erdogan S, et al (2020b) Economics of energy and environmental efficiency:
813 evidence from OECD countries. Environ Sci Pollut Res. <https://doi.org/10.1007/s11356-019-07020-x>
- 814 Jansen DJ, Jonker N (2018) Fuel tourism in Dutch border regions: Are only salient price
815 differentials relevant? Energy Econ 74:143–153.
816 <https://doi.org/10.1016/j.eneco.2018.05.036>
- 817 Jermsittiparsert K, Chankoson T (2019) Behavior of tourism industry under the situation of
818 environmental threats and carbon emission: Time series analysis from Thailand. Int J
819 Energy Econ Policy 9:366–372. <https://doi.org/10.32479/ijep.8365>
- 820 Jun W, Waheed J, Hussain H, et al (2020) Working women and per capita household
821 consumption expenditures; an untouched reality. Zb Rad Ekon Fak au Rijeci.
822 <https://doi.org/10.18045/zbefri.2020.1.35>
- 823 Khan H, Seng CF, Cheong WK (1990) Tourism multiplier effects on Singapore. Ann Tour Res
824 17:408–418. [https://doi.org/10.1016/0160-7383\(90\)90006-D](https://doi.org/10.1016/0160-7383(90)90006-D)
- 825 Khan MTI, Yaseen MR, Ali Q (2019) Nexus between financial development, tourism,
826 renewable energy, and greenhouse gas emission in high-income countries: A continent-
827 wise analysis. Energy Econ 83:293–310. <https://doi.org/10.1016/j.eneco.2019.07.018>
- 828 Khokhar M, Hou Y, Rafique MA, Iqbal W (2020) Evaluating the social sustainability criteria
829 of supply chain management in manufacturing industries: A role of BWM in MCDM.
830 Probl Ekonomiki 2020(1). <https://doi.org/10.18045/pe.2020.1.35>
- 831 Klain SC, Satterfield T, Sinner J, et al (2018) Bird Killer, Industrial Intruder or Clean Energy?
832 Perceiving Risks to Ecosystem Services Due to an Offshore Wind Farm. Ecol Econ
833 143:111–129. <https://doi.org/10.1016/j.ecolecon.2017.06.030>
- 834 Korstanje ME, Tarlow P (2012) Being lost: Tourism, risk and vulnerability in the post-'9/11'
835 entertainment industry. J Tour Cult Chang 10:22–33.
836 <https://doi.org/10.1080/14766825.2011.639455>
- 837 Kreishan FMM (2010) Tourism and economic growth: The case of Jordan. Eur J Soc Sci
838 15:63–68
- 839 Kumar RA (2019) The Impact of Inbound Tourism on Economic Growth of Nepal. Int J Acad
840 Res Bus Soc Sci 9:.. <https://doi.org/10.6007/ijarbss/v9-i3/5647>
- 841 Lenzen M, Li M, Malik A, et al (2020) Global socio-economic losses and environmental gains
842 from the coronavirus pandemic. PLoS One. <https://doi.org/10.1371/journal.pone.0235654>
- 843 Li, W., Chien, F., Hsu, C.-C., Zhang, Y., Nawaz, M. A., Iqbal, S., & Mohsin, M. (2021). Nexus
844 between energy poverty and energy efficiency: Estimating the long-run dynamics.
845 Resources Policy, 72, 102063.
- 846 Lin K, Peng MYP, Anser MK, et al (2020) Bright harmony of environmental management
847 initiatives for achieving corporate social responsibility authenticity and legitimacy:
848 Glimpse of hotel and tourism industry. Corp Soc Responsib Environ Manag.
849 <https://doi.org/10.1002/csr.2076>
- 850 Liu A, Wu DC (2019) Tourism productivity and economic growth. Ann Tour Res 76:253–265.
851 <https://doi.org/10.1016/j.annals.2019.04.005>
- 852 Liu X, Peng MYP, Anser MK, et al (2020) Key Teacher Attitudes for Sustainable Development
853 of Student Employability by Social Cognitive Career Theory: The Mediating Roles of
854 Self-Efficacy and Problem-Based Learning. Front Psychol.
855 <https://doi.org/10.3389/fpsyg.2020.01945>
- 856 Ma T, Hong T, Zhang H (2015) Tourism spatial spillover effects and urban economic growth.
857 J Bus Res 68:74–80. <https://doi.org/10.1016/j.jbusres.2014.05.005>
- 858 Massé F (2016) The political ecology of human-wildlife conflict: Producing wilderness,

- 860 insecurity, and displacement in the Limpopo National Park. Conserv Soc 14:100–111.
