ISSN 0024-5623

Local Government Quarterly

July - September 2025

A Journal of the
All India Institute of Local Self-Government

- ★ Empowering Rural Local Governments Through 73rd Constitutional Amendment Act
- ★ Issues and Approaches to Drinking Water in Rural Areas
- ★ Spatial Distribution and Environmental Implications of Wind Turbines: A Case Study of Hassan District
- ★ Analysing Profiles of Panchayat Representatives in Punjab: A Socio-Economic Study of Majha Region

About All India Institute of Local Self-Government (AIILSG)

All India Institute of Local Self-Government (AIILSG), established in 1926 has been actively working in the field of urban development management and is a diligent partner in promoting the cause of local governance in India and overseas.

The Institute has been the steadfast friend, philosopher and guide to Urban Local Bodies (ULBs) across the Country. For more than eight decades it has contributed to the principles and practice of urban governance, education, research and capacity building. It has designed and developed a vast array of training literature and courses and trained more than 1.5 million stakeholders in diverse areas of urban governance and urban services delivery.

These activities of the AIILSG are practiced through 30 regional centres located in different regions of the Country. The Institute anchors the Regional Centre for Urban and Environmental Studies (RCUES) of the Ministry of Urban Development, Government of India for Western India region. This Centre is actively involved in building capabilities of municipal officials, staff and elected members from the States of Goa, Gujarat, Maharashtra, Rajasthan and the Union Territories of Diu, Daman, and Dadra & Nagar Haveli by upgrading their knowledge and skills required for effective administration and implementation of various urban development programmes.

With a view to cater to the growing requirement of ULBs in regard to services, the AIILSG runs specialized capacity building institutions such as the National Fire Academy, the Nrupur Institute of Nursing Science and Research and the Centre for Environment & Disaster Management at Vadodara, PRUDA at Ahmedabad, National Resource Centre for Urban Poverty, International Centre of EQUI-T, the Disaster Management Cell and the Centre of GIS at Pune. It runs the Solid Waste Management Cell of the Government of Maharashtra. In recent years, AIILSG has ventured into rural and tribal capacity building and hand holding of rural institutions of self-governance.

In addition to the domestic activities, the Institute organises several tailor-made capacity building programmes for various countries in South Asia, viz, Bangladesh, Nepal, Sri Lanka and in other regions, including South Africa, Ethiopia, Indonesia, Malaysia, China, etc. The Institute has linkages with renowned international organizations including UNCHS (Habitat), UNDP, UNICEF, UNFPA, WHO, DFID, CITYNET, CLGF, US-AEP and the Ford Foundation. It is the anchor institution for Urban Management Programme (UMP-UNCHS-Habitat) for South Asia.

Vol : XCV, No. 3 July - September, 2025

Contents

Local Government Quarterly
Published by the
All India Institute of Local Self-Government

All India Institute of Local Self-Government
M. N. Roy Human Development Campus, Plot No.6, 'F' Block,
TPS Road No.12, Bandra (E), Mumbai – 400051.
Tel : +91 86576 22550 / 51 / 52 / 54
E-mail : dg@aiilsg.org Website : www.aiilsg.org

Local Government Quarterly

Printed by Dr. Jairaj Phatak I.A.S. (Retd.), The Director General, All India Institute of Local Self-Government, at Copytronics, Bandra (E), Mumbai - 400 051 and published by him at the All India Institute of Local Self-Government, 11, Horniman Circle, Mumbai - 400 023.

Editorial

Sustainable tourism

In 2024, the tourism sector contributed to 10% of global GDP; one in ten jobs was supported by this sector. This represents a very significant role for this industry in the global economy, especially considering that several countries and a large number of cities in the world have major dependence on tourism and derive big benefits out of it.

The United Nations observes World Tourism Day on September 27 each year. The theme for this year, 2025 is 'Tourism and Sustainable Transformation'.

The wide ranging benefits of the tourism sector are now fairly well-known and are being leveraged by national, regional, and local governments as well as the community and civil society in a big way. The economic benefits have become pronounced and well known across the population in most cases. These economic benefits go towards supporting populations in entire cities, regions, and states and are proving vital for the well-being of people there. If we take the example of Ayodhya in Uttar Pradesh, it has become the most visited tourism destination of the State in 2024 with about 135 million people visiting up to September 2024, surpassing even the Taj Mahal which also continues seeing record number of visitors especially international tourists. Such large numbers may be limited to a few prominent destinations but there are so many other destinations which draw significant tourist inflows and derive the related benefits. Such tourism sites provide substantial economic benefits to many sectors especially in hospitality are greatly benefited given the big demand for hotel rooms, restaurants, taxis, tours and travel which in turn benefits players in the organised sectors like high-end hotels and resorts, as well as medium scale operations like budget hotels, restaurants, and entrepreneurs in food, taxi operations, small shops, and so on.

