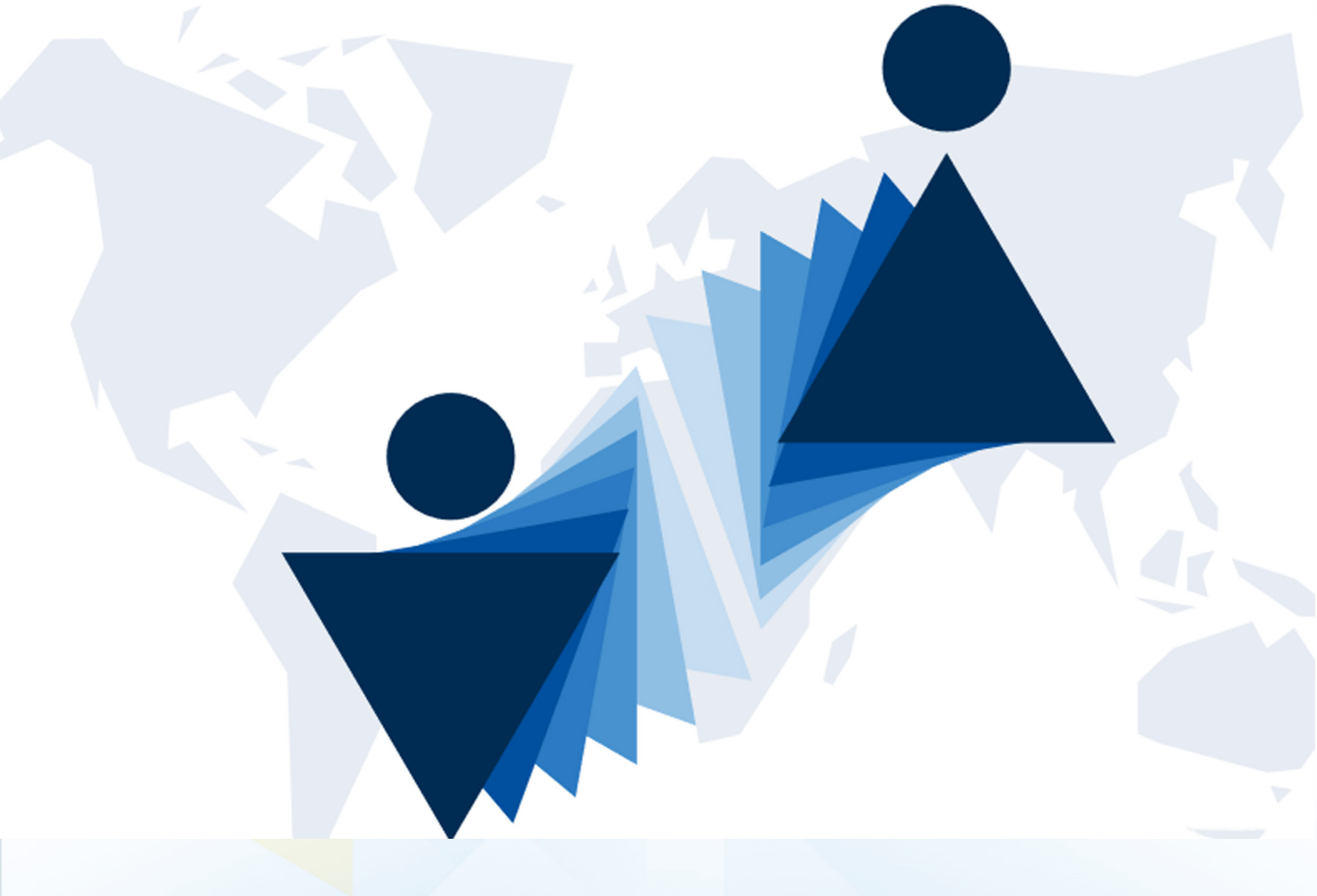


Global Gender Gap Simulation report



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I- Introduction:

