



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 3, March 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

Analysis of Sustainable Development Goals in Major Asian Countries after Covid-19

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ABSTRACT: COVID-19 has had a huge impact on people all around the world and seems to be a serious problem that has changed many people's life. The realization of the Sustainable Development Goals (SDGs) is severely hampered by the pandemic. To meet this challenge, a thorough analysis of the pandemic's effects on SDG is needed. It is a Challenge to implement the plan of United Nations adopted in 2015 on achieving 17 sustainable development goals by 2030. In this paper, the impact of the COVID-19 pandemic on the degree of attainment of the SDG in 8 major Asian countries was assessed by conducting the SDG score analysis of all 17 goals. The database is based on the SDG Index and Dashboards Report produced by the Sustainable Development Solutions Network (SDSN)[1].

I. INTRODUCTION

The economy and human health have been the main areas that COVID-19 has impacted. The global pandemic had infiltrated a significant part of people's lives worldwide. Along with health concerns, the pandemic also poses a threat to society's economy, humanitarian efforts, security, livelihood, employment and human rights. Globally, the COVID-19 has shown to be a formidable obstacle to attain sustainable development goals as set by United Nations in 2015.

Meeting all the SDG would make it possible to react quickly to any future threats. This becomes even more difficult when we talk about developing countries. In this paper, we have analysed the SDG score of all 17 goals of 8 major Asian countries, which are China, Japan, India, Korea Rep., Indonesia, Saudi Arabia, Israel and Singapore for the years 2021 and 2022. For each country, the overall score measures the total progress towards achieving all 17 SDGs. A score of 100 indicates that all SDGs have been achieved. The score can be interpreted as a percentage of SDG achievement. Similarly, the score of all 17 goals indicates the total progress towards achieving that particular SDG. In this paper we have tried to find out the percentage change of all 17 goal score for the above mentioned 8 Asian countries for the year 2021 and 2022. This analysis provides an overview on the recent advancements of the SDGs in the Asian countries.

II. LITERATURE REVIEW

The agenda of UN [2] resolution on SDG is a plan of action for people, the planet and prosperity. It also seeks to strengthen universal peace in larger freedom. In [3] United Nations 2022 data report on the achievement of Sustainable Development Goals (SDGs) across the following four dimensions: economic, social, environmental and institutional. Ward's method was applied to obtain clustering results for forty-five Asian countries to understand their level of progress and overall trends in achieving SDGs were studied. In [4] the study has extracted secondary data from secondary sources such as SDGs reports and world development indicators (WDI) from 1986 to 2020. Countries in all regions perform well, such as Japan and South Korea in East Asia and Saudi Arabia in West Asia. However, South Asia is generally the most average performer, which aligns with the findings from a recent study on energy and environmental sustainability [5]. Study in [6] has classified countries worldwide from the 2019 SDG report to focus on each country's achievements, challenges, needs, strengths, and weaknesses in reaching the SDGs. This study identifies five homogenous clusters worldwide; moreover, it finds that the Central Asian region has same cluster membership with 26 high-income developed countries, while the rest of the Asian regions were clusters with members from lower- or middle-income countries. They conclude that clusters with better socio-economic and politico-cultural structures have a high global SDG index. In [7] the analysis of trends in sustainable development and success in achieving sustainable development goals during the COVID-19 pandemic in the Western Balkans (Serbia, Montenegro, Northern Macedonia, Albania and Bosnia and Herzegovina) has been studied. As noted by Zhao [7], the global health crisis and social-economic downturn during the COVID-19 pandemic further hampered the process of achieving the SDGs. In [8] studies shows that though the South Asian countries have achieved some positive progress in particular SDG but majority SDGs including 1, 5, 8, 11, 14-17 remain challenges for achieving the target.

III. EXPERIMENTAL METHODOLOGY

For this research analysis, the percentage change of all 17 SDG score for the 8 major Asian countries China, Japan, India, Korea Rep., Indonesia, Saudi Arabia, Israel and Singapore has been studied for the year 2021 and 2022. The map of Asia is shown in figure 1 where the above mentioned 8 major countries are highlighted. The data are collected from the Dashboards Report produced by the Sustainable Development Solutions Network (SDSN)[1].



Figure 1: Map of Asia where 8 major countries under consideration are highlighted.

The 17 SDGs adopted by all UN Member States in 2015 as part of the 2030 Agenda for sustainable development is presented in Table 1. The goal score of all 17 SDGs for the 8 major Asian countries under consideration are presented in the Table 2 and 3. The considered period is 2021-2022 years. UN has set 15 years’ time period from 2016 to 2030 for the countries towards implementation of SDGs. This study analyses the progress of South Asian countries to achieve the Goals of Sustainable Development. Bar diagram and comparative analysis are used to explain the countries performance on SDGs.

SDG1	No Poverty
SDG2	No Hunger
SDG3	Good Health and Well-Being
SDG4	Quality Education
SDG5	Gender Equality



SDG6	Clean Water and Sanitation
SDG7	Affordable and Clean Energy
SDG8	Decent Work and Economic Growth
SDG9	Industry, Innovation and Infrastructure
SDG10	Reduced Inequalities
SDG11	Sustainable Cities and Communities
SDG12	Responsible Consumption and Production
SDG13	Climate Action
SDG14	Life Below Water
SDG15	Life on Land
SDG16	Peace, Justice and Strong Institutions
SDG17	Partnerships for the Goals

Table 1: The 17 SDGs set by United Nations in 2015.

