Addressing Gender Disparity in Public Universities of Malaysia: Challenges and Achievements

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Ensuring equal access to affordable higher education is a fundamental target of the Sustainable Development Goals SDGs to be achieved by 2030. Malaysia has committed to this target and introduced effective policies to accomplish the gaol as early as possible. This paper aimed to trace the effort made by Malaysian government in achieving gender parity. The paper used the most recent statistical data released by related higher education institutions. This coupled with the critical review and deep analysis of the documents and reports on higher education published in and out of Malaysia. The paper also employed both Gender Parity Index (GPI) and Gender Gap Global Index GGGI to measure gender parity. The findings showed that Malaysia has not only made efforts, but also achieved gender parity practically in public universities. The female gross enrolment ratio has jumped from only 10.7% in the 1950s to around (48%) of today. Despite this positive remark, gender stereotype is likely to continue taking other shapes and forms and still a room left for improvement.

Keywords: gender inequality, SDGs, gender parity index, GER, higher education, Malaysia

INTRODUCTION

Historical evidence has shown that males dominate higher education institutions compared to females worldwide. In the early 1900s, male students were the majority in higher education and there were very few female students (Zakee, Alam, & Rehman, 2022) even in advanced nations. For example, in the United States, females were excluded from universities until the 1850s when women's colleges were established (Thelin, 2004). Up to the 1920s, Oxford University, which is the oldest university in the English-speaking world, had only admitted male students; after that the doors were opened for female to join the university. As indicated by Wan (2018), only in the beginning of the 20th century had females been provided with an opportunity to be fulltime students at universities. However, during the last four decades, things have substantially changed as the enrolment of females has expanded very rapidly, resulting in the transformation of gender parity (Chang, Chou, & Chen, 2022).

Lately, the number of students enrolled in higher education has increased substantially. Worldwide, the gross enrolment ratio (GER) in tertiary education increased from 10% in 1972 to 32% in 2012, and in 54 national systems, the GER reached 50% compared with only five systems 20 years before. Additionally, there are 14 countries with a GER of 75% or more (Marginson, 2016). Several authors related this increase

to the escalation of females enrolled in higher education. Strom and Rao (2020) explained that enrolments have increased manifold in the past two or three decades and considered the reason for this increase to be due to women entering degree programs in large numbers. The unprecedented increase of female compared to male students has led to "changing gender disparity." The concept indicates that female enrolment in higher education is surpassing male students in most developed and developing countries. Countries like the UK, USA, The Netherlands, Germany, and France are noticeable examples of the "changing gender disparity" in higher education (Alam & Saadat, 2020; Zakee, Alam, & Rehman, 2022). Instead of women, men are now underrepresented in tertiary education institutions, with women accounting for 10% more enrolment in the majority of western countries, including the United States and OECD countries (Stoet & Geary, 2020).

The rapid increase in female enrolment is not taken for granted; extensive efforts have been made at the national, regional, and international levels. It has become one of the crucial goals adopted by international bodies to be achieved in a specific time. For example, the United Nations has set 17 Sustainable Development Goals (SDGs) to be achieved by 2030. Goal 4 focuses on quality education, "ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all." Regarding education, target number three of the fourth goal (4.3) ensures that both women and men have equal access to affordable and quality technical, vocational, and tertiary education, including enrolment in universities, by 2030 (United Nations, 2015). Since then, the number of students enrolled in higher education worldwide has increased very rapidly. Malaysia is one of the developing countries that have witnessed rapid expansion of higher education enrolment. The gross enrolment ratio has increased from 19.6% in 2000 to 42% in 2020 and it is projected in the Blueprint report to reach 70% in 2025 (Ministry of Education Malaysia, 2016). The gross enrolment ratio of females has jumped from only 10.7% in the 1950s at the University of Malaya (UM) to around 48% of today and exceeded 50% in 2015 (World Bank, 2022). In 2022, the total students enrolled in public universities were 589,879 students with 230,161 (39%) representing male and 359,718 (61%) representing female students (Ministry of Education Malaysia, 2022). These figures imply that Malaysia has virtually managed to achieve gender parity at least in public universities. As we will see later in this paper, females are even outnumbering males in the majority of public universities. Despite this positive remark, a wide disparity remains in access to university level with regard to gender, social, regional, and ethnic background, and to age and disability (UNESCO, 2015); hence, there is still room for improvement. A World Economic Forum (WEF) survey in 2022 placed Malaysia within the low-performance countries in the East Asia and Pacific region in terms of gender gap (World Economic Forum, 2022). Among the 19 countries of the region, Malaysia ranked number 14 with only 5 countries left behind. Meanwhile, the World Bank (2013) divided countries into four color codes based on their achievement in terms of equality. Malaysia was coded red, indicating that inequality has not been fully addressed. Therefore, the aim of this paper is to trace the effort made by successive national governments to address gender disparity in higher education. The overall objective is to uncover the challenges and opportunities facing Malaysia in achieving gender parity in ensuring that no one is left behind due to sex or socio-economic background.

LITERATURE REVIEW: POLICIES INTERVENTION

Since its independence in 1957, Malaysia has substantially embarked on addressing challenges that hinder development and economic growth. In this regard, much attention has paid to education as it is considered a key to success in tackling inherited problems like poverty, social injustice, gender discrimination, and socio-economic marginalization. Internationally, Malaysia, along with 192 nations, has adopted the Sustainable Development Goals (SDGs) issued in 2015, aiming to achieve gender equity in all aspects of life including access to higher education (United Nations, 2015). SDGs comprise 17 Sustainable Development Goals (SDGs) that encompass economic growth, social inclusion, and environmental protection to be achieved by 2030. Mainly, the fifth goal is to achieve gender equality and empower all women and girls. It is stated clearly in the first target (5.1) that the goal is to end all forms of discrimination against all women and girls everywhere. The tenth goal aims to reduce inequality within and among

countries. Specifically, the second target of the tenth goal (10.2) is to empower and promote the social, economic, and political inclusion of all by 2030, irrespective of age, gender, disability, race, ethnicity, origin, religion, economic, or other status.