So, while tourism provides wide ranging economic benefits, it does so in a fair, equitable and inclusive manner. A majority in the sector's workforce comprises

women, while half of those in the workforce are under 25 years of age. More affordable travel options, the rapid transformation in the railways operations, a growing middle class, easy availability of information of tourism destinations, formalization of the workforce, improved adoption of labour rights (leave), etc. are contributing to the growth of leisure travel and tourism. These themes have added to the sustained growth of the sector. These are likely to continue and strengthen in coming times. In India, the recent cut in rates of indirect and direct taxes will lead to significant household savings, a good part of which will go into leisure travel and give a further leg-up to the tourism sector.

Tourism gives an opportunity for citizens to meet, understand and interact with people from culturally diverse backgrounds thus providing for a rich experience. An example is the growing spread of languages of various regions and communities among visitors and vice versa.

The role of governments in India, national, regional, and local needs to be acknowledged in promoting tourism. The national and most state governments have set up tourism development corporations in the public sector. These work to develop and maintain new tourism destinations, provide connectivity, create infrastructure, and so on. This is supported with initiatives by private operators.

Yet, among the biggest challenges facing the tourism sector is related to the environment and ecology. There is a concern that so many of the tourism destinations which are located in ecologically fragile regions are subject to over-exploitation and ecological stress. Recent incidents of environmental disasters in some scenic northern states of India have once again drawn the attention of policy makers to these dangers. The growing number of visitors to these destinations leads to growing need for hard infrastructure like hotels, lodges, and restaurants leading to more construction often infringing on regulations, thereby putting stress on the environment. Alongside is the higher demand on resources like water supply, sanitation, and waste management which is in any case, modest in these locations. Therefore, the idea of 'Responsible tourism' needs to be kept uppermost while we promote the sector and enjoy its benefits. Local governments will have the most prominent role in designing appropriate local regulations and in enforcing them effectively for protection of these tourism assets. The theme of this year's World Tourism Day rightly lays emphasis on 'sustainable transformation'.

It is no wonder then, that a related observance, namely Global Tourism Resilience Day has been established since 2023. Observed on February 17 each

year, it works to spur responsible behavior, and sustainable consumption while promoting conservation and preservation of our ecology.

Resilience and sustainability have become key themes in relation to the tourism sector. As the UN Secretary General puts it 'Today, and every day, let's harness the power of tourism as a force for transformation, resilience, sustainability, and shared progress for all'.

Empowering Rural Local Governments through 73rd Constitutional Amendment Act

Gopi Madaboyina

Abstract

Empowerment is the process of enhancing the capacity of individuals or a group or an institution to make their own choices and encourage in such a way as to transform those choices into defined actions and outcomes. It should be noted that it is a process, which involves exploring the potential and enhancing ability for the benefit of both individual and society. The perception of empowerment is varied across the country due to variation in time, culture and people's lifestyle.

Local Governments stands for a government which is formed by the local citizens and confines its activities to their own area and needs. It is a unit of the whole governmental structure which is formed democratically for the local needs. Local Government's jurisdiction is limited to a specific area and functions relate to the provision of civil amenities to the population living within its jurisdiction. Nature of services i.e., houses for poor, electricity, health centers, parks, play grounds etc. In fact, local Government is today much more important in the daily life of a citizen than the State or Central Government. Thus, it is very important to understand Local Government, its functions, etc.

Rural local governments in India are organized as a three-tier Panchayati Raj System, consisting of the Gram Panchayat (village level), the Block/Mandal Panchayat (intermediate level), and the Zilla Panchayat (District level). Formally established by the 73rd Constitutional Amendment Act of 1992, this system decentralizes governance, empowers rural communities, and facilitates local participation in decision-making and development.

The title of the paper is "Empowering Rural Local Governments through 73rd Constitutional Amendment Act". The aim of this paper is "How far the 73rd

Constitutional Amendment Act will empower the local governments particularly the Rural Local Governments in India".

Local government in India is governmental jurisdiction below the level of the state. Local self-government means that residents in towns, villages and rural settlements are the people who elect local councils and their heads authorizing them to solve the important issues. India is a Federal Republic with three spheres of government: Union, State and Local. The 73rd and 74th Constitutional Amendments give recognition and protection to local governments and in addition each state has its own local government legislation. Since 1992, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th Amendment to the Constitution, have Municipality but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the panchayati raj system, under the 73rd Amendment to the Constitution.