Country Code ISO3	Country	year	population	SDG Index Score	Goal 1 Score	Goal 2 Score	Goal 3 Score	Goal 4 Score	Goal 5 Score	Goal 6 Score
CHN	China	2021	1425861543	71.99	97.59	83.33	83.40	99.53	78.23	69.00
CHN	China	2022	1425925386	72.01	98.05	83.40	83.40	99.53	78.19	69.00
JPN	Japan	2021	124946751	79.53	99.28	75.15	94.40	93.93	61.16	84.93
JPN	Japan	2022	124278310	79.41	99.30	75.18	94.57	93.93	61.70	84.93
IND	India	2021	1402807867	62.78	80.62	54.19	64.29	86.02	45.96	58.13
IND	India	2022	1412319817	63.45	86.23	54.39	64.79	89.29	46.25	58.13
KOR	Korea, Rep.	2021	51831253	78.23	99.45	82.90	92.96	92.33	66.04	74.02
KOR	Korea, Rep.	2022	51829025	78.06	99.48	82.90	92.78	92.33	66.30	74.02
IDN	Indonesia	2021	272890093	70.01	83.21	66.51	64.51	92.18	63.74	70.08
IDN	Indonesia	2022	274616289	70.16	86.06	66.61	64.84	92.18	63.77	70.08
SAU	Saudi Arabia	2021	35764241	67.54	100.00	56.83	80.69	78.47	44.16	59.09
SAU	Saudi Arabia	2022	36136551	67.69	100.00	56.85	80.69	78.47	44.60	59.09
ISR	Israel	2021	8829385	74.17	98.57	55.39	96.34	99.58	75.89	68.21
ISR	Israel	2022	8970733	73.97	98.63	55.39	96.34	99.58	76.10	68.21
SGP	Singapore	2021	5926220	71.18		76.17	94.91	98.62	75.12	74.15
SGP	Singapore	2022	5955901	71.78		76.17	94.41	98.62	75.12	74.15

Table 2: The goal score of all 17 SDGs (Goal 1 to Goal 6) for the 8 major Asian countries.

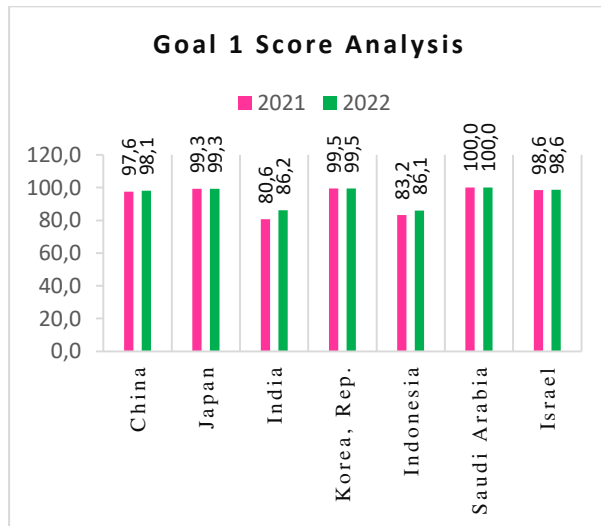


Country	year	Goal 7 Score	Goal 8 Score	Goal 9 Score	Goal 10 Score	Goal 11 Score	Goal 12 Score	Goal 13 Score	Goal 14 Score	Goal 15 Score	Goal 16 Score	Goal 17 Score
China	2021	67.72	78.95	80.27	34.93	79.46	87.00	77.64	55.71	49.24	60.58	41.31
China	2022	67.72	78.90	80.27	34.93	79.46	87.00	77.64	55.73	48.94	60.58	41.40
Japan	2021	72.63	88.08	94.40	80.52	86.92	66.06	73.47	55.79	63.55	87.36	74.31
Japan	2022	72.63	88.20	94.40	80.52	84.21	66.06	73.47	55.84	63.15	86.32	75.64
India	2021	66.21	73.50	50.56	38.45	46.39	94.78	94.28	62.38	45.91	50.61	55.00
India	2022	66.21	73.71	50.96	38.45	50.05	94.78	94.28	62.34	45.61	48.51	54.65
Korea, Rep.	2021	70.57	85.10	99.13	82.63	88.66	73.10	69.75	55.38	54.48	79.47	63.93
Korea, Rep.	2022	70.57	85.52	99.13	82.63	87.03	73.10	69.75	55.43	54.13	77.88	64.06
Indonesia	2021	64.46	77.07	49.13	60.91	74.93	89.70	92.50	69.76	51.78	67.39	52.33
Indonesia	2022	64.46	77.36	50.66	60.91	75.34	89.70	92.50	69.76	51.43	64.71	52.39
Saudi Arabia	2021	68.65	76.62	74.09		65.26	66.02	33.75	64.77	49.33	75.61	87.38
Saudi Arabia	2022	68.65	77.48	74.72		63.64	66.02	33.75	64.75	49.01	75.23	80.86
Israel	2021	71.72	83.63	95.41	71.55	87.87	66.56	67.15	37.51	49.36	70.84	65.35
Israel	2022	71.7	84.3	94.7	71.6	84.6	66.6	67.2	37.5	49.4	69.6	66.1
Singapore	2021	72.0	74.5	91.4		96.1	51.6	57.5	47.2	27.0	82.8	48.6
Singapore	2022	72.0	74.8	91.4		96.1	51.6	57.5	47.2	26.5	83.2	49.0

Table 3: The goal score of all 17 SDGs (Goal 7 to Goal 17) for the 8 major Asian countries.

