

# ENVIRONMENTAL SUSTAINABILITY, GENDER EQUALITY & ECONOMIC DEVELOPMENT IN GUJARAT: A TRI-FOLD ANALYSIS

**Dr. Kalpana Satija, Manish Chhatlani**

HOD & ASSOCIATE PROFESSOR, KSKV Kachchh University  
RESEARCH SCHOLAR, PURSUING PhD, KSKV Kachchh University

## ABSTRACT

Economies cannot advance at the cost of environmental damages. Sustainable development requires equitable resource utilisation & gender-equal participations. Gender and environment must be accounted for if we want to build a sustainable future. As we realize about the influence that economic actions have on the quality of life, the link between ecology and the economy has assumed more importance. This paper makes an attempt to analyse the nexus between the three important aspects of sustainable development as underlined in the UN SDG (goals) : Protecting the Environment (SDG 6, 7, 13), Gender Disparities (SDG-5) and Economic Development (SDG-8). The paper theoretically examines the possible models of interaction between the three variables and presents discussion on the causation between the same. The paper then analyses the trends of target achievements outlined under such SDG indicators for the State of Gujarat.

**Key words:** Sustainable Development, Environment, Gender Inequality, Gujarat, Economic Development

**JEL Classification:** Q01, Q5, O44, J16

## INTRODUCTION

Socio-Economic development is form of living that improvises every day. It implies maximum availability of resources to people to sustain a continuous betterment of quality of life. But factors such as environmental degradation make it a challenging journey. The core concept of **environmental degradation** is the element that resources on the earth are limited and their deterioration through consumption of these resources have been at alarming rates across the globe. Economics on the other hand lays its foundation on the very principle of **scarcity**. The idea that limited resources have unlimited wants and can be used in alternative manner is the core of Economic studies. According to United Nations, 'Increasing **unsustainable consumption patterns** have led to worsening air pollution, water scarcity and waste generation, threatening human and environmental health.' It also cites that increased demand for fossil fuels and natural resources is responsible for causing biodiversity loss. (United Nations, 2016)

An Oxford article (Oxford) suggests that there is a role for economic instruments in reducing pollution-based factors related to **increasing urbanization**. It cites that there 'exist crucial environmental thresholds to India's growth strategy.' Governments here have a crucial role to ensure where markets exploit resources to advance their profits and fulfil their individual needs than the collective need of the society, pointing towards a case of **Market Failure** where interventions may be required to stop the Marginal **social cost** (MSC) being higher than the Marginal Social benefits

(MSB) accruing from higher outputs.

In recent times, the linkages between Human Development and Environmental studies have led to the introduction of the ideas such as **Environmental Economics, Environmental Accounting & Green GNP**. The UN has listed Sustainable Development Goals for economies to achieve by 2030 in this regard.

**SDG-5** (United Nations) talks about empowering women and ensuring their equal participation in the workforce. This can lead to economic growth and poverty reduction. Gender inequality can also result in reduced social welfare. **SDG-6** plans to conserve water resources and provision of such resources undisputedly to public at large. **SDG-7** (United Nations) lists access to energy as one of the main pillars of economic development of a country. Economies need to shift towards alternative sources of energy to meet the power needs. People who don't have access to clean sources of energy, are more likely to be among those belonging areas that are deprived of basic necessities/belonging to the below poverty line.

**SDG – 8**, meanwhile aims for sustainable economic growth, decent work for all, and inclusive opportunities and aspects such as addressing youth unemployment. Economic Growth is the primary foundation on which economies would continue to address its other issues. **SDG-13**, centres on Climate Action, striving to combat climate change and its effects by employing diverse strategies.

This paper will analyse the interplay between the three factors: environment sustainability, economic growth & gender equality.