Much effort has been applied by successive Malaysian governments to meet the SDG commitment and to address gender inequality. In this regard, several policies have been implemented to foster economic development and simultaneously reduce overall poverty, thus enhancing the social fabric of the entire society. Moreover, to ensure equity among all, additional attention was given to the most disadvantaged group. These policies include Pre-New Economic Policy (PNEP) 1960–1970, New Economic Policy (NEP) 1971–1990, National Development Policy (NDP) 1991–2000, National Vision Policy (NVP) 2001–2010, Government Transformation Plan (NTP) 2011–2020, Eleventh Malaysia Plan (11MP) 2016–2020, and Twelfth Malaysia Plan (12MP) 2021–2025. These policies and their related programs have succeeded in promoting economic growth, thereby substantially reducing the incidence of poverty in all states. Consequently, the economy of the country has improved very rapidly and some Malaysian states reached zero poverty (Elhadary & Samat, 2015). However, the impacts on various groups were not uniform as some ethnic groups faced more economic difficulties than others. Compared with men, women generally do not have the same possibilities to develop a life characterized by stable and formal employment (Sandig, 2020).

With regard to education, much effort has been made to achieve gender parity and to address socio-economic limitations that hinder students from pursuing their studies. The Malaysian government has introduced the National Higher Education Strategic Plan (2007–2020), Eleventh Malaysia Plan (2016–2020), Malaysian Education Blueprint MEB (2013–2025), and Malaysian Education Blueprint MEB for higher education (2015–2025). The overall objective of these plans is to ensure equal access to higher education, stipulate equity, and address all issues that interrupt access to education, such as socio-economic disadvantages and geographical barriers (urban versus rural) (Ministry of Education Malaysia, 2016). Sirat and Wang (2022) described the national policies toward education in three stages: 1970–1990, 1990–2000, and post-2000. The first stage predominantly focused on nation building, integration, and addressing inter-ethnic inequality and regional disparities within Malaysia. The second was geared toward liberalizing higher education to address economic needs and the pressure of massification. The third stage strategizes Malaysian higher education to address global competitiveness and the pursuit of prestige and reputation.

To confirm that no one is left behind, Malaysia has made vital interventions in the higher education system. These include but are not limited to funding higher education, language of teaching, introduction of quotas, scholarships, and endowments. Funding higher education is an essential factor for helping students, especially those from low-income families, to pursue their studies. Therefore, the budget directed toward higher education has increased very sharply and currently the public expenditure on education represents 1% of the Growth Domestic Product (GDP). This commitment is better than most developing nations and not far from some developed nations. UNESCO data indicate that public expenditure in tertiary education is approximately 1.3% in Germany, 1.3% in the UK, 1.4% in the US, and 1.5% in Australia (UNESCO, 2015).

Malaysia is a multiracial country, where some ethnic groups face difficulties in accessing higher education due to their geographical situation, language barrier, or economic condition. As specified by Harun and Ibrahim (2021), people from disadvantaged groups (such as minority, gender, language, age, culture, religion, disability, or caste) encounter additional barriers to access tertiary education. Therefore, special attention was given to the Bumiputeras and those students living in remote areas of the country. Bumiputeras refers to the Malays, the indigenous people in Peninsula Malaysia (Orang Asli), and natives in Sabah and Sarawak (Sirat & Wang, 2022). For example, the introduction of the quota system has played a vital role in narrowing the gap between Bumiputeras and other ethnic groups. Through the quota system, students from Orang Asli can easily pursue programs in higher education. The quota system has even moved beyond ethnicity and has gradually targeted indigent and low-income households, and persons with disabilities irrespective of their ethnicity (Morshidi et al., 2020). Under the Eleventh Malaysia Plan (2016–2020), students from households earning approximately RM 2,537.00 (approximately USD 600) were given priority in terms of access and success in higher education (Azman, 2019). Consequently, the ethnic proportion in Malaysian public universities in 1983 changed significantly: 63% of the students were from

the Bumiputeras, nearly 30% were Chinese, and 7% were Indians or those belonging to other ethnic groups (UNESCO, 2016; Azman, 2019). Interestingly, among the public universities, there is a university (MARA Institute of Technology, MIT) dedicated only to enrolling Bumiputera students at the undergraduate level. Note that the quota system was terminated in 2002 and access to higher education since then has been based on academic qualifications.

Apart from the quota system, the government has also introduced student loans and scholarships to support those who could not afford the cost of education. According to Lee (2012), a loan scheme was considered as one of the most important interventions in Malaysian higher education, particularly in promoting equitable access to tertiary education. One of the duties of the National Higher Education Fund Corporation (PTPTN), launched in 1997, is to offer subsidized loans to ensure that no one failed to pursue higher education owing to any financial barriers. Azman (2019) described PTPTN as one of the most important interventions in Malaysian higher education in addressing inclusion, equity, and education attainment. In 2013 alone, approximately RM 5.5 billion (USD 1.2 billion) were approved, and the current total amount is RM 76 billion (Wan, Ahmed, & Ismail, 2016). Annually, around 200,000 students receive the education loan from PTPTN and it has been recognized as a significant enabler to support access into higher education (Sirat & Chan, 2022).

Another intervention undertaken by the government is changing the medium of instruction at public universities, where they use local language as a means of teaching to facilitate easy access to higher education and to integrate the multiracial society. In 1980, the Malay language (Bahasa Melayu) was introduced as the medium of instruction in public universities. This decision has caused the number of Malay students in higher education to increase rapidly. Despite the use of local language, many programs, particularly in the sciences, technology, and engineering, are still being taught in English or interchangeably between the two languages (Wan, Ahmed, & Ismail, 2016). It is important to note that the medium of instruction for private institutions remains English. Therefore, most of the students enrolled in the private institution are non-Malay. This coupled with the use of local language in public universities and the quota system has influenced negatively the social fabric of the society. The use of Bahasa Melayu and neglect from the quota system has forced Chinese students to join private institutions. In this regard, graduates of the private institutions of higher learning (most of them Chinese) tend to have an advantage over graduates of public institutions of higher learning (most of them Malays) as they have better proficiency in English (Tan & Santhiram, 2009).