Local Governments in India: Post Independence:

After Independence, the Government of India appointed several committees for strengthening the local governments. Among them the prominent committees are as follows:

Balwantrai Mehta Committee:

In January 1957, the Government of India appointed a committee to examine the working of the Community Development Programme (1952) and the National Extension Service (1953) and to suggest measures for their better working. The Chairman of this committee was Balwantrai G Mehta. The committee submitted its report in November, 1957 and recommended the establishment of scheme of "democratic decentralization" which ultimately came to be known as Panchayati Raj. The specific recommendations made by it are:

1. Establishment of a three-tier Panchayati Raj system – Gram Panchayat at the Village level, Panchayat Samiti at the Block level and Zilla Parishad at the District level. These tiers should be organically linked through a device of indirect elections

2. The Village Panchayat should be constituted with directly elected representatives, whereas the Panchayati Samiti and Zilla Parishad should be constituted with indirectly elected members

3. All planning and development activities should be entrusted to these bodies

4. The Panchayat Samiti should be the executive body while the Zilla

Parishad should be the advisory, coordinating and supervisory body

5. The District Collector should be the Chairman of Zilla Parishad

6. There should be a genuine transfer of power and responsibility to these democratic bodies

7. Adequate resources should be transferred to these bodies to enable them to discharge their functions and fulfil their responsibilities

8. A system should be evolved to effect further devolution of authority in future

These recommendations of the committee were accepted by the National Development Council (NDC) in January, 1958. The council did not insist on a single rigid pattern and left it to the states to evolve their own patterns suitable to local conditions. But the basic principles and broad fundamentals should be identical throughout the country.

Rajasthan was the first state to establish Panchayat Raj. The scheme was inaugurated by the Prime Minister on October 2, 1959, in Nagaur District. Rajasthan was followed by Andhra Pradesh, which also adopted the system 1959. Thereafter, most of the states adopted the system.

Ashok Mehta Committee:

In December, 1977, the Janata Government appointed a committee on Panchayati Raj institutions under the chairmanship of Ashok Mehta. It submitted its report in August, 1978 and made 132 recommendations to revive and strengthen the declining Panchayati Raj system in the country. Its main recommendations were:

1. The three-tier system of Panchayati Raj should be replaced by the two-tier system, that is, Zilla Parishad at the district level and below it, the Mandal Panchayat consisting of a group of villages with a total population of 15,000 to 20,000

2. A district should be the first point for decentralization under popular supervision below the state level

3. Zilla Parishad should be the executive body and made responsible for planning at the district level

4. There should be an official participation of political parties at all levels of Panchayat elections

5. The Panchayati Raj institutions should have compulsory powers of taxation to mobilize their own financial resources

6. There should be a regular social audit by a district level agency and

by a committee of legislators to check whether the funds allotted for the vulnerable social and economic groups are actually spent on them

7. The state Government should not supersede the Panchayati Raj institutions. In case of an imperative supersession, elections should be held within six months from the date of supersession

8. The Nyaya Panchayats should be kept as separate bodies from that of Development Panchayats. They should be presided over by a qualified judge

9. The chief electoral officer of a state in consultation with the chief election commissioner should organize and conduct the Panchayati Raj elections

10. Development functions should be transferred to the Zilla Parishad and all development staff should work under its control and supervision

11. The voluntary agencies should play an important role in mobilizing the support of the people for Panchayat Raj

12. A minister for Panchayati Raj should be appointed in the state council of ministers to look after the affairs of the Panchayati Raj institutions

13. Seats for SCs and STs should be reserved on the basis of their population

Due to the collapse of the Janata Government before the completion of its term, no actions could be taken on the recommendations of the Ashok Mehta Committee at the central level. However, the three states of Karnataka, West Bengal and Andhra Pradesh took steps to revitalize the Panchayati Raj, keeping in view some of the recommendations of the Ashok Mehta Committee.

GVK Rao Committee:

The Committee to review the existing Administrative Arrangements for Rural Development and Poverty Alleviation Programmes under the Chairmanship of GVK Rao was appointed by the Planning Commission in 1985. The committee came to conclusion that the developmental process was gradually bureaucratized and divorced from the Panchayati Raj. This phenomena of bureaucratization of development administration as against the democratization weakened the Panchayati Raj institutions resulting in what is aptly called as 'grass without roots'. Hence, the Committee made the following recommendations to strengthen and revitalize the Panchayati Raj System:

1. The district level body, that is, the Zilla Parishad should be of pivotal

importance in the scheme of democratic decentralization. It stated that 'the district is the proper unit for planning and development and the Zilla Parishad should become the principal body for management of all development programmes which can be handled at that level'.

2. The Panchayati Raj institutions at the district and lower levels should be assigned an important role with respect to planning, implementation and monitoring of rural development programmes.

3. Some of the planning functions at the state level should be transferred to the district level planning units for effective decentralized district planning.