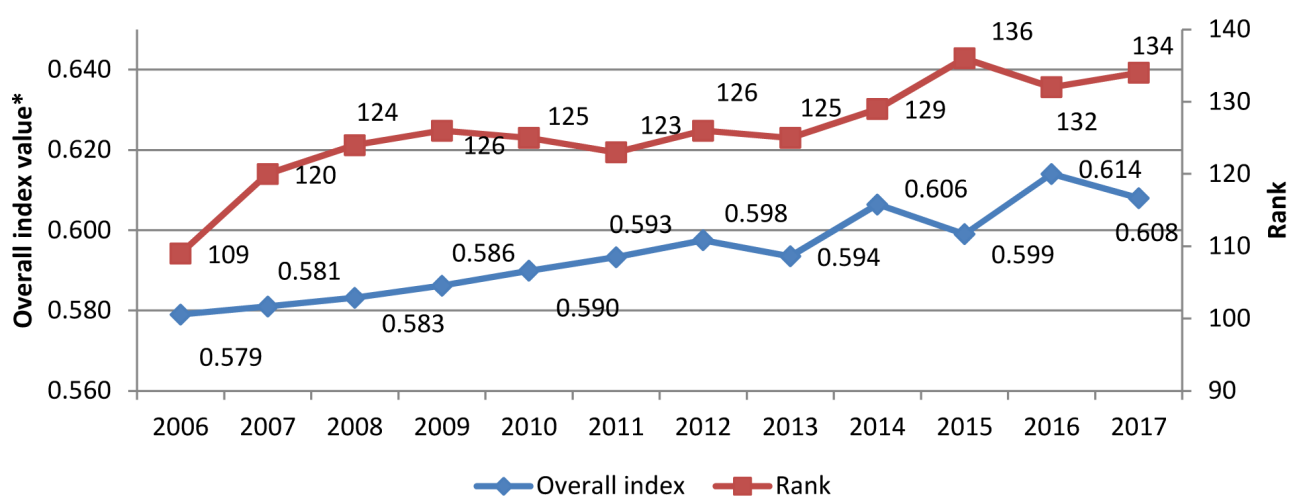
The Global Gender Gap (GGG) index is an annual index published by the World Economic Forum to measure the gap between males and females in four aspects: economic participation and opportunities, educational attainment, health and survival, and political empowerment. Each of the four aspects is measured by a sub-index that is calculated from 3 to 4 indicators. The overall index and the sub-indices are 0-1 scales, with 0 means the extreme inequality and 1 means the extreme equality.

The first GGG report that was released in 2006 included 115 countries while GGG 2017 included 144 countries. Egypt has a profile in GGG reports starting from the first report (GGG report 2006) till the last one published in report 2017.

There are three main points that worth mentioning regarding GGG index; the first is that it focuses on measuring gaps rather than levels, that is the gap between males and females not the absolute female situation in each country. The second point is that it captures gaps in outcome variables rather than gaps in input variables. The third is that it ranks countries according to gender equality rather than women's empowerment.

Egypt scored 0.578 in 2006 and ranked 109th among 115 countries. The value of the overall index for Egypt increased in 2017 to 0.608 but the rank dropped to 134th among 144 countries. The following figure displays the overall index value for Egypt (2006-2017) along with the overall rank. The labels represent the rank and the value of the overall indicator (Rank, Value).

Figure (1): Trend of Egypt's GGG overall index, and rank (2006-2017).



II- Objective of the study:

Changing values of the sub-indicators of the GGG will result in different values and ranks for Egypt. Accelerating the improvement in Egypt GGG value requires re-shaping the positions in the sub-indices according to the impact of the improvement in the sub-indices on the total GGG value.

This report present simulation results for Global Gender Gap Index based on the current situation in addition to some hypothetical scenarios for changes in the sub-indices.

In the coming sections, the methodology and the results of the scenarios are displayed, along with a comparison with GGG report 2017.

III- Methodology:

A simulation system was developed by baseera team using MS Excel. The system includes all the equations needed to re-calculate the sub-indices of the GGG, the GGG total score and Egypt rank once the user changes any value for the GGG indicators.

To calculate the score and the rank of Egypt, the following assumptions were made:

- 1- There is no change in males' status which means that their indicators values will remain the same as the baseline year, except in the ministerial positions and the percentage of parliament seats.
- 2- The indicators of other countries will remain at the levels of GGG 2017.

Due to changes in Egypt's indicators in 2018 if compared to the indicators used to calculate the 2017 GGG score, current Egypt's score was recalculated. Five scenarios for changes in Egypt indicators were applied using the simulation system and their results were compared to the results of the current status scenario.



IV- Results:

Current situation

Egypt witnessed improvements in 2 indicators if compared to the values published in the GGG 2017 report. These indicators are the literacy rate, and the percentage of ministerial positions held by women. The literacy rate changed for females from 67.2% to 69.2%, and for males from 82.6% to 78.9%, based on the results of 2017 census. The percentage of women in ministerial positions increased in June 2018 to 24.2% after the appointment of 8 female ministers in Dr. Moustafa Madbouly's cabinet.