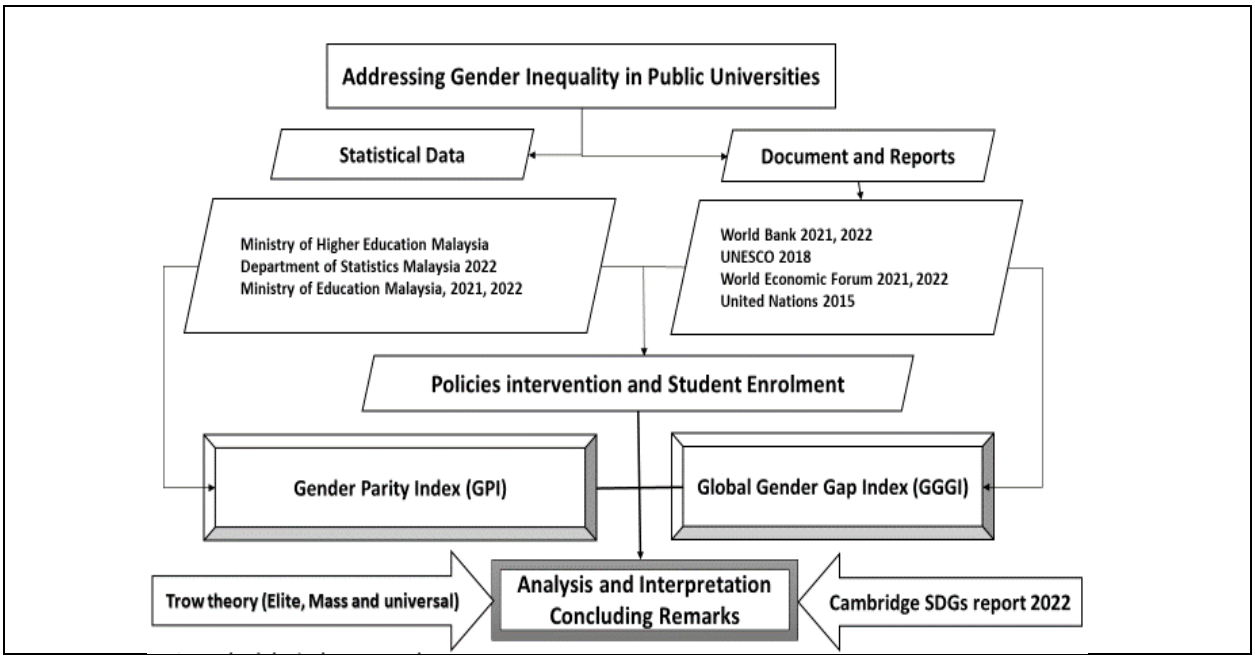
It is clear that Malaysia has made great progress to keep its commitment to the United Nations. The above-mentioned facts show that Malaysia has not only made a considerable effort but also has achieved some success in addressing the socio-economic barriers that hinder some students from pursuing higher education. The gender gap in education has narrowed significantly and currently, the number of female students is higher than male students. Despite these developments, Malaysia still has much to do to achieve gender parity, particularly in terms of academic fields, types of institutions, and choice of discipline. Therefore, this paper aims to investigate these aspects of gender disparity and uncover the challenges and opportunities. The paper aims to answer the following questions: (1) What SDG targets have been achieved up to the present? (2) What are the challenges that delay achievement? The answers to these questions are complicated. Details regarding what has and has not been achieved are discussed following the Methodology section.

METHODOLOGY AND MATERIALS

This paper is based predominantly on the relevant statistical data gathered from governmental institutions and international actors, i.e., the United Nations (2015), Ministry of Education Malaysia (2015, 2022), UNESCO (2016), Department of Statistics Malaysia (2013, 2018, 2022), World Bank (2021), and the World Economic Forum (2006, 2021 2022). It also includes a critical review and deep analyses of some recent papers and reports related to higher education published in and out of Malaysia as shown in the methodological framework (Figure 1). The frame starts by showing the overall objective of the paper (addressing gender disparity in public universities) followed by the various sources of data collection, which

is divided into text and numerical type. To measure gender parity in higher education at the global, regional, and national levels, the paper employed both the Gender Parity Index (GPI) and Global Gender Gap Index (GGGI) generated by the World Economic Forum (WEF). By so doing, the paper managed to compare the gross enrolment ratio in higher education and to measure gender gap in public universities. With the help of Trow's theory and the sustainable development goals report released by Cambridge University (2022), the paper made deep analysis and interpretation. The paper has come out with some concluding remarks like the classification of Malaysia based on Trow (elite, mass, and universal), whereas the Cambridge report provides detailed information on what SDG targets have been achieved and on the constraints that hinder some.

FIGURE 1
METHODOLOGICAL FRAMEWORK



The Gender Parity Index (GPI) is a simple application that requires only the number of males and females involved in various issues related to higher education. Thereafter, the results are obtained by dividing the total number of females over the number of males and rounding up to two decimal places (Tienxhi, 2017) as follows:

- GPI = EF/EM
- EF: enrollment ratio of higher education for females
- EM: enrollment ratio of higher education for males

The resultant score of the above formula reflects the condition of gender parity. A GPI equal to 1 indicates parity between females and males; a value less than one indicates disparity in favor of males, and a value greater than one indicates disparity in favor of females. If the score is 2.0, then there are two females for every male. According to the UNDP (2014), a GPI of 0.97 to 1.03 indicates that gender parity has been achieved. Four classes are generated based on the result obtained: extreme disparity, intermediate disparity, close to parity, and gender parity. These classes are elaborated in Table 1.

TABLE 1
GENDER PARITY INDEX

GDI	Result	In favor of	Result	In favor of
Extreme disparity	Below 0.5	Males	>1.5	Females
Intermediate disparity	(0,05–0.89)	Males	(1.11–1.5)	Females
Close to parity	(0.9–0.96	Nearly equal	(1.03–1.1)	Nearly equal
Gender parity	(0.97–1.03).	Equality	(0.97–1.03).	Equality

Source: adapted from Department of Statistics Malaysia (2013), UNDP (2014), and Tienxhi (2017).

To place Malaysia in a regional and global context, the paper used the Global Gender Gap Index (GGGI). This index has been frequently used by the World Economic Forum since 2006 (World Economic Forum, 2022) to measure gender parity across four key dimensions in 146 countries. These four sectors include Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. The score ranged from 0 to 1 (100%), where 1 indicates full gender parity and 0 means disparity. This is a very useful indicator in measuring gender disparity worldwide and will be discussed in the following section.

DISCUSSION

Global Gender Gap Index (GGGI)

As mentioned above, the GGGI identifies the gap between women and men across four sub-indices in 146 countries, including Malaysia. Table 2 summarizes the scores of Malaysia in the four sectors for the years 2006, 2021, and 2022.