4. A post of District Development Commissioner should be created. He should act as the Chief Executive Officer of the Zilla Parishad and should be in charge of all the development departments at the district level.

5. Elections to the Panchayati Raj institutions should be held regularly. It found that elections became overdue for one or more tiers in 11 states.

Thus the Committee, in its scheme of decentralized system of field administration, assigned a leading role to the Panchayati Raj in local planning and development. It is in this respect that the recommendations of the GVK Rao Committee Report (1986) differed from those of the Dantwala Committee Report on Block-Level Planning (1978).

L. M Singhvi Committee:

In 1986, Rajiv Gandhi Government appointed a committee to prepare a concept paper on "Revitalization of Panchayati Raj Institutions for Democracy and Development" under the chairmanship of L.M Singhvi. It made the following recommendations:

1. The Panchayati Raj institutions should be constitutionally recognized, protected and preserved. For this purpose, a new chapter should be added in the Constitution of India.

2. Nyaya Panchayats should be established for a cluster of villages

3. The villages should be reorganized to make Gram Panchayats more viable. It also emphasized the importance of Gram Sabha and called it as the embodiment of direct democracy.

4. The village panchayats should have more financial resources

5. The judicial tribunals should be established in each state to adjudicate controversies about

election to the Panchayati Raj institutions, their dissolution and other matters related to their functioning

73RD CONSTITUTIONAL AMENDMENT ACT

Significance of the Act:

This Act has added a new Part-IX to the Constitution of India. This part is titled 'The Panchayats' and consists of provisions from Articles 243 to 243 O. In addition, the Act has also added a new Eleventh Schedule to the Constitution. This schedule contains 29 functional items of the panchayats. It deals with Article 243-G. The Act has given a practical shape to Article 40 of the Constitution which says that, "The State shall take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government." This article forms a part of the Directive Principles of State Policy.

The Act gives a constitutional status to the Panchayati Raj institutions. It has brought them under the purview of the justiciable part of the Constitution. In other words, the state governments are under constitutional obligation to adopt the new Panchayati Raj system in accordance with the provisions of the Act. Consequently, neither the formation of panchayats nor the holding of elections at regular intervals depends on the will of the state government any more. The provisions of the Act can be grouped into two categories-compulsory and voluntary. The compulsory (mandatory or obligatory) provisions of the Act have to be included in the state laws creating the new Panchayati Raj system. The voluntary provisions, on the other hand, may be included at the discretion of the states. Thus the voluntary provisions of the Act ensure the right of the states to take local factors like geographical, politico-administrative and others, into consideration while adopting the new Panchayati Raj system.

The Act is a significant landmark in the evolution of grass root democratic institutions in the country. It transfers the representative democracy into participatory democracy. It is a revolutionary concept to build democracy at the grass root level in the country.

Salient Features of the 73rd Constitutional Amendment Act

The salient features of the Act are:

Gram Sabha: The Act provides for a Gram Sabha as the foundation of the Panchayati Raj system. It is a body consisting of persons registered in the electoral rolls of a village comprised within the area of Panchayat at the

village level. Thus, it is a village assembly consisting of all the registered voters in the area of a panchayat. It may exercise such powers and perform such functions at the village level as the legislature of a state determines.

Three-Tier System: The Act provides for a three-tier system of Panchayati Raj in every state, that is, panchayats at the village, intermediate, and district levels. Thus, the Act brings about uniformity in the structure of Panchayati Raj throughout the country. However, a state having a population not exceeding 20 lakh may not constitute panchayats at the intermediate level.

Election of Members and Chairpersons: All the members of panchayats at the village, intermediate and district levels shall be elected directly by the people. Further, the chairperson of panchayats at the intermediate and district levels shall be elected indirectly by and from amongst the elected members thereof. However, the chairperson of a panchayat at the village level shall be elected in such manner as the state legislature determines.

Reservation of Seats: The Act provides for the reservation of seats for scheduled castes and scheduled tribes in every panchayat (i.e., at all the three levels) in proportion of their population to the total population in the panchayat area. Further, the state legislature shall provide for the reservation of offices of chairperson in the panchayat at the village or any other level for the SCs and STs. The Act provides for the reservation of not less than one-third of the total number of seats for women (including the number of seats reserved for women belonging the SCs and STs). Further, not less than one-third of the total number of offices of chairpersons in the panchayats at each level shall be reserved for women. The Act also authorizes the legislature of a state to make any provision for reservation of seats in any panchayat or offices of chairperson in the panchayat at any level in favour of backward classes.