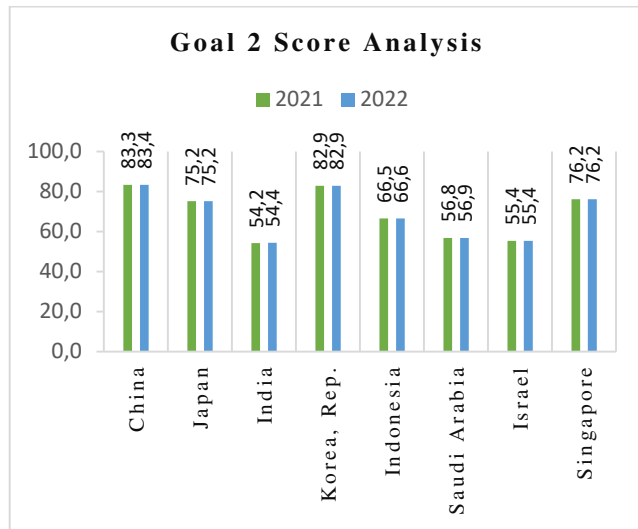
IV. GOAL SCORE ANALYSIS OF 17 SDG

GOAL 1 Score Analysis			
Country	2021	2022	Percentage Change
China	97.59	98.05	0.47
Japan	99.28	99.30	0.02
India	80.62	86.23	6.96
Korea, Rep.	99.45	99.48	0.03
Indonesia	83.21	86.06	3.42
Saudi Arabia	100.00	100.00	0.00
Israel	98.57	98.63	0.06
Singapore			

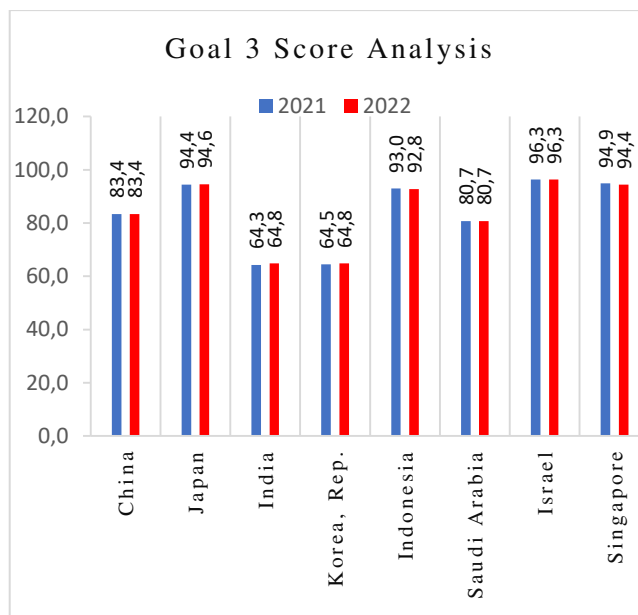




GOAL 2 Score Analysis			
Country	2021	2022	Percentage Change
China	83.33	83.40	0.09
Japan	75.15	75.18	0.03
India	54.19	54.39	0.37
Korea, Rep.	82.90	82.90	0.00
Indonesia	66.51	66.61	0.15
Saudi Arabia	56.83	56.85	0.04
Israel	55.39	55.39	0.00
Singapore	76.17	76.17	0.00

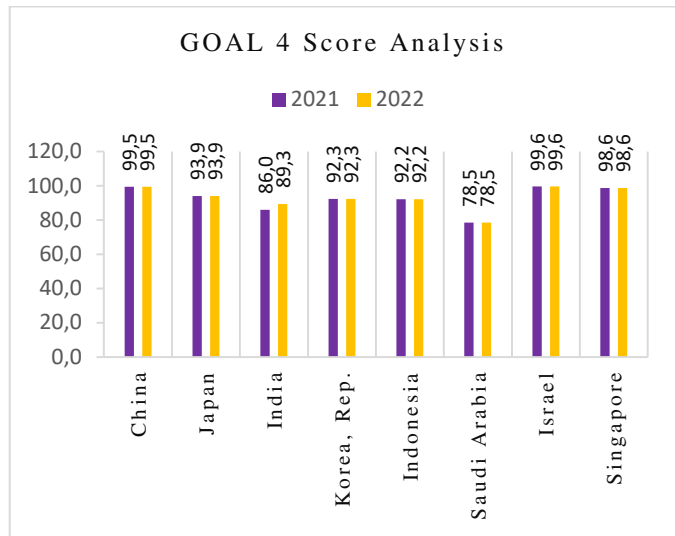


GOAL 3 Score Analysis			
	2021	2022	Percentage Change
China	83.40	83.40	0.00
Japan	94.40	94.57	0.19
India	64.29	64.79	0.78
Korea, Rep.	64.50	64.79	0.45
Indonesia	92.96	92.78	-0.19
Saudi Arabia	80.69	80.69	0.00
Israel	96.34	96.34	0.00
Singapore	94.91	94.41	-0.53