861 <https://doi.org/10.4103/0972-4923.186331>
- 862 Mihalic T (2016) Sustainable-responsible tourism discourse - Towards “responsustable”
863 tourism. J Clean Prod. <https://doi.org/10.1016/j.jclepro.2014.12.062>
- 864 Min C ki, Roh T seon, Bak S (2016) Growth effects of leisure tourism and the level of economic
865 development. Appl Econ 48:7–17. <https://doi.org/10.1080/00036846.2015.1073838>
- 866 Mohsin M, Abbas Q, Zhang J, et al (2019a) Integrated effect of energy consumption, economic
867 development, and population growth on CO₂ based environmental degradation: a case of
868 transport sector. Environ Sci Pollut Res. <https://doi.org/10.1007/s11356-019-06372-8>
- 869 Mohsin M, Hanif I, Taghizadeh-Hesary F, et al (2021) Nexus between energy efficiency and
870 electricity reforms: A DEA-Based way forward for clean power development. Energy
871 Policy. <https://doi.org/10.1016/j.enpol.2020.112052>
- 872 Mohsin, M., Kamran, H. W., Nawaz, M. A., Hussain, M. S., & Dahri, A. S. (2021). Assessing
873 the impact of transition from nonrenewable to renewable energy consumption on
874 economic growth-environmental nexus from developing Asian economies. Journal of
875 environmental management, 284, 111999.
- 876 Mohsin M, Nurunnabi M, Zhang J, et al (2020a) The evaluation of efficiency and value addition
877 of IFRS endorsement towards earnings timeliness disclosure. Int J Financ Econ.
878 <https://doi.org/10.1002/ijfe.1878>
- 879 Mohsin M, Rasheed AK, Sun H, et al (2019b) Developing low carbon economies: An
880 aggregated composite index based on carbon emissions. Sustain Energy Technol
881 Assessments. <https://doi.org/10.1016/j.seta.2019.08.003>
- 882 Mohsin M, Taghizadeh-Hesary F, Panthamit N, et al (2020b) Developing Low Carbon Finance
883 Index: Evidence From Developed and Developing Economies. Financ Res Lett.
884 <https://doi.org/10.1016/j.frl.2020.101520>
- 885 Mohsin M, Zhou P, Iqbal N, Shah SAA (2018) Assessing oil supply security of South Asia.
886 Energy 155:438–447. <https://doi.org/10.1016/J.ENERGY.2018.04.116>
- 887 Mulok D, Kogid M, Asid R, Lily J (2012) Tourism and Economic Growth Linkages. BIMP-
888 EAGA J Sustain Tour Dev 1:3–10
- 889 Nawaz, M. A., & Hassan, S. (2016a). Investment and Tourism: Insights from the literature.
890 Journal of Economic & Management Perspectives, 10(4), 581-590.
- 891 Nawaz, M. A., & Hassan, S. (2016b). Tourism in South Asia. Journal of Economic &
892 Management Perspectives, 10(4), 591-601.
- 893 Nawaz, M. A., Hussain, M. S., Kamran, H. W., Ehsanullah, S., Maheen, R., & Shair, F. (2021).
894 Trilemma association of energy consumption, carbon emission, and economic growth of
895 BRICS and OECD regions: Quantile regression estimation. Environmental Science and
896 Pollution Research, 28, 16014-16028. doi:<https://doi.org/10.1007/s11356-020-11823-8>
- 897 Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). Nexus
898 between green finance and climate change mitigation in N-11 and BRICS countries:
899 empirical estimation through difference in differences (DID) approach. Environmental
900 Science and Pollution Research, 28(6), 6504-6519.
- 901 Nepal Tourism Board (2018) Geography of Nepal. Nepal Tour. Board
- 902 OECD (2017) OECD Studies on Tourism Tourism Policy Review of Mexico. In: OECD Stud.
903 Tour.
- 904 OECD (2020) Tourism Policy Responses to the coronavirus (COVID-19). Oecd
- 905 Ohlan R (2017) The relationship between tourism, financial development and economic growth
906 in India. Futur Bus J 3:9–22. <https://doi.org/10.1016/J.FBJ.2017.01.003>
- 907 Pratt S (2015) The economic impact of tourism in SIDS. Ann Tour Res 52:148–160.
908 <https://doi.org/10.1016/j.annals.2015.03.005>
- 909 Prideaux B, Thompson M, Pabel A (2020) Lessons from COVID-19 can prepare global tourism

- for the economic transformation needed to combat climate change. *Tour Geogr.* <https://doi.org/10.1080/14616688.2020.1762117>
- Ranasinghe R, Damunupola A, Wijesundara S, et al (2020) Tourism after Corona: Impacts of Covid 19 Pandemic and Way Forward for Tourism, Hotel and Mice Industry in Sri Lanka. *SSRN Electron J.* <https://doi.org/10.2139/ssrn.3587170>
- Sarker SA, Wang S, Mehedi Adnan KM, et al (2020) Economic viability and socio-environmental impacts of solar home systems for off-grid rural electrification in Bangladesh. *Energies.* <https://doi.org/10.3390/en13030679>
- Shair, F., Shaorong, S., Kamran, H. W., Hussain, M. S., & Nawaz, M. A. (2021). Assessing the efficiency and total factor productivity growth of the banking industry: do environmental concerns matter? *Environmental Science and Pollution Research*, 1-17. doi:<https://doi.org/10.1007/s11356-020-11938-y>
- Siegel J (2011) Thoughts on L2 listening pedagogy
- Sokhanvar A (2018) Does foreign direct investment accelerate tourism and economic growth within Europe? *Tour Manag Perspect* 29:86–96. <https://doi.org/10.1016/j.tmp.2018.10.005>
- Songling Y, Ishtiaq M, Thanh BT (2019) Tourism Industry and Economic Growth Nexus in Beijing, China. *Economies* 7:25. <https://doi.org/10.3390/economies7010025>
- Suhel S, Bashir A (2018) The role of tourism toward economic growth in the local economy. *Econ J Emerg Mark* 10:32–39. <https://doi.org/10.20885/ejem.vol10.iss1.art4>
- Sun H ping, Tariq G, Haris M, Mohsin M (2019) Evaluating the environmental effects of economic openness: evidence from SAARC countries. *Environ Sci Pollut Res.* <https://doi.org/10.1007/s11356-019-05750-6>
- Sun, H., Awan, R. U., Nawaz, M. A., Mohsin, M., Rasheed, A. K., & Iqbal, N. (2020). Assessing the socio-economic viability of solar commercialization and electrification in south Asian countries. *Environment, Development and Sustainability*, 1-23.