Duration of Panchayats: The Act provides for a five-year term of office to the panchayat at every level. However, it can be dissolved before the completion of its term. Further, fresh elections to constitute a panchayat shall be completed (a) before the expiry of its duration of five years; or (b) in case of dissolution, before the expiry of a period of six months from the date of its dissolution. But, where the remainder of the period (for which the dissolved panchayat would have continued) is less than six months, it shall not be necessary to hold any election for constituting the new panchayat for such period.

Moreover, a panchayat constituted upon the dissolution of a panchayat

before the expiration of its duration shall continue only for the remainder of the period for which the dissolved panchayat would have continued had it not been so dissolved. In other words, a panchayat reconstituted after premature dissolution does not enjoy the full period of five years but remains in office only for the remainder of the period.

Disqualifications: A person shall be disqualified for being chosen as or for being a member of panchayat if he is so disqualified, (a) under any law for the time being in force for the purpose of elections to the legislature of the state concerned, or (b) under any law made by the state legislature. However, no person shall be disqualified on the ground that he is less than 25 years of age if he has attained the age of 21 years. Further, all questions of disqualifications shall be referred to such authority as the state legislature determines.

State Election Commission: The superintendence, direction and control of the preparation of electoral rolls and the conduct of all elections to the panchayats shall be vested in the state election commission. It consists of a state election commissioner to be appointed by the governor. His conditions of service and tenure of office shall also be determined by the governor. He shall not be removed from the office except in the manner and on the grounds prescribed for the removal of a judge of the state high court. His conditions of service shall not be varied to his disadvantage after his appointment. The state legislature may make provision with respect to all matters relating to elections to the panchayats.

Powers and Functions: The state legislature may endow the Panchayats with such powers and authority as may be necessary to enable them to function as institutions of self-government. Such a scheme may contain provisions for the devolution of powers and responsibilities upon Panchayats at the appropriate level with respect to (a) the preparation of plans for economic development and social justice; (b) the implementation of schemes for economic development and social justice as may be entrusted to them, including those in relation to the 29 matters listed in the Eleventh Schedule.
Finances: The state legislature may (a) authorize a panchayat to levy, collect and appropriate taxes, duties, tolls and fees; (b) assign to a panchayat taxes, duties, tolls and fees levied and collected by the state government; (c) provide for making grants-in-aid to the panchayats from the consolidated fund of the state; and (d) provide for constitution of funds for crediting all moneys of the panchayats.

Finance Commission: The governor of a state shall, after every five

years, constitute a finance commission to review the financial position of the panchayats. It shall make the following recommendations to the Governor:

1. The principles that should govern:
    a) The distribution between the state and the panchayats of the net proceeds of the taxes, duties, tolls and fees levied by the state.
    b) The determination of taxes, duties, tolls and fees that may be assigned to the panchayats.
    c) The grants-in-aid to the panchayats from the consolidated fund of the state.
2. The measures needed to improve the financial position of the panchayats.
3. Any other matter referred to it by the governor in the interests of sound finance of the panchayats.

The state legislature may provide for the composition of the commission, the required qualifications of its members and the manner of their selection. The governor shall place the recommendations of the commission along with the action taken report before the state legislature. The Central Finance Commission shall also suggest the measures needed to augment the consolidated fund of a state to supplement the resources of the panchayats in the states (on the basis of the recommendations made by the finance commission of the state).

Audit of Accounts: The state legislature may make provisions with respect to the maintenance of accounts by the panchayats and the auditing of such accounts.

Application to Union Territories: The President of India may direct that the provisions of this Act shall apply to any union territory subject to such exceptions and modifications as he may specify.

Exempted States and Areas: The Act does not apply to the states of Jammu and Kashmir, Nagaland, Meghalaya and Mizoram and certain other areas. These areas include, (a) the scheduled areas and the tribal areas in the states; (b) the hill area of Manipur for which a district council exists; and (c) Darjeeling District of West Bengal for which Darjeeling Gorkha Hill Council exists.

However, the Parliament may extend the provisions of this Part to the scheduled areas and tribal areas subject to such exceptions and modifications as it may specify.

Continuance of Existing Laws and Panchayats: All the state laws relating to panchayats shall continue to be in force until the expiry of one year from the commencement of this Act. In other words, the states have to adopt the new Panchayati Raj system based on this Act within the maximum period of one year from 24 April, 1993, which

was the date of the commencement of this Act. However, all the panchayats existing immediately before the commencement of Act shall continue till the expiry of their term, unless dissolved by the state legislature sooner. Consequently, majority of states passed the Panchayati Raj acts in 1993 and 1994 to adopt the new system in accordance with the 73rd Constitutional Amendment Act of 1992.

Bar to Interference by Courts in Electoral Matters: The Act bars the interference by courts in the electoral matters of panchayats. It declares that the validity of any law relating to the delimitation of constituencies or the allotment of seats to such constituencies cannot be questioned in any court. It further lays down that no election to any panchayat is to be questioned except by an election petition presented to such authority and in such manner as provided by the state legislature.