TABLE 2
MALAYSIA GLOBAL GENDER GAP INDEX (MGGGI)

Sub-Indices	Rank 2006	Rank 2021	Rank 2022	Score 2006	Score 2021	Score 2022
Economic Participation and Opportunity	68	104	88	0.592	0.638	0.656
Educational Attainment	63	70	56	0.985	0.994	0.995
Health and Survival	80	74	68	0.970	0.972	0.972
Political Empowerment	90	128	123	0.056	0.102	0.102
Global Gender Gap Index	72	112	103	0.651	0.676	0.681

Source: World Economic Forum Report (2006, 2021, 2022).

Out of the 146 countries cited, Malaysia ranked 72nd in 2006 and then declined 40 places compared to 2021, where it ranked 112th. With a value of 0.681 in 2022, Malaysia ranked 103rd, improving nine places compared to 2021, but still less than that of 2006 when it was ranked 72th. These results suggest that the gender gap situation in Malaysia is worsening and that the country performed better 20 years ago than today. The overall score of the four sectors showed that gender parity in Malaysia is still not fully achieved (0.676 in 2021 and 0.681 in 2022) and is ahead of only of 34 and 43 countries, respectively. Based on the 2022 score, there remains a spread of 42% to achieve gender equality. Two sectors almost approaching gender parity are education and health, whereas poor progress has been made in economic and the political empowerment. The secret of success in education and health is due to the effort made by successive governments to improve education, the critical success factor for all life matters. For example, Malaysia has invested 20% of its total budget in education and higher education in 2021. According to the World

Bank (2021), the Ministry of Education Malaysia received the largest (15.5%) allocation, RM 50 billion ($12 billion) followed by the Ministry of Finance and Ministry of Health with RM 31.9 billion ($7.7 billion). Meanwhile, the Ministry of Higher Education comes 6th with an allocation of 4.8% or RM 14.4 billion ($3.5 billion).

The MGGI score at regional level showed that Malaysia is fairly progressed in achieving gender parity. Among the 19 countries of East Asia and the Pacific region, Malaysia ranked 14th, ahead of only 5 countries: Brunei Darussalam, Myanmar, Fiji, Vanuatu, and Japan. This led the World Bank (2021) to declare that Malaysia scores poorly in gender-related indicators although it performs fairly well on a number of human development indicators in international indices. The country even not succeeded in addressing equity among its states as it scores differently. The MGGI score at national level in 2021 is 0.707, a 0.7% reduction compared to 0.714 in 2020. According to the Department of Statistics Malaysia (2021), the three states recording the highest MGGI scores were W.P. Kuala Lumpur (0.842), W.P. Putrajaya (0.762), and Melaka (0.761). Seven states recorded scores below the national equality level, namely, Sabah (0.704), Kedah (0.703), Pahang (0.702), Perlis (0.699), Pulau Pinang (0.695), Perak (0.694), and Negeri Sembilan (0.686). This result challenges the aspiration of Malaysia to be one of the developed nations in the near future. Since 2006 and up to 2022, Malaysia's overall score on global and national gender gap has almost stagnated, fluctuating around plus or minus 0.03.

Trow's Theory (Elite, Mass, and Universal): Winners and Losers

According to Trow (1973), higher education systems have evolved through "massification"; that is, from being for "elites" to the "masses," thus creating a universal system. Since its theory, the terms "elite" and "massification" have entered the vocabulary of higher education. The transition between the two depends on the gross enrolment ratio. An elite system enrolls less than 15% of students within an age cohort, a mass system enrolls between 15 and 50%, and a universal system enrolls more than 50% (Marginson, 2016; Scott, 2019; Chen, 2021). The purpose of higher education within the elite system is to educate a handful of students to assume leadership positions in society, whereas the mass system has greater technical and vocational elements. The universal system, on the contrary, is more accessible to the wider population and largely takes the form of lifelong education (Chang et al., 2022). The transitions between stages from elite to mass and from mass to universal are not taken for granted as they require both policies and political will to achieve. Some authors, like Harun and Ibrahim (2021), classified countries economically based on these three stages. For example, lower-income countries can be viewed as elite systems, middle-income countries have moved to a mass system, and higher-income countries have progressed into a universal system. Moreover, the World Bank (2022) has classified countries according to their tertiary enrolments as low-income (9%), middle-income (38%), and high income (80% and above).

According to (Sirat & Wang, 2022) the gross enrolment ratio (GER) in Malaysia's tertiary education system moved from only 4% in 1980 to 11% in 1995 and then exponentially jumped to 22% in 1998. With reference to Trow, Malaysia passed the elite stage after 1995 as described in Table 3. This is consistent with Harun and Ibrahim (2021) who stated that middle income has shifted from elite to massified system since 2000 also the high income passed mass stage to universal in the same year. Currently, Malaysia is in the massification stage as the gross enrolment ratio reached 42.6% in 2020. Table 3 shows the gross enrolment rate in Malaysia by sex between 2012 and 2020.

TABLE 3
TERTIARY GROSS ENROLMENT RATIO (GER) IN MALAYSIA BY SEX %

Sex	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	37.6	39.1	39.5	45.6	46.8	43.7	45.1	43.1	42.6
Male	32.2	33.2	33.9	39.8	43.2	40.5	40.7	37.7	37
Female	43.3	45.2	45.4	51.7	50.6	47.1	49.9	48.7	48.4

Source: World Bank, 2022

Table 3 shows that the GER declined by 4.2% within four years, decreasing from 46.8% in 2016 to 42.6% in 2020 and less than the regional average of 51%. Compared to some Asian countries, Malaysia scores the same as Thailand (42.6%) and performs better than India (29.4%), Philippines (33.4%), and Indonesia (36%) but less than Fiji (53%), China (58.4%), Japan (64.6%), New Zealand (80%), Singapore (93.1%), Korea (102%), and Australia (114%). Although these results indicate that Malaysia is fairly progressed, the country has a long way to go to surpass the regional average and achieve results close to Singapore.

With regard to females, Malaysia is progressing well as the GER rose from 43.3% in 2012 to 48.4% in 2020 and exceeded 50% in the years 2015 and 2016. In contrast, the GER for males rose from 32.2% in 2012 to 37% in 2020. It is important to note that Malaysia has managed to address gender parity and the GER for females is consistently higher than males as it reached 48.4% versus 37%, respectively, in 2020 (World Bank, 2022). It is important to see behind the number as it has a relation with socio-economic and political aspects of the country. Thus, quantitative growth in higher education leads to qualitative change in the country. As indicated by Trow (1973), the purpose of higher education shifts from shaping the mind and character of the ruling class (elite), to preparing a larger group in professional and technical skills (mass), and lastly preparing the whole population in "adaptability" to social and technological change (universal).