- Sun H, Pofoura AK, Adjei Mensah I, et al (2020a) The role of environmental entrepreneurship for sustainable development: Evidence from 35 countries in Sub-Saharan Africa. *Sci Total Environ.* <https://doi.org/10.1016/j.scitotenv.2020.140132>
- Sun L, Qin L, Taghizadeh-Hesary F, et al (2020b) Analyzing carbon emission transfer network structure among provinces in China: new evidence from social network analysis. *Environ Sci Pollut Res.* <https://doi.org/10.1007/s11356-020-08911-0>
- Susanto AB (2019) The effect of government policy and environmental sustainability on the performance of tourism business competitiveness: Empirical assessment on the reports of international tourism agencies. *Int J Energy Econ Policy* 9:439–446. <https://doi.org/10.32479/ijEEP.8297>
- Tehreem HS, Anser MK, Nassani AA, et al (2020) Impact of average temperature, energy demand, sectoral value added, and population growth on water resource quality and mortality rate: it is time to stop waiting around. *Environ Sci Pollut Res.* <https://doi.org/10.1007/s11356-020-09822-w>
- The World Travel & Tourism Council (2015) Travel & Tourism Economic impact Vanuatu. World Travel Tour Counc
- tourism C, experience T (2016) Assessment of Cultural Tourism Experience in Selected Attraction in Nanyang, Henan Province in China. *J Tour Hosp* 05: <https://doi.org/10.4172/2167-0269.1000205>
- Tourism Tasmania (2018) Tasmanian Tourism Snapshot -Year ending December 2017
- Wasif Rasheed HM, Anser MK (2017) Effect on Brand Loyalty in Mobile Phone Purchasing (A Case Study In Bahawalpur, Pakistan). *J Public Adm Gov.* <https://doi.org/10.5296/jpag.v7i1.11042>
- Wong EPY, Bauer TG, Wong KKF (2008) A critical comparison of tourism policies of Hong

- 960 Kong and Singapore - An avenue to mutual learning. *Int J Tour Res* 10:193–206.
961 <https://doi.org/10.1002/jtr.656>
- 962 World Bank (2018) World Bank- Data-GDP growth(annual). In: World Bank
963 World Travel & Tourism Council (2016) Economic Impact 2016 - Annual Update Summary.
964 World Travel Tour Counc 1–4
- 965 Xu Y, Chen Z, Peng MYP, Anser MK (2020) Enhancing Consumer Online Purchase Intention
966 Through Gamification in China: Perspective of Cognitive Evaluation Theory. *Front*
967 *Psychol.* <https://doi.org/10.3389/fpsyg.2020.581200>
- 968 Yang Z, Abbas Q, Hanif I, et al (2021) Short- and long-run influence of energy utilization and
969 economic growth on carbon discharge in emerging SREB economies. *Renew Energy*.
970 <https://doi.org/10.1016/j.renene.2020.10.141>
- 971 Yeung S, Wong J, Ko E (2004) Preferred shopping destination: Hong Kong versus Singapore.
972 *Int J Tour Res* 6:85–96. <https://doi.org/10.1002/jtr.474>
- 973 Yousaf S, Anser MK, Tariq M, et al (2020) Does technology orientation predict firm
974 performance through firm innovativeness? *World J Entrep Manag Sustain Dev*.
975 <https://doi.org/10.1108/WJEMSD-11-2019-0091>
- 976 Yumei H, Iqbal W, Nurunnabi M, et al (2021) Nexus between corporate social responsibility
977 and firm's perceived performance: evidence from SME sector of developing economies.
978 *Environ Sci Pollut Res* 28:2132–2145. <https://doi.org/10.1007/s11356-020-10415-w>
- 979 Zhuang, Y., Yang, S., Chupradit, S., Nawaz, M. A., Xiong, R., & Koksal, C. (2021). A nexus
980 between macroeconomic dynamics and trade openness: Moderating role of institutional
981 quality. *Business Process Management Journal*. doi:<https://doi.org/10.1108/BPMJ-12-2020-0594>
- 983 (2014) OECD Tourism Trends and Policies 2014 (Summary in Chinese)
984