Assuming that the score of other countries will remain at the same level as in 2017 GGG report, the rank of Egypt will change positively from 134 to 132 as the overall index changes from 0.608 to 0.623 (+2.4%). These changes affect the education attainment and the political empowerment sub-indices [The first one changes from 0.961 to 0.973 with a percentage change of 1.3% and the second one changes from 0.087 to 0.133 with a percentage change of 52.5%].

Table (1): GGG under the current scenario, GGG 2017 and the percentage change

	GGG under the current scenario	GGG 2017	Percent change (%)
Economic participation and opportunities	0.413	0.413	0
Educational attainment	0.973	0.961	1.3
Health and survival	0.971	0.971	0
Political empowerment	0.133	0.087	52.5
Overall Index	0.623	0.608	2.4
Overall Rank	132	134	

Scenario 1: Increase females' labor force participation

This scenario assumes that labor force participation for females increases from 24.9% to 40%, while the value for males remains the same. This change will result in a change in the economic participation and opportunities sub-index and the overall index. The sub-index increases from 0.413 to 0.451 with an increase of 9%. Consequently, the overall index will increase from 0.623 to 0.630 which will push the overall rank upwards by 5 ranks (from 132 to 127), given that the ranks of the other countries remain the same.

Table (2): GGG under the scenario 1, current GGG in 2018 and the percentage change

	GGG under the NSWE scenario	Current GGG 2018	Percent change (%)
Economic participation and opportunities	0.451	0.413	9
Educational attainment	0.966	0.973	-0.7
Health and survival	0.971	0.971	0
Political empowerment	0.133	0.133	0
Overall Index	0.630	0.623	1.2
Overall Rank	127	132	

Scenario 2: Increase females' literacy rate

The second scenario assumes that the literacy rate of females will increase from 69.2% to 88%, while the value of the indicator is the same for males. This change will result in an increase in the value of the educational attainment sub-index from 0.973 to 0.997 and the value of the overall index from 0.623 to 0.629 resulting in a movement upwards for the overall rank by 5 places (from 132 to 127), given that the ranks of the other countries remain the same. Worth noting that Egypt's current situation for educational attainment is already in an advanced level with a value of 0.973 out of 1, meaning that any increase in the educational level indicators will result in a relatively small improvement in the overall index.

Table (3): GGG under the scenario 2, current GGG in 2018 and the percentage change

	GGG under the NSWE scenario	Current GGG 2018	Percent change (%)
Economic participation and opportunities	0.413	0.413	0
Educational attainment	0.997	0.973	2.4
Health and survival	0.971	0.971	0
Political empowerment	0.133	0.133	0
Overall Index	0.629	0.623	1
Overall Rank	127	132	

Scenario 3: Increase females' healthy life expectancy

In the third scenario, it is assumed that the healthy life expectancy increases from 63.2 years to 71.4 years, while the value for males remains the same. This hypothetical change results in a change in health and survival sub-index from 0.971 to 0.980 with an increase 1% approximately. However, this increase does not affect the rank of Egypt as it remains at 132 as the overall index will stay the same as the current situation.

Table (4): GGG under the scenario 3, GGG currently in 2018 and the percentage change

	GGG under the NSWE scenario	Current GGG 2018	Percent change (%)
Economic participation and opportunities	0.413	0.413	0
Educational attainment	0.966	0.973	-0.77
Health and survival	0.980	0.971	0.8
Political empowerment	0.133	0.133	0
Overall Index	0.623	0.623	0.03
Overall Rank	132	132	

Scenario 4: Increase the number of females in ministerial positions

The fourth scenario assumes that the percentage of females in ministerial positions is 50%, meaning that the percentage of males will decrease to 50%. This hypothetical change will result in a change in the value of the political empowerment and in the overall index. The value of political empowerment sub-index will increase from 0.133 to 0.301 with a percentage change of 126% and the overall index consequently will increase from 0.623 to 0.663 with a percentage change of 6%, and Egypt rank will jump from 132 to 113.

Table (5): GGG under the scenario 5, Current GGG 2018 and the percentage change

	GGG under the NSWE scenario	Current GGG 2018	Percent change (%)
Economic participation and opportunities	0.413	0.413	0
Educational attainment	0.966	0.973	-0.77
Health and survival	0.971	0.971	0
Political empowerment	0.301	0.133	126
Overall Index	0.663	0.623	6
Overall Rank	113	132	

Scenario 5: Increase the percentage of females in parliament

The fifth scenario assumes that the percentage of females in parliament will increase from the current level of 15% to 35%, meaning that percentage of males will decrease to 65%. This hypothetical change will result in a change in the value of the political empowerment sub-index and in the overall index. The value of political empowerment sub-index will increase from 0.133 to 0.264 with a percentage change of 85% and the overall index consequently increase from 0.623 to 0.649 with a percentage change of 4%, and the overall rank jump from 132 to 119.