Eleventh Schedule: It contains the following 29 functional items placed within the purview of panchayats:

1. Agriculture, including agricultural extension
2. Land improvement, implementation of land reforms, land consolidation and soil conservation
3. Minor irrigation, water management and water-shed development
4. Animal husbandry, dairying and poultry
5. Fisheries
6. Social forestry and farm forestry
7. Minor forest produce
8. Small-scale industries, including food processing industries
9. Khadi, village and cottage industries
10. Rural housing
11. Drinking water
12. Fuel and fodder
13. Roads, culverts, bridges, ferries, waterways and other means of communication
14. Rural electrification, including distribution of electricity
15. Non-conventional energy sources
16. Poverty alleviation programme
17. Education, including primary and secondary schools
18. Technical training and vocational education
19. Adult and non-formal education
20. Libraries
21. Cultural activities

22. Markets and fairs

23. Health and sanitation including hospitals, primary health centres and dispensaries

24. Family welfare

25. Women and child development

26. Social welfare, including welfare of the handicapped and mentally retarded

27. Welfare of the weaker sections, and in particular, of the scheduled castes and the scheduled tribes

28. Public distribution system

29. Maintenance of community assets.

Compulsory and Voluntary Provisions

Now, we will identify separately the compulsory (obligatory or mandatory) and voluntary (discretionary or optional) provisions (features) of the 73rd Constitutional Amendment Act (1992) or the Part IX of the Constitution:

Compulsory Provisions

- Organisation of Gram Sabha in a village or group of villages. Establishment of panchayats at the village, intermediate and district levels.
- Direct elections to all seats in panchayats at the village, intermediate and district levels. Indirect elections to the post of chairperson of panchayats at the intermediate and district levels.
- 21 years to be the minimum age for contesting elections to panchayats.
- Reservation of seats (both members and chairpersons) for SCs and STs in panchayats at all the three levels.
- Reservation of one-third seats (both members and chairpersons) for women in panchayats at all the three levels.
- Fixing tenure of five years for panchayats at all levels and holding fresh elections within six months in the event of supersession of any panchayat.
- Establishment of a State Election Commission for conducting elections to the panchayats.
- Constitution of a State Finance Commission after every five years to review the financial position of the panchayats.

Voluntary Provisions

- Giving representation to members of the Parliament (both the Houses) and the state legislature (both the

Houses) in the panchayats at different levels falling within their constituencies.

- Providing reservation of seats (both members and chairpersons) for backward classes in panchayats at any level.

- Granting powers and authority to the panchayats to enable them to function as institutions of self-government (in brief, making them autonomous bodies).

- Devolution of powers and responsibilities upon panchayats to prepare plans for economic development and social justice; and to perform some or all of the 29 functions listed in the Eleventh Schedule of the Constitution.

- Granting financial powers to the panchayats, that is, authorizing them to levy, collect and appropriate taxes, duties, tolls and fees.

RURAL LOCAL GOVERNMENTS - THREE TIER SYSTEM

Gram Panchayat – Structure, Powers and Functions:

The term "Panchayat" literally means a council of five. The principle of the Panchayat is "Panch Parameshwar" which means God speaking through the five. The institution of Panchayat has existed in India since ancient times. The village was an autonomous republic and its affairs were governed by the Panchayat. It was usually a democratically constituted body as its members were chosen by the people.

Mahatma Gandhi, who identifies Panchayat Raj with Ram Raj says that just as Rama was the ruler-servant of Ayodhya so was the Sarpanch the ruler-servant of the village. As such, Gandhiji always advocated the introduction of Gram Swaraj or Village Republics. The Constitution of India has incorporated the concept of Mahatma Gandhi regarding Panchayats, the basic unit of democracy. Article 40 of the Constitution lays down, "the state shall take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government".

On the basis of the guidelines provided by the Mehta Committee report, Rajasthan was the first state to adopt the three-tier system on 2nd October, 1959 and Andhra Pradesh followed it. Now almost all the states have adopted the system. Under the scheme, the adult population of the village forms the Gram Sabha. It is a sort of village 'Parliament'; it elects a body of about five persons called the Panchayat. It is the cabinet of village government.