## LITERATURE REVIEW

In 11-state analysis of India in terms of clean water & sanitation, (Ghosh, Bhowmick, & Saha) talk about SDG targets and the initiatives of the central government with respect to this goal in India and how Indian states have progressed over time in this aspect from 1990s. The study finds that **Gujarat fares as one of the best performers** of the SDG 6 parameters

In his (Deshpande, June 2020) research on India and gender bias, it was observed that India has amongst the most unequal gender division of household work globally. It points that 'while women have suffered disproportionately more job losses, risky, hazardous and stigmatized jobs are exclusively their preserve during lockdown'. It also points out that **the gaps in labour force participation have widened** over the period of study.

India's ongoing attempts to achieve SDG-7 goals are examined under the energy policy report (by) (Srikanth, 2018). The research brings the fact that **SDG 7 is central to every major challenge** that India has to overcome today and in the near future. 'There is a need to develop an orderly transition to a **low-carbon economy**, so that India can achieve its SDGs and NDCs in an efficient, effective and sustainable manner.

In the report examining the status of renewable energy in Gujarat, (Tabassum & Shastry, 2021) states that Gujarat has an enormous renewable energy potential especially wind and solar. Policies like solar power policy of 2021 has made **Gujarat the first state with highest number of roof top installations**. The wind power policy has led to development of world's largest hybrid solar-wind power park In significantly old research, one that possibly laid foundation

of economics-feminism nexus, (Agarwal, 1992) studies and presents arguments that, Women, particularly those living in impoverished rural households in India, experience distinct gender-specific impacts of environmental degradation. Simultaneously, they play an essential role as proactive participants in environmental protection and regeneration of the environment.

## OBJECTIVES OF STUDY

The objectives of the study include:

- (i) To **discuss the causation models** possible for the three variables under study: Gender Equality, Environmental Sustainability & Economic Development.
- (ii) To **measure progress in SDG Indicators in relevant areas** for the state of Gujarat

## METHODOLOGY:

In this paper, we analyse three possible relationships of causality among the three variables

- (i) Spurious Confounding
- (ii) Mediation
- (iii) Moderation

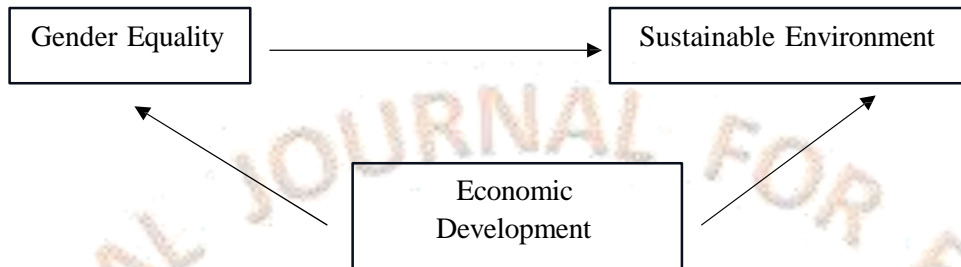
Arguments are presented with respect to how the variables are related to justify the models. It is followed by measuring changes (net difference over time frame) made in relevant SDG indicators.

The data pertaining to SDGs sub indicators were collected by **secondary data collection** from the **National Family Health Survey (NFHS-IV & V)** which completed its data publication in 2021 from states of India. The study covers parameters from the state of **Gujarat** (India). The data obtained from both this platform was cleaned, tabulated and analysed using Pivot operations. Suitable transformations were made to raw data to an appropriate form to allow statistical calculations.

**DISCUSSION & ANALYSIS:**

A confounding variable Z creates a spurious relationship between variables X and Y when variable Z is related to both X and Y. A confounding variable usually distorts or hides the effects of another variable on economic growth/development in question.

**Figure 1 – Spurious Confounding Model**



One may argue that there may not exist a direct impact that gender equality is capable of causing Sustainable Development. However, Economic Development may act here as a confounding variable, that is capable of affecting both the variables. As economies progress to higher economic fronts, the workforce participation among men and women is likely to be more, owing to better lifestyles, and reformed social setup. At the same time, resources will get utilised and Environment can be affected catastrophically if development is at the expense of consuming exhaustible resources. Economic Development (Z) can be indicator capable of producing the correlative pattern between Gender Equality (X) and Sustainable Development (Y).