Table (6): GGG under the scenario 6, Current GGG 2018 and the percentage change

	GGG under the NSW scenario	Current GGG 2018	Percent change (%)
Economic participation and opportunities	0.413	0.413	0
Educational attainment	0.966	0.973	-0.7
Health and survival	0.971	0.971	0
Political empowerment	0.246	0.133	85
Overall Index	0.649	0.623	
Overall Rank	119	132	

Scenario 6: Achieving the targets of the national strategy for women

This scenario assumes that Egypt achieved the targets of the national strategy for women empowerment (NSWE scenario), including:

- Labor force participation: to increase from 24.9% to 35% for females.
- Ratio of females' Estimated earned income (PPP, US\$) to males' Estimated earned income (PPP, US\$): to increase from 0.285 to 0.580.
- Percentage of Legislators, senior officials and managers: to increase from 6.4% to 12% for females.
- Percentage of Professional and technical workers: to increase from 37.5% to 48% for females.
- Literacy rate: to increase from 67.2% to 88% for females.
- Healthy life expectancy: to increase from 63.2 years to 71.4 years for females.
- Percentage of parliament seats held by women: to increase from 14.9% to 35%.

In addition, the scenario uses the new percentage of the ministerial positions held by women (24.2%) resulted from appointing 8 female ministers in the new cabinet which is headed by Dr.Moustafa Madbouly, and the current percentage of literacy rate (69.2%).

Egypt GGG under the this scenario reaches 0.694 compared to 0.623 currently with an increase of 11%. The rank of Egypt will jump from 132 to 74.

The following table shows that the highest change was witnessed in the score of the political empowerment with an increase of 85% compared to 2018 score, followed by the economic participation and opportunities (34%). Education attainment witnessed a small increase of 2.4%. Health and survival almost reaches the ideal parity status under the NSWE scenario so it witnessed the lowest increase (1%) because Egypt is currently very close to the ideal parity status⁽¹⁾.

Worth noting that in the health and survival component, the GGG methodology assigns the highest weight to the sex ratio at birth which is a biological matter and a lower weight to the healthy life expectancy.

Table (7): GGG under the scenario 1, GGG currently in 2018 and the percentage change

	GGG under the NSWE scenario	GGG currently in 2018	Percent change (%)
Economic participation and opportunities	0.553	0.413	34
Educational attainment	0.997	0.973	2.4
Health and survival	0.980	0.971	1
Political empowerment	0.246	0.133	85
Overall Index	0.694	0.623	11
Overall Rank	74	132	

⁽¹⁾ Egypt exceeds in the healthy life expectancy the parity limit as the ratio between females and males under the NSWE scenario is 1.167 while the upper limit for this ratio is set as 1.060, thus Egypt value was set at 1.060.



Conclusion

A simulation for the GGG index was performed to explore the impact of changing each of the GGG sub-indices on Egypt GGG score and its rank among other countries.

The values of the indicators used by the world economic forum to calculate 2017 GGG index has been changed due to change in literacy rate and the number of female ministers in 2018. This changes the Egypt GGG score from 0.608 to 0.623 and accordingly the rank changes from 134 to 132.

The objective of this paper is to test the effect of changing different indicators and sub-indices on the change in Egypt's score and rank in the GGG. Six scenarios for changes were tested:

- 1- Increase females' labor force participation
- 2- Increase females' literacy rate
- 3- Increase females' healthy life expectancy
- 4- Increase the number of females in ministerial positions
- 5- Increase the percentage of females in parliament
- 6- Achieving the targets of the national strategy for women

If one indicator will be changed, the highest improvement in the GGG score and rank will be achieved under scenario 4; to increase number of females in ministerial positions, as the score will reach 0.663 and the rank will be 113. Scenario 5; to increase the percentage of females in parliament, will come second with a score of 0.649 and a rank of 119. Scenario 1; to increase females' labor force participation, and Scenario 2, to increase females' literacy rate, cause the same effect as the score will reach 0.630 and the rank will be 127. Improving women's health will not reflect on improving the GGG score or rank. This suggests that women political empowerment will accelerate the pace of improving Egypt's GGG score.

Assuming that the other countries score will not change, achieving the quantitative targets of the national strategy for women empowerment will make a great change in Egypt's GGG score and rank. The score will reach 0.694 with a rank of 74.



Women political empowerment will accelerate the pace of improving Egypt's GGG score.