Powers and Functions of Panchayat: The functions of the panchayats are legislative, executive and judicial. The panchayats have mainly administrative duties. The Panchayat Act prescribes a number of Obligatory functions and also Discretionary functions. Obligatory functions are those which a panchayat must perform and discretionary functions are those which a panchayat can undertake if it so desires. The judicial functions are also performed by the Panchayats

Obligatory Functions:

- Construction, repair, maintenance, cleaning and lighting of public streets
- Medical relief
- Sanitation and taking curative and preventive measures to remove and to stop the spread of an epidemic
- Keep up, protection and supervision of any building or other property belonging to Gram Sabha
- Registration of births, deaths and marriages
- Regulation of places for the disposal of dead bodies
- Regulation of markets and fairs
- Establishing and maintaining primary schools for boys and girls
- Constructions, repair and maintenance of public wells, tanks and ponds for the supply of water for drinking, washing and bathing purposes
- Regulation of the construction of building
- Assisting the development of agriculture, commerce and industry
- Maternity and child welfare
- The administration of civil and criminal justice

Discretionary Functions:

- Planting and maintaining trees on the sides of public streets and in other public places
- Filling in of insanitary depressions and levelling of land
- Organizing volunteer force for watch and ward, and for assisting Gram Panchayat and Nyaya Panchayat in the discharge of their functions and for the service of summons and notices issued by them
- Assisting and advising agriculturists in the obtaining and distribution among them government loans and in the repayment thereof and in the liquidation of old debts
- Establishing of improved seed and implement stores
- Relief against famine, floods and other calamities
- Establishment and maintenance of places of recreation and games
- Arranging for public radio sets and gramophones
- Making arrangements for the seizure (attack) and disposal of stray (wandering) cattle, stray dogs, wild animals and monkeys etc.

Mandal Parishad – Structure, Powers and Functions:

The Panchayat Samithi or Mandal Parishad represents the intermediate level in Panchayat Raj System. It functions at Block. There have been a number of variations of these institutions in various states. Comparable organizations have been Mandal Parishad in Andhra Pradesh, Taluk Panchayat in Gujarat, Mandal Panchayat in Karnataka, Janapad Panchayat in Madhya Pradesh, Panchayat Sangh in Tamil Nadu, Kshetra Samithi in the Jammu & Kashmir and Anchal Committee in Arunachal Pradesh.

Composition:

The Constitutional pattern of the Panchayat Samithi varies from state to state. Co-option of Scheduled Castes and Tribes and the female members is a common feature. Special representation to cooperative, cooperative banks and progressive farmers is also accorded. The MLAs, MPs are ex-officio members of Panchayat Samithi. They are associate members having right to attend Parishad's meetings but are not allowed to exercise right to vote or get elected to the officer of Chairman of the standing committee.

- Method of Election
- Tenure

Powers and Functions of Mandal Parishad: The functions of the Mandal Parishad can be divided into the following groups:

Education:

- Opening and running of primary schools, conversion of primary schools into basic schools
- Extending scholarships and stipends to the children of scheduled castes, scheduled tribes and other backward classes.
- Adult education
- Provision of library service, community centers, youth organization etc. is the set tasks of the Parishad.

Health and Sanitation:

- The function comprises vaccination and control of epidemics
- Providing potable drinking water facilities
- Inspection and setting up of Ayurvedic dispensaries and primary family planning, health centers conducting health campaigns
- Imparting education in nutrition
- Maternity, child health
- Control of communicable diseases
- Regularization of trade and reclamation of healthy locations

Social Welfare:

- Management of hostels of scheduled castes and scheduled tribes

- The strengthening of voluntary social welfare organizations
- Service of backward classes
- Propagation of Prohibition
- Child and women welfare
- Inspection of poor houses, ashrams and orphanages
- Rural housing for low-income groups – comprise social welfare functions

Housekeeping Functions:

- Collection of statistics
- Publicity
- Supervision and guidance of Panchayats
- Collection of Mandal Parishad revenues
- Budgeting
- Record maintenance
- Reporting
- Administering trusts for furthering the purpose of Samithi - are its housekeeping functions

Emergency Relief: It is expected to provide relief against fire, flood, famine, epidemics or other widespread natural calamities.

Communication: Maintenance of inter-panchayat roads and culverts are included in this function.

Miscellaneous: Rural insurance agency, representation of the area interests and agency for small savings are also important functions of the Parishad.

Community Development: In this category can be included organization of village institutions and striving for increasing production, employment and amenities so as to promote self-help and community feeling.