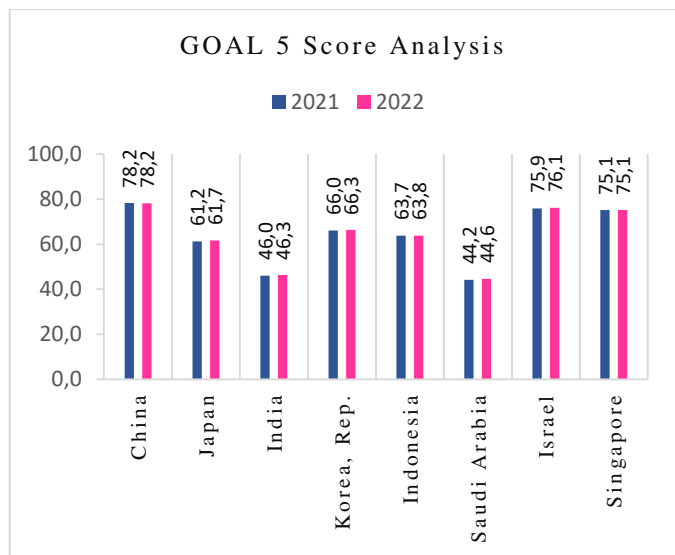




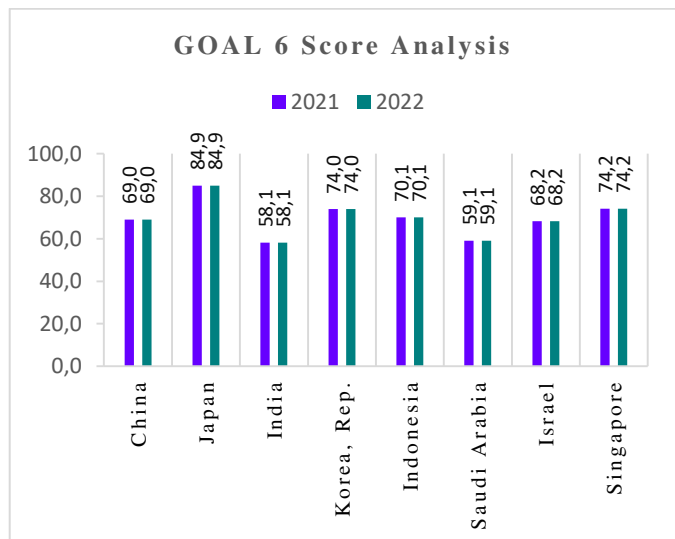
	2021	2022	Percentage Change
China	99.53	99.53	0.00
Japan	93.93	93.93	0.00
India	86.02	89.29	3.80
Korea, Rep.	92.33	92.33	0.00
Indonesia	92.18	92.18	0.00
Saudi Arabia	78.47	78.47	0.00
Israel	99.58	99.58	0.00
Singapore	98.62	98.62	0.00



	2021	2022	Percentage Change
China	78.23	78.19	-0.05
Japan	61.16	61.70	0.88
India	45.96	46.25	0.64
Korea, Rep.	66.04	66.30	0.40
Indonesia	63.74	63.77	0.04
Saudi Arabia	44.16	44.60	1.00
Israel	75.89	76.10	0.27
Singapore	75.12	75.12	0.00

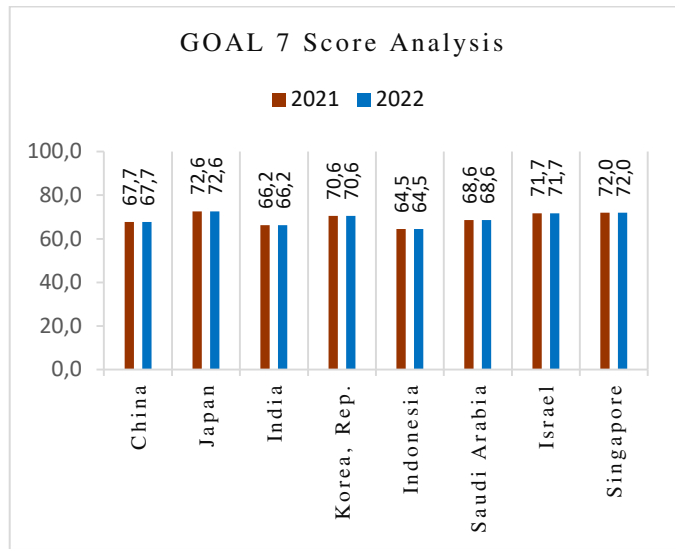


	2021	2022	Percentage Change
China	69.00	69.00	0.00
Japan	84.93	84.93	0.00
India	58.13	58.13	0.00
Korea, Rep.	74.02	74.02	0.00
Indonesia	70.08	70.08	0.00
Saudi Arabia	59.09	59.09	0.00
Israel	68.21	68.21	0.00
Singapore	74.15	74.15	0.00

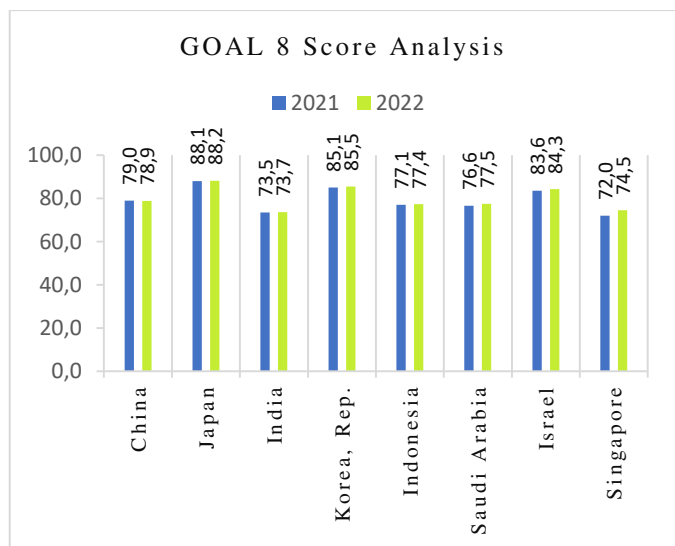




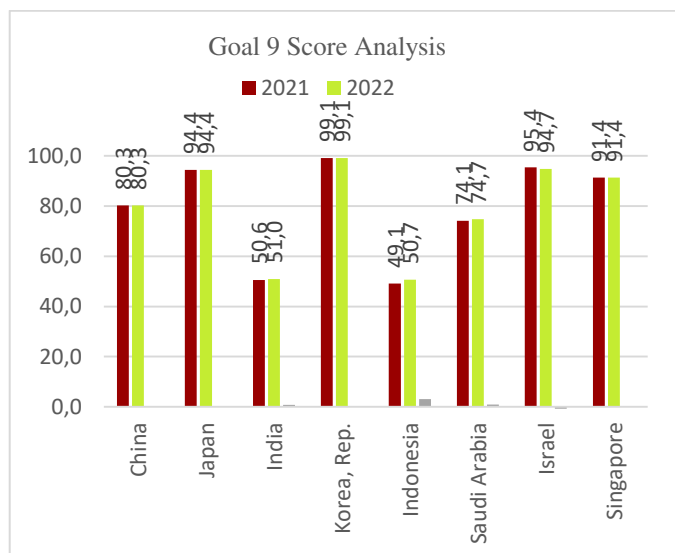
	2021	2022	Percentage Change
China	67.72	67.72	0.00
Japan	72.63	72.63	0.00
India	66.21	66.21	0.00
Korea, Rep.	70.57	70.57	0.00
Indonesia	64.46	64.46	0.00
Saudi Arabia	68.65	68.65	0.00
Israel	71.72	71.72	0.00
Singapore	71.96	71.96	0.00



	2021	2022	Percentage Change
China	78.95	78.90	-0.07
Japan	88.08	88.20	0.13
India	73.50	73.71	0.29
Korea, Rep.	85.10	85.52	0.50
Indonesia	77.07	77.36	0.37
Saudi Arabia	76.62	77.48	1.12
Israel	83.63	84.29	0.78
Singapore	71.96	74.55	3.60

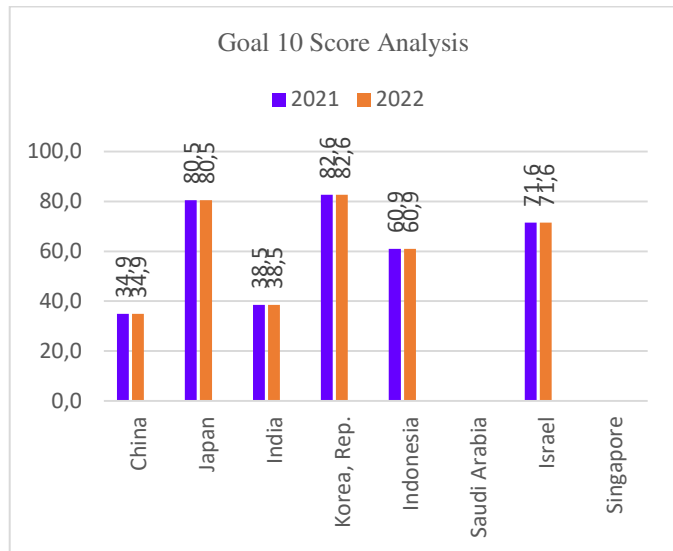


	2021	2022	Percentage Change
China	80.27	80.27	0.00
Japan	94.40	94.40	0.00
India	50.56	50.96	0.79
Korea, Rep.	99.13	99.13	0.00
Indonesia	49.13	50.66	3.13
Saudi Arabia	74.09	74.72	0.86
Israel	95.41	94.73	-0.71
Singapore	91.36	91.36	0.00

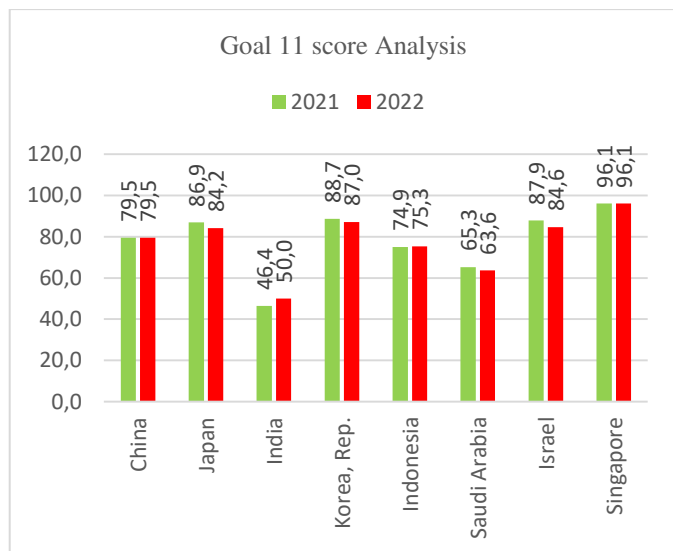




	2021	2022	Percentage Change
China	34.93	34.93	0.00
Japan	80.52	80.52	0.00
India	38.45	38.45	0.00
Korea, Rep.	82.63	82.63	0.00
Indonesia	60.91	60.91	0.00
Saudi Arabia			
Israel	71.55	71.55	0.00
Singapore			

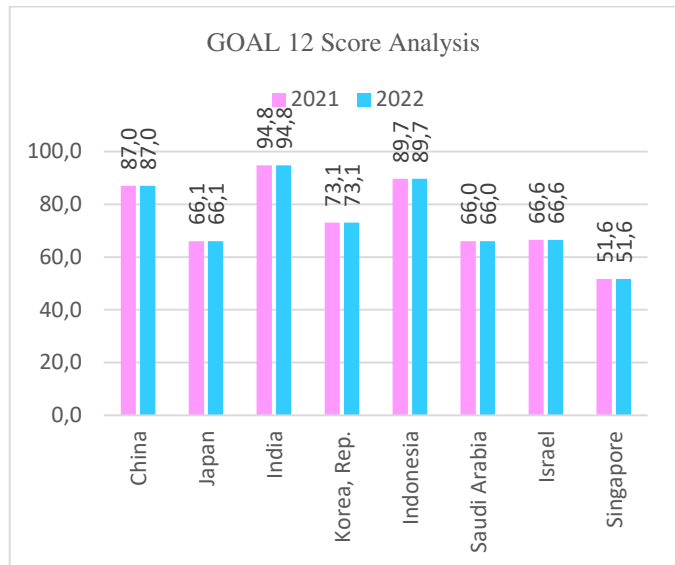


	2021	2022	Percentage Change
China	79.46	79.46	0.00
Japan	86.92	84.21	-3.11
India	46.39	50.05	7.87
Korea, Rep.	88.66	87.03	-1.83
Indonesia	74.93	75.34	0.54
Saudi Arabia	65.26	63.64	-2.49
Israel	87.87	84.63	-3.69
Singapore	96.05	96.05	0.00

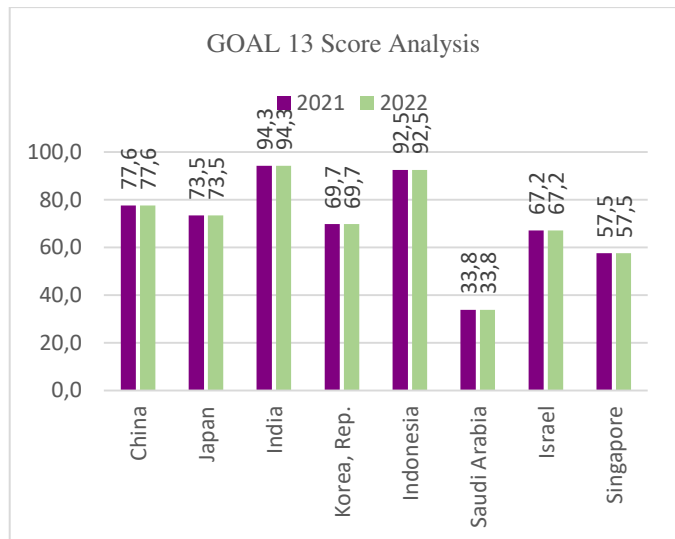




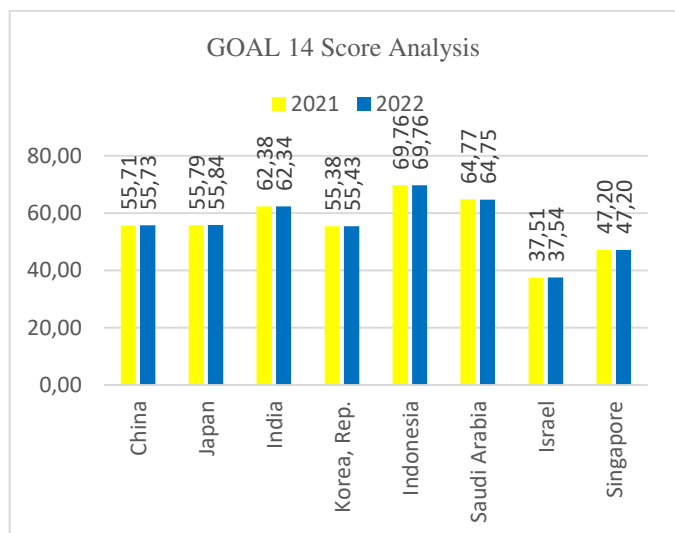
	2021	2022	Percentage Change
China	87.00	87.00	0.00
Japan	66.06	66.06	0.00
India	94.78	94.78	0.00
Korea, Rep.	73.10	73.10	0.00
Indonesia	89.70	89.70	0.00
Saudi Arabia	66.02	66.02	0.00
Israel	66.56	66.56	0.00
Singapore	51.64	51.64	0.00