As reported in Table 3, the number of males attending public universities in Malaysia has decreased since 2012 compared to the number of females. This raises an urgent question as to why females are increasingly outnumbering males in public universities. Alternatively, why are males less motivated to pursue higher education in public universities? The under-representation of males in higher education has become a global phenomenon in both developed and developing countries. Stoet and Geary (2020) explained that considerably fewer men than women enroll in tertiary education in the US and other Western countries, where the average is approximately 45% male students. In the US, there are six female university students for every four male students, which is the largest female–male gender gap in the history of higher education. New concepts have entered the arena of higher education owing to the increase in female enrolment and to the decrease in male students. These concepts include "The Boy Turn" (Weaver-Hightower, 2003), "National Scandal" (Weale, 2016), "Lost Boys" (Tienxhi, 2017), the reversed gender gap dilemma (Van Bavel et al., 2018), and "changing gender disparity," which all discuss the lower representation of males in higher education. Although addressing this issue is complicated and needs additional research, some studies have related the current phenomenon to males' poor reading proficiency (Stoet & Geary, 2020), better performance of females in secondary schools (Tienxhi, 2017), and to socio-economic matters (Chang, Chou, & Chen, 2022). Several authors, like Alam and Saadat (2020), warned the society from the negative consequences of this current phenomenon, arguing that changing gender disparity measures could result in social imbalance and cause severe social problems.

With reference to Trow's theory (1973) and World Bank data (2022), Malaysia is in the massification stage linked to middle-income countries. This implies that Malaysia is lagging behind in achieving full gender parity and falls even lower than its neighboring countries. For example, the gross enrolment ratio of Singapore is 93%, placing the country in the universal stage, which is associated with high-income countries. There is a need for Malaysia to increase the gross enrolment rate and address the challenges that hinder male students from pursuing higher education. The following section provides detailed information on gender disparity mainly in public universities.

Public Universities and Gender Disparity

To date, Malaysia has 20 public universities, with at least one in each state. All are under the umbrella of the Ministry of Higher Education. Five of these universities are classified as research universities, six as comprehensive universities, four as technical universities, and the remaining five are focused on defense, education, management, marine studies, and entrepreneurship (Sirat & Wang, 2022). Generally, female student enrolments in undergraduate programs outnumber male enrolments in most of the public universities; however, that number alone does not tell the entire story and it is essential for the researcher

to uncover the hidden meanings that lie behind the number. Table 4 presents the GPI and some facts behind the numbers.

As shown in Table 4, the total number of students enrolled in 2021 was 584,576 of which 227,620 were male (38.94%) and 356,956 female (61.06%). This figure climbed to 589,879 in 2022 of which 230,161 were male (39%) and 359,718 female (61%), and where the GPI is 1.6. As indicated in the methodology section, a score of 1.6 indicates gender disparity but against males. This indicates that gender parity in public universities has been achieved and female enrollment is currently exceeding male enrollment except in very few universities.

TABLE 4
STUDENT ENROLMENT IN PUBLIC UNIVERSITIES AND GPI

Public Universities	Acronyms	2013	GPI	2021	2022
Universiti Malaya	UM	32,142	1.63	35,885	36,472
Universiti Sains Malaysia	USM	29,183	1.67	31,674	33,841
Universiti Kebangsaan Malaysia	UKM	33,113	1.94	30,844	30,774
Universiti Putra Malaysia	UPM	28,151	2.18	28,587	29,123
Universiti Teknologi Malaysia	UTM	31,992	0.81	32,900	32,279
Universiti Utara Malaysia	UUM	31,587	1.91	32,965	33,758
Universiti Islam Antarabangsa Malaysia	UIAM	30,870	1.48	29,254	27,584
Universiti Malaysia Sarawak	UNIMAS	16,377	2.10	16,551	16,143
Universiti Malaysia Sabah	UMS	17,785	1.76	17,498	17,674
Universiti Pendidikan Sultan Idris	UPSI	22,426	2.89	26,554	30,036
Universiti Teknologi MARA	UiTM	172,686	2.01	188,701	185,303
Universiti Sultan Zainal Abidin	UniSZA	12,411	2.68	12,901	14,115
Universiti Malaysia Terengganu	UMT	10,529	2.57	10,323	10,502
Universiti Sains Islam Malaysia	USIM	12,181	1.03	13,608	14,084
Universiti Tun Hussein Onn Malaysia	UTHM	17,862	0.75	18,581	19,254
Universiti Teknikal Malaysia Melaka	UTeM	13,857	1.10	14,937	14,721
Universiti Malaysia Pahang	UMP	12,748	0.98	13,607	13,685
Universiti Malaysia Perlis	UnIMAP	13,266	2.61	13,176	13,339
Universiti Malaysia Kelantan	UMK	8,953	0.40	11,058	12,213
Universiti Pertahanan Nasional	UPNM	4,583	1.71	4,972	4,979
Total		552,702		584,576	589,879

Among the 20 universities, undergraduate programs are dominated by males only at UTM, UTHM, and UMK. These three universities, specifically (UMK), showed extreme disparity against women. UMK, which was established in 2007 with its main campus located in Bachok district in the east coast of Malaysia, enrolled 12,213 students in the year 2022. Note that UTHM, which is located in the remote area of Johor, also reflected extreme disparity against women. Thus, it is important to note that universities located away from urban areas or not close to the student's home will not attract females as most of the females prefer a university close to home or located in urban areas. This led Marginson (2016) to argue that the expansion of participation in higher education is associated with urbanization and, in particular, the growth of urban middle classes. This explains why Malaysia established at least one university in each of its states. On the other hand, UTM, a university that holds the status of Research University (RU), favors males. This university is dedicated to engineering and technology programs, which do not attract females not only in Malaysia but also worldwide and are considered the STEM subjects (Science, Technology, Engineering, and Mathematics), which tend to favor males. Malaysia, but also worldwide are sensitive in selecting engineering field. As it is considered as one of the (STEM) subjects that worldwide favour male. Detailed information on the lower representation of females in STEM subjects is provided in the following section.

Meanwhile, eight universities scored over 2.0, indicating extreme disparity against males. This ratio implies that in such universities, for every two females there is only one male. Hence, UMP and USIM are the only two universities that have achieved gender parity, indicating that males and females have equal access to education.