Production Programmes: In this category the following functions can be included:

- Construction and maintenance of irrigation works
- Development of cooperatives by promoting cooperative societies, providing credit and other facilities, encouraging investments in small savings and insurance
- Development of village forests and rational grazing
- Development of cottage and small-scale industries, establishment and maintenance of production-cum-training centers
- Development of agriculture and animal husbandry
- Organizing services and supplies catering to agricultural and animal husbandry development. It implies establishment and maintenance of seed multiplication forms, artificial insemination, centers, stock breeding farms and veterinary dispensaries – Besides these functions, the state Government may confer more functions upon the Mandal Parishad

Zilla Parishad - Structure, Powers and Functions:

A Zilla Parishad constitutes the apex in the Panchayati Raj system of rural local government in India. As the name itself signifies, the Zilla Parishad is a rural local government body operating at the district level in all the Indian States except Assam and Tamil Nadu. But States like Haryana, Madhya Pradesh, Karnataka and Orissa have of late abolished the body of Zilla Parishad, thus changing the traditional three-tiered structure of the Panchayati Raj into an unknown two-tiered one. In Assam, the apex body has been established at the sub-divisional level, making the territorial jurisdiction of the body smaller than that of a district.

The nomenclature is not the same in all the States. It is called Zilla Parishad in Andhra Pradesh, Bihar, Gujarat, Maharashtra, Punjab, Rajasthan, Uttar Pradesh and West Bengal; Mohkuma Parishad in Assam; and District Development Council in Tamil Nadu. Broadly speaking, a Zilla Parishad consists of the following members:

- Presidents of panchayat samitis in the district
- All members of Parliament, representing constituencies falling within the district
- All members of the State Legislature returned from constituencies within the district
- A representative of cooperative society, usually the President of the district cooperative society
- Certain specified number of scheduled castes and scheduled tribes
- Some co-opted members having some experience in administration, public life or rural development

The functions of the Zilla Parishad vary from State to State. Broadly speaking, in most States (except Maharashtra and Gujarat) the Zilla Parishad functions as a supervisory and coordinating body, the pivotal role being reserved for the panchayat samiti. In Maharashtra and Gujarat, on the other hand, the Zilla Parishad is an executive organization, the panchayat samiti being merely its agent and appendage. These, broadly, are the two models of Zilla Parishad in the country. The non-Maharashtra model of Zilla Parishad has been assigned the following functions:

- It examines and approves the budget of the panchayat samitis
- It issues directions to panchayat samitis for performing their functions efficiently
- It coordinates development plans prepared by the panchayat samitis. It also coordinates the inter-block activities

- It advises the State Government on all matters relating to the development of the district
- It distributes State-allocated funds to the panchayat samitis in the district
- It informs the District Collector and the Divisional Commissioner about irregularities committed by the panchayats and panchayat samitis in the district
- It collects statistics relating to the activities of local authorities in the district
- It advises the State Government regarding the allocation of work to be made among Panchayats and Panchayat samities in the district
- It exercises such powers and performs such functions as may be conferred by the State Government

The Zilla Parishad has been entrusted with executive functions in fields like agriculture, animal husbandry, forests, social welfare, education, public health, communications, cottage and village industries, housing and community development. The Panchayat Samiti acts as a merge agent of the Zilla Parishad in performing all the above functions.

Conclusion:

Local government in India has two parallel, constitutionally recognized systems: Panchayati Raj Institutions (PRIs) for rural areas and Urban Local Bodies (ULBs) for towns and cities. Instituted by the 73rd and 74th Constitutional Amendments in 1992, these third-tier governments handle local planning, development, and service provision. PRIs typically have a three-tier structure (Gram Panchayat, Block/Mandal, District Panchayat), while ULBs include Municipal Corporations, Municipal Councils, and Nagar Panchayats, each suited to different urban sizes.

The 73rd Amendment Act of 1992 granted constitutional status to the Panchayati Raj system in India, establishing Part IX and the Eleventh Schedule in the Constitution to create institutions of rural local self-government. This landmark legislation aimed to decentralize power by promoting grassroots democracy, mandating the creation of three-tier Panchayati Raj systems, and ensuring democratic participation at the local level. Key provisions include mandatory reservation of seats for Scheduled Castes (SCs) and Scheduled Tribes (STs) and women, creation of State Election Commissions to oversee elections, and listing 29 subjects for the Panchayats' functions in the Eleventh Schedule. In conclusion we can say that

there is a strong need of the implementation of the 73rd Constitutional Amendment Act and no doubt it is empowering the Rural Local Governments.

References:

1. Anirban Kashyap: Panchaytiraj, Views of founding fathers and recommendation of different committees, New Delhi, Lancer Books, 1989 P 109

2. Government of India, Report of the Team for the Study of Community Projects and National Extension Service, (Chairperson: Balvantray Mehta), Committee on Plan Projects, National Development Council, (New Delhi, November 1957), Vol. I,

3. Mahoj Rai et al. :The state of Panchayats – A participatory perspective, New Delhi, Smscriti, 2001 P 9

4. T M Thomas Issac with Richard Franke : Local democracy and development – Peoples Campaign for decentralized planning in Kerala, New Delhi, Leftword Books, 2000 P 19

5. The Constitution (Seventy-fourth Amendment) Act