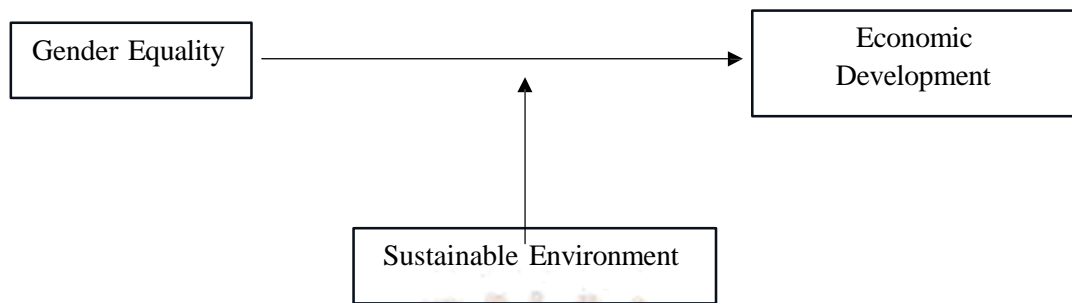
In a mediated model, causation occurs when at least part of the reason X affects Y is through Z. X affects Z and Z affects Y.

**Figure 2 – Mediation Model**



Here, we consider economic development to happen in an economy if it is inclusive and sustainable. Gender disparities, exemplified by restricted access to essential resources like energy, water, and sanitation, adversely affect human well-being, the environment, and hinder sustainable development. An unsustainable environment does not provide the foundation for further growth of industrial and business environment necessary for growth. This is the indirect effect. The direct effect also affects our variable of Economic development (Y) through Gender Equality (X) as outlined in SDG-5. Equal opportunities to education, health and employment would only improve the economic health of the countries.

Figure 3 – Moderation Model



Gender equality (X) drives economic development (Y) by expansion of the workforce, utilizing skills effectively, fostering entrepreneurship, enhancing consumer demand, investing in education, promoting financial inclusion, and reducing income inequality. Sustainable development here acts as a moderator (Z) that decides the impact X will have on Y. It controls the effect. If Environment is not sustainable, i.e., polluted or unsafe, equitable gender roles will still not be able to impact the development goals much.

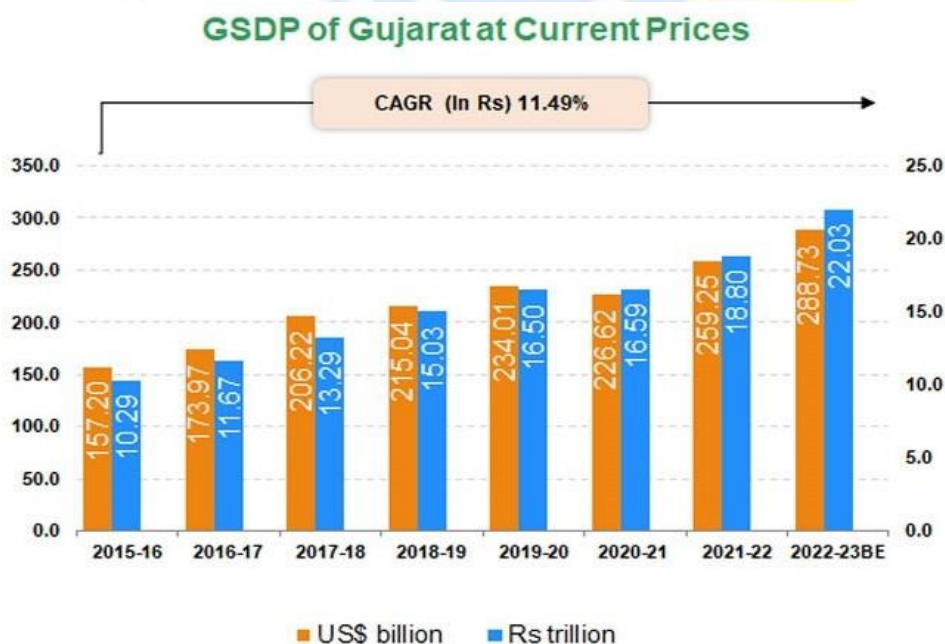
**Measuring Progress : Case of Gujarat**

Gujarat, is one of the most prosperous and economically advanced states of India. In this segment, we analyse the three components under study and their progress over the period of time.