Numerous reasons motivate women to pursue higher education. These reasons probably include the opportunity to be independent, self-motivation, avoidance of unwanted marriage, and a path toward success in a variety of ways (Strom & Rao, 2020). Alam and Saadat (2020) added self-efficacy, academic performance, family influence, financial support, school education, teacher influence, and government policies. The academic performance of females at the expense of males is not a new phenomenon and has been markedly documented in the majority of developed countries (UNDP, 2014). Several studies have attributed the gender gap in higher education to males' under-performance in secondary schools, undoubtedly leading to low academic achievement and high overall dropout rates. Goolamally and Ahmad (2010) and Lim (2019) revealed that females in Malaysia perform better than males in primary, secondary, and higher secondary examinations in all subjects. Similarly, Wan (2018) stated that access to public university is significantly competitive with strong emphasis on academic performance in secondary schools and pre-university programs. Hence, this selection criterion results in more females being enrolled in higher education and explains why relatively more male students prefer private institutions rather than public. It is true to say that private universities seek only profit and are less competitive and more flexible to accommodate students having low performance into undergraduate programs. In addition, it reflects gender role within families as some parents are willing to pay fees for their sons while letting daughters struggle to access public universities. Therefore, the fees demanded by private institutions directly relate to gender distribution in higher education. This led Wan (2018) to claim that more males than females populate the more expensive programs in private institutions. Conversely, more females than males enrolled in public universities reflects a more academic-oriented admission system (Aida Suraya et al., 2015). Therefore, it is not astonishing to find male-dominated private and foreign institutions and female-dominated public institutions. As indicated by Wan (2018), the ratio of females to males in private universities is 49:51 and in the foreign branch campuses 43:57.

Other factors that motivate females to join higher education include the system of educating pupils in the schools' pre-universities. For example, the lack of male teachers in basic education has negatively influenced the achievement of male students. According to Lim (2019), the majority of teachers in Malaysia are females, who are considered favored. Evidently, the fewer the number of female teachers the wider the enrolment, retention, and promotion gaps between female and male students. Other studies, such as Tienxhi (2017), have found different explanations on why males are minimally represented in Malaysian public universities. For example, this could be because males have been given privileged positions by their families and are sent overseas, such as to the UK or US, to receive higher education from highly recognized institutions. UNESCO (2016) indicated that there are currently 56,260 Malaysian students studying overseas, specifically in the UK (15,583), Australia (15,357), and the US (6,486).

With respect to above-mentioned ideas, this paper argues that the limited economic return from higher education has forced most males to access a job as early as possible. Men mainly those in the Muslim communities have to shoulder the economic responsibilities for the expanded and nuclear family. Thus, it is better for them to secure a job that does not require a university degree, especially in a situation where access to a job after graduation is more difficult if not impossible. On the other hand, particularly in Muslim communities, it is not compulsory for a woman to shoulder economic responsibility for either her expanded or nuclear family. Thus, by entering higher education, women are benefited economically and this explains why more females are pursuing higher education. This area needs additional research.

This section concludes that Malaysia has made much effort and managed to achieve gender parity in public universities with a GPI score of 1.6. It is important to note that females in Malaysia are the winners of this massification stage that has taken place since 1995 compared to males. Not only Malaysia, but within all regional countries of the Pacific and East Asia, females are benefited from higher education expansion. The average of females' gross enrolment ratio is 55% compared to 47% for males (World Bank, 2022). The GER in Malaysia is 48% female vs. 37% male compared to Vietnam 32% vs. 26%, Thailand 50% vs. 36%,

Philippines 38% vs. 29%, Indonesia 36% vs. 34%, Fiji 64% vs. 43%, China 64% vs. 54%, Japan 64% vs. 66%, Singapore 98% vs. 88%, and Australia 113% vs. 96%. These figures show that Malaysia is progressing even better than Vietnam, Philippines, and Indonesia but still has a long way to go in surpassing the regional average and equaling a country like Singapore.

Despite the progress made, gender bias against females continues to exist, leaving still more room for improvement. The World Bank (2021) has argued that Malaysia's female enrolment rates are below those of regional and "aspirational" countries. The paper supported this argument and added that the number of female enrolled is deceiving as not all females enrolled completed their studies and hold degrees. Table 5 clearly shows that only 26.8% of the total students enrolled in 2022 were graduated: 17.1% of females vs. 9.7% of males. In other words, 73.2% of enrolled students left their studies without obtaining a degree. The dropout for females (82.9%) is lower than that for males (90.3%). This supports our argument that males prefer to join free jobs that do not require a university degree. It observed in Table 5 that graduated females outnumber graduated males in all fields except engineering (13.7% and 15.2%, respectively).

Regarding regional context, Malaysia is poorly performed among Asian nations in female student completion. Harun and Ibrahim (2021) argued that the completion rate of tertiary education for females in Malaysia and the Philippines is meager at less than 30%. In comparison, Vietnam, Laos, and Myanmar recorded more than 60%, with the highest rate of 84% in Singapore. Moreover, females dominated only in the arts, humanities, management, and social sciences rather than in STEM (Science, Technology, Engineering, and Mathletics) subjects. This is because some developing countries, including Malaysia, still believe that women are ideally suited as housewives and that when educated, they should be channeled into teaching, nursing, or other feminine occupations (UNESCO, 2016). This notion is maintained due to sexism, threats to their social identity, and worries about not fitting in (O'Brien et al., 2015). The following section elaborates on gender disparity in the academic fields in public universities.

TABLE 5
ENROLMENT AND GRADUATED STUDENTS BY SEX AND FIELD OF STUDY IN PUBLIC UNIVERSITIES (2022)

	Graduated 2022			2022	Graduated %		
Field of Study	Males	Females	Total	Enrolment	Male	Female	Total
Education	2,141	5,754	7,895	46,342	4.6	12.4	17.0
Arts and Humanities	4,472	8,725	13,197	55,104	8.1	15.8	23.9
Social Science, Business, and Law	16,174	41,324	57,498	199,948	8.1	20.7	28.8
Science, Math, and Computers	8,444	14,818	23,262	90,862	9.3	16.3	25.6
Engineering and Construction	19,354	17,666	37,020	126,926	15.2	13.9	29.2
Agriculture and Veterinary	1,388	1,591	2,979	10,906	12.7	14.6	27.3
Health and Welfare	2,024	6,007	8,031	36,780	5.5	16.3	21.8
Services	3,005	4,683	7,688	21,055	14.3	22.2	36.5
General programs	77	219	296	1,956	3.9	11.2	15.1
Total and Percentage	57,079	100,787	157,866	589,879	9.7	17.1	26.8

Source: Ministry of Education Malaysia, 2022

Gender Disparity by Academic Field in Public Universities

Although female students have dominated public universities in the last three decades, stereotyping still exists in the academic fields. The use of GPI has revealed that in public universities females are less represented in fields like engineering as seen in Table 6.