	2021	2022	Percentage Change
China	77.64	77.64	0.00
Japan	73.47	73.47	0.00
India	94.28	94.28	0.00
Korea, Rep.	69.75	69.75	0.00
Indonesia	92.50	92.50	0.00
Saudi Arabia	33.75	33.75	0.00
Israel	67.15	67.15	0.00
Singapore	57.53	57.53	0.00

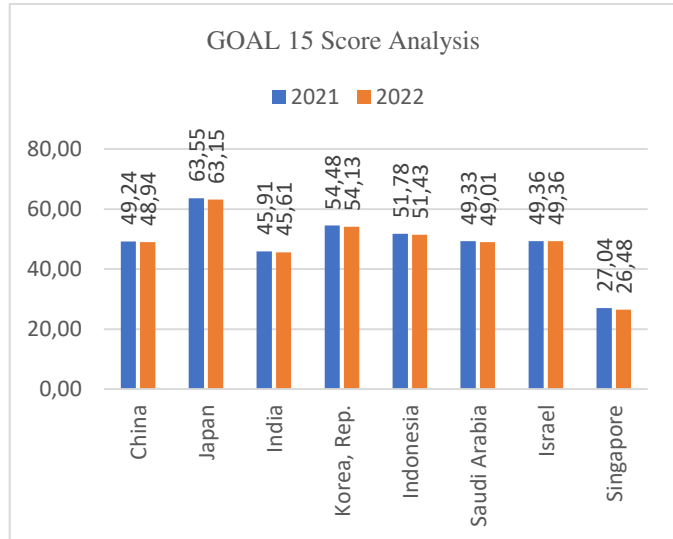


	2021	2022	Percentage Change
China	55.71	55.73	0.04
Japan	55.79	55.84	0.08
India	62.38	62.34	-0.06
Korea, Rep.	55.38	55.43	0.08
Indonesia	69.76	69.76	0.00
Saudi Arabia	64.77	64.75	-0.03
Israel	37.51	37.54	0.08
Singapore	47.20	47.20	0.00

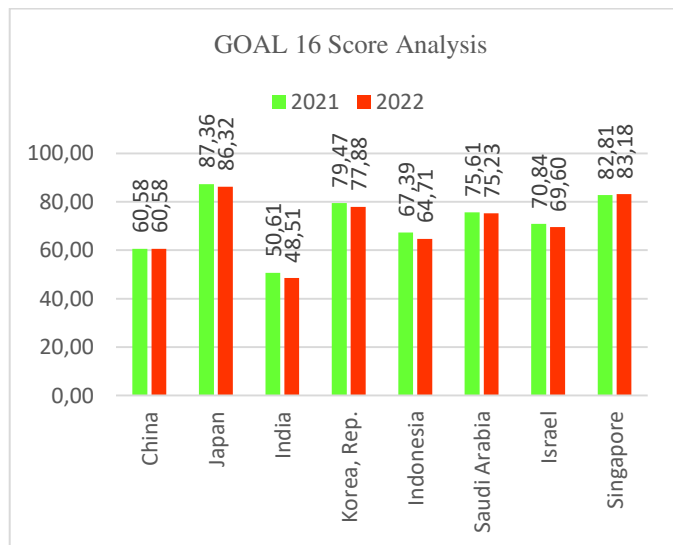




	2021	2022	Percentage Change
China	49.24	48.94	-0.61
Japan	63.55	63.15	-0.63
India	45.91	45.61	-0.65
Korea, Rep.	54.48	54.13	-0.64
Indonesia	51.78	51.43	-0.68
Saudi Arabia	49.33	49.01	-0.63
Israel	49.36	49.36	0.00
Singapore	27.04	26.48	-2.08

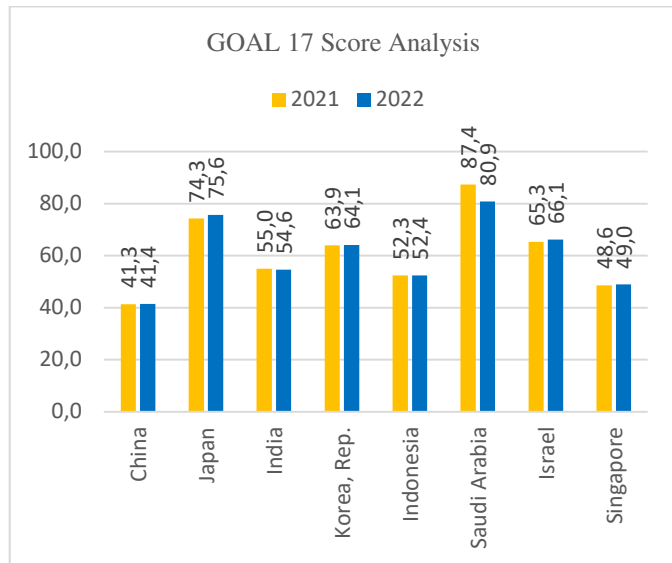


	2021	2022	Percentage Change
China	60.58	60.58	0.00
Japan	87.36	86.32	-1.19
India	50.61	48.51	-4.15
Korea, Rep.	79.47	77.88	-2.00
Indonesia	67.39	64.71	-3.97
Saudi Arabia	75.61	75.23	-0.50
Israel	70.84	69.60	-1.76
Singapore	82.81	83.18	0.46