Gujarat has seen a compounded growth of 11.49% over the decade in its Gross Domestic Product. The increase is an indicator of Economic growth and better lifestyle of its people.

Figure 4 – Gross State Domestic Product of Gujarat (2015 to 2022)

(Secondary Source: IBEF)



Note: BE- Budget Estimate  
 Source: Directorate of Economics and Statistics Gujarat, Government of Gujarat

Following is a tabular presentation of goals in these areas achieved by Gujarat as per NFHS IV & V Survey Rounds. (2015-16 and 2019-20)

Indicators observed

- Clean Fuel refers to Electricity, biogas, or LPG connections usage for cooking by households.
- Improved sanitation is unshared flush system by households (*not indication of toilet coverage*)
- Improved drinking water source includes RO plants, piped water, public taps, etc fit for drinking purpose.
- Percentage of women who participate in decisions related to household on daily basis

Absolute & relative differences have been found to measure progress which shows increment in all dimensions examined. A healthy, clean and safe environment is therefore conducive to economic growth.

**Table 1 – NFHS Data Fact Sheet (Gujarat)**

Dimension	Attribute	Reported in Percentage			
		2019-20	2015-16	Absolute Difference	Relative Difference
Environment	Clean Fuel for Cooking	66.9	52.6	14.3	27.19
Environment	Improved Sanitation	74	63.6	10.4	16.35
Environment	Improved Drinking Water Source	97.2	95.9	1.3	1.36
Gender	Women's Participation in Household decisions	92.2	85.4	6.8	7.96

The observable attributes show significant improvement in the 'Environment' dimension by Gujarat in 5 years gap. There is a 27% rise in number of households that have been able to switch over to cleaner sources of fuel. Progress is remarkable in reducing dependencies on firewood or coal for cooking, cleaner sanitation facilities & open/untreated water sources. The state has achieved almost complete coverage of households that use clean drinking water at 95.9%.

**Table 2 – Gender disparity as noted in NFHS V (Gujarat)**

Attribute	Reported in Percentage (2019-20)		Ratio (F: M)
	Males	Females	
Literacy Rates	90.9	76.5	0.84
Schooling (More than 10 years)	45.6	33.8	0.74
Internet Users	58.9	30.8	0.52

The table is indicative of the gap in gender among people of Gujarat. Ratios are slightly aspirational in terms of the goals we wish to achieve under SDG-5. The ratio of internet users is however poor. Ratio values closer to one (1), would be indicative of equitable opportunities to men and women. Proportion of schooling is however less than 50 for both males and females, the state can aspire to work on improving dropouts or encouraging students to persist for more years in the education domain to increase their employability/productivity.

Gujarat is a promising area where these three SDGs could work together to bring about a change. As the data shows, all trends have shown positive scope for work ahead in the direction.

## CONCLUSION:

Women have a crucial part in safeguarding the environment and promoting economic growth. Their involvement includes activities like sustainable farming, preserving biodiversity, embracing renewable energy sources, and adapting to climate change. Women's contributions in entrepreneurship, education, and raising awareness also lead to positive social and cultural impacts. Gender equality and empowerment contribute to increased economic productivity and overall progress. Acknowledging and supporting the roles of women can foster sustainability and prosperity, benefiting both the environment and the economy. Gujarat can be seen as an example of leading economic development by driving on all fronts. The scope of the study can be expanded to study the three variables through econometric measurement & identification of exact degree of causation for particular states of India, such as Gujarat.

(Agarwal, 1992)

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