TABLE 6
GPI AND STUDENT ENROLMENT IN PUBLIC UNIVERSITIES BY FIELD OF STUDY (2022)

Field of Study	Males	Females	Total	GPI
Education	12,876	33,466	46,342	2.6
Arts and Humanities	19,610	35,494	55,104	1.8
Social Science, Business, and Law	65,098	134,850	199,948	2.1
Science, Mathematics, and Computers	36,644	54,218	90,862	1.5
Engineering, Manufacturing, and Construction	71,731	55,195	126,926	0.8
Agriculture and Veterinary	4,650	6,256	10,906	1.3
Health and Welfare	10,295	26,485	36,780	2.6
Services	8,550	12,505	21,055	1.5
General programs	707	1,249	1,956	1.8
Total and Percentage	230,161 (39%)	359,718 (61%)	589,879	1.6

Source: Ministry of Education Malaysia, 2022

Table 6 shows that females outnumbered males in all fields, including subjects where males are expected to be numerous such as mathematics and the sciences. This result implies that women are pursuing programs previously associated with "masculine" interests rather than arts and education, which were previously associated with "feminine" interests (Yusof, Alias, & Habil, 2012). The only fields of study in which males continue to outnumber females are engineering, manufacturing, and construction, for which the GPI is 0.8. This finding is consistent with Alam et al. (2021) who stated that the low participation of female students in STEM fields, where job opportunities are expanding, is still a matter of concern. The increase of female enrolment in STEM fields is the crucial target of the Incheon Declaration held by UNESCO (2015), which states that countries must develop policies and programs that reinforce the research function in tertiary and university education through the early uptake of STEM fields, particularly by girls and women. Despite this concern, the interest of female students in taking up STEM subjects has decreased (Kamsi et al., 2019). Several authors, like O'Brien et al. (2015), argued that the lower sense of belonging in female STEM students is connected to their belief of how others view women's abilities. This is not only the case of Malaysia as gender disparity in STEM education exists all over the world. As of 2019, only 27% of the STEM workforce in the United States of America (USA), the world leader in science and technology, is composed of females (Martinez & Christnacht, 2021). However, the variation in STEM is not high in Malaysia, implying that females are on the way to achieving parity in these fields. The World Bank (2021) supported this idea; as stated, when compared to selected OECD countries, Malaysia performs very well as its enrolment ratio for engineering courses is 45% female versus an enrolment rate of 17.6–21.8% for the United Kingdom and United States, respectively.

The three subjects that showed extreme disparity in favor of females are education, social sciences, and health studies. This indicates that males and females are still influenced by society's norms regarding "feminine" and "masculine" roles. Males and females decide on higher education differently and gender roles tend to influence these decisions (El Kharouf & Daoud, 2019). Accordingly, females are dominant in health and socio-economic studies, but minimally represented in engineering subjects. In this regard, Strom and Rao (2020) stated that women continue to be overrepresented in certain fields and underrepresented in others (often those that are considered significantly prestigious or have high earning potential). This is consistent with the World Economic Forum (2021) findings that gender gaps are more likely in sectors that require disruptive technical skills. For example, in cloud computing, women comprise 14% of the workforce, 20% in engineering, and 32% in data and artificial intelligence. This situation has impacted negatively on the participation of women in the labor market. This segregation in education is likely to have implications for the labor market, where some occupations will become predominantly male while others will be female-dominated (Mokhtar, 2020). The gender gaps in these fields of study need to be addressed and field selection must be based according to interest and competitiveness. Malaysia has to increase

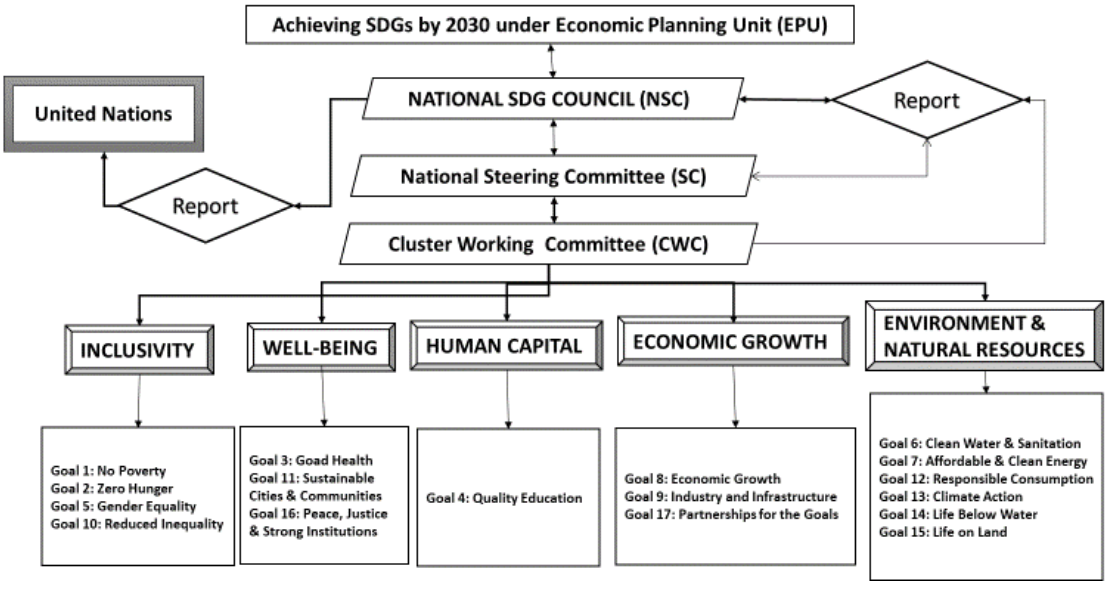
awareness early among female students regarding the growing demand of STEM graduates in the national and global market.

Has Malaysia Achieved the SDGs?