	2021	2022	Percentage Change
China	41.31	41.40	0.23
Japan	74.31	75.64	1.79
India	55.00	54.65	-0.64
Korea, Rep.	63.93	64.06	0.21
Indonesia	52.33	52.39	0.11
Saudi Arabia	87.38	80.86	-7.45
Israel	65.35	66.13	1.19
Singapore	48.61	48.97	0.75



V. KEY AREA OF PROGRESS AND SDG ACHIEVEMENT

SDG	Maximum Goal Score in 2021	Minimum Goal Score in 2021	Maximum Percentage Change		In 2021 Country with Goal Score	
	Name of Country	Name of Country	Name of Country	Amount of Percentage Change	≥ 95	≤ 50
SDG1	Saudi Arabia	India	India	6.96%	China, Japan, Korea Rep., Saudi Arabia, Israel	--
SDG2	China	India	India	0.37%	Israel	--
SDG3	Israel	India		0.78%	--	--
SDG4	Israel	Saudi Arabia	--	--	China, Israel, Singapore	--
SDG5	China	Saudi Arabia	Saudi Arabia	1%	--	India, Saudi Arabia
SDG6	Japan	India	--	--	--	--
SDG7	Japan	Indonesia	--	--	--	--
SDG8	Japan	Singapore	Singapore	3.60%	--	--
SDG9	Korea Rep.	Indonesia	Indonesia	3.13%	Korea Rep., Israel	Indonesia
SDG10	Korea Rep.	China	--	--	--	China, India
SDG11	Singapore	India	India	7.87%	Singapore	India
SDG12	India	Singapore	--	--	--	--
SDG13	India	Saudi Arabia	--	--	--	Saudi Arabia
SDG14	Indonesia	Israel	Japan	0,0836%	--	Israel, Singapore
SDG15	Japan	Singapore	Israel	0.00%	--	China, India, Saudi Arabia,



						Israel, Singapore
SDG16	Japan	India	Singapore	0.46%	--	--
SDG17	Saudi Arabia	China	Japan	1.79%	--	China, Singapore

Table 4: Analysis of 17 SDGs.

The Table 4 shows that out of 17 SDGs, SDG1, SDG2, SDG4, SDG9 and SDG11 have progressed with SDG Goal score more than 95 in some Asian countries under consideration. In SDG5, SDG9, SDG10, SDG11, SDG13, SDG14, SDG15 and SDG17 most of the Asian countries are lagging with SDG Goal Score less than 50. Major variations in the SDG Goal score are seen in SDG9 and SDG11, where some countries have Goal score more than 95 whereas there is also a country with Goal score less than 50. It is also seen that those countries which had low goal score in 2021 have also made good percentage improvement from 2021 to 2022.

VI. RECOMMENDATIONS AND CONCLUSION

Sustainable Development Goals are the 17 global goals established by the United Nations as part of the 2030 Agenda for Sustainable Development. Achieving these goals is crucial for the 8 major Asian countries China, Japan, India, Korea Rep., Indonesia, Saudi Arabia, Israel and Singapore which are facing many challenges. In order to assist these 8 major Asian countries in their efforts to reach the Sustainable Development Goals (SDGs), the following key recommendations are provided:

- i. India is lagging in 3 major SDGs which are SDG1, SDG2 and SDG3 so It is imperative that some economic reforms be implemented in order to improve these SDGs score.
- ii. For progress in SDG5, India and Saudi Arabia should take various initiatives and implement policies for women education and women empowerment to promote gender equality and empower women.
- iii. To meet the target of SDG9, it is essential for Indonesia to foster the adoption of cutting-edge technologies and to expedite the growth of its manufacturing industry, as well as to invest more in research and development.
- iv. In order to achieve the objective of SDG10, China and India should adopt policies to Ensure equal opportunity and reduce inequalities by eliminating discriminatory laws, policies and practices.
- v. To contribute in advancing SDG 17, China and Singapore should integrate the SDGs into planning systems (at all levels), budgets, statistical systems, Partnerships, innovative financing, science and technology transfers and data transparency.

VII. ACKNOWLEDGMENT

This work is supported by Madhya Pradesh Council of Science and Technology (MPCST), India (Grant F.No. 3851/CST/R&D/Phy. & Engg. and Pharmacy/2022-23). We are very grateful to the editors and reviewers for their helpful suggestions and comments.

DATA AVAILABILITY STATEMENT

Data publicly available from 2023 Sustainable Development Report— <https://dashboards.sdgindex.org/downloads>

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