In New York on 25 September 2015, 192 nations, including Malaysia, adopted the Sustainable Development Goals (SDGs) 2030. The agenda covers 17 goals, 169 targets, and 232 indicators to be achieved by 2030. The SDGs are "transforming our world: the 2030 Agenda for Sustainable Development sets out an ambitious plan of action for people, planet, prosperity, peace, and partnership with the objective of leaving no one behind" (Department of Statistics Malaysia, 2018). This section aimed to trace the Malaysian government's progress in meeting the goals mainly related to our paper, i.e., 4, 5, and 10. Data from the EPU (2017) and Department of Statistics Malaysia (2018) show that Malaysia has taken the issue of SDGs very seriously and swiftly embarked on creating a roadmap to fulfill the goals as early as possible.

Immediately in December 2016, the government named the National SDG Council (NC) to be responsible for achieving these goals. To demonstrate its political will at the highest level, the council is chaired by the Prime Minister of Malaysia. The overall role of the NC is to plan and monitor SDG implementation, set the national agenda, and report progress to the United Nation via the High Level Political Forum (HLPF). To facilitate its task, a National Steering Committee (NSC) headed by the Director General of the Economic Planning Unit (EPU) was generated. The role of NSC is to formulate the SDG roadmap, monitor progress of targets, identify issues, and report to the National Council. The NSC includes representatives from government agencies, civil society organizations (CSOs), the private sector, and academia. Under the NSC, five dedicated cluster working committees/groups (CWCs) were launched in March 2017, led by section heads from the EPU. The aim of CWC is to identify indicators for each SDG, implement programs, and report to the NSC. The five CWCs comprise Inclusivity, Well-Being, Human Capital, Economic Growth, and Environment and Natural Resources. Each committee/group addresses specific goals. For example, the Inclusivity group is responsible for Goal 1 (No Poverty), Goal 2 (Zero Hunger), Goal 5 (Gender Equality), and Goal 10 (Reduced Inequalities). Detailed information on the structure of the NC and its related three layers are shown in Figure 2.

FIGURE 2
NATIONAL COUNCIL STRUCTURE



Malaysia has increased awareness among its entire population about the agenda of the SDGs and promotes all sectors public, private, NGOs and civil societies to participate in achieving the vision of SDGs

as soon as possible. Several policies have been implemented regarding gender parity in accessing higher education. This includes but is not limited to the Malaysian Education Blueprint 2013–2025 (MEB), Malaysia Education Blueprint (Higher Education) 2015–2025, Blueprint on Enculturation of Lifelong Learning for Malaysia 2011–2020, Eleventh Malaysia Plan (11MP) 2016–2020 "Anchoring Growth on People," and recently, the Twelfth Malaysia Plan (12MP) 2021–2025. Moreover, Malaysia hosted the Malaysia SDG Summit in September 2019, themed on "The Whole of Nation Approach: Accelerating Progress on the SDGs." These interventions led Malaysia to make positive progress in achieving the goals particularly related to higher education and inclusion.

Malaysia has achieved gender parity in all level of education as indicated by the UPU (2017). The enrollment rates for primary school reached 97.2% and 90% for secondary school for both boys and girls. According to the World Bank and data gathered from the quick facts (Ministry of Education Malaysia, 2022), the proportion of female students enrolled in public universities reached 48% in 2020 and exceeded 50% in the years 2015 and 2016. In the year 2022, the number of females in public universities was almost twice that of males in the same institutions (61% and 39%, respectively).

Despite the above positive remarks, Malaysia still has not fully achieved the SDGs mainly related to our paper due to internal and external difficulties. This is not only the case for Malaysia, but is manifested also in many developed and developing countries. The world is not on-track to achieve gender equality by 2030 and the social and economic fallout from the Covid-19 pandemic has made the situation even bleaker (United Nations, 2022). This is also evident from the SDG report released by Cambridge University in 2022. For this report, scoring 75 out of 100 indicates that the SDG target has been achieved and vice versa. Based on this measure, countries are classified into five categories: very high (80–100), high (65–79), moderate (50–64), low (40–49), and very low (0–39). Malaysia is located in the moderate category, meaning that gender parity is not fully addressed. With reference to the reports, Malaysia has done well in the year 2020 compared to 2022 (Sachs et al., 2022). In 2020, Malaysia ranked 60th among 166 countries with the Sustainable Development Goals (SDG) with a score of 71.8%. The situation declined in 2022 as it ranked 72nd out of 162 nations (70.4%), with a regional average of 65.9%. Furthermore, the report evaluates the progress achieved in each goal separately. It indicates that "moderately increasing progress with challenges remain" regarding goal four (Quality Education) while goal five (Gender Equality) is "moderately increasing with major challenges remaining" and for goal ten (Reduced Inequality), "major challenges remain."

This section concludes that Malaysia has made a huge effort to achieve gender parity by 2030. It is on the right track to accomplish the SDGs, but faces internal and external difficulties that will delay success. The lack of financial support and the Covid-19 pandemic have aggravated the situation. From 2020 to the present, considerable manpower and huge financial resources have been reallocated to fighting the pandemic. The country is in need to address the low-income families, ensure ethnic equity, cope with international crises, and reduce socio-economic disadvantage among its whole population. Without addressing these limitations, the ambition of Malaysia to be a high-income nation by between 2024 and 2028 will remain an illusion rather than reality.

CONCLUSION

The paper concludes that political will, the implementation of rational policies, and maintaining a commitment to international actors are the success factors behind achieving gender parity in education attainment. The percentage of females enrolled in public universities has increased very rapidly and is 61% compared to 39% for males. On contrast, male enrolment in public universities has consistently decreased since 2012. Among 146 nations, Malaysia ranks 56th regarding education and attainment (99.4%) ahead of 90 countries. Despite these positive remarks, gender disparities remain and can take several forms. Women are underrepresented in STEM subjects, particularly engineering where job opportunities are expanding. The gross enrolment ratio is even below the regional average (51%) and far from some neighboring countries like Singapore (93%). Malaysia is performing fairly well regarding SDGs but still is in the moderate stage with an overall score of 70.4%. Malaysia has to accelerate its efforts if the SDGs are to be

achieved by 2030. Up to the present, Malaysia is in the massification stage, which is linked to middle-income countries. Without addressing gender inequality and achieving SDGs, the aspiration of Malaysia to be a high-income nation between 2024 and 2028 seems more an illusion than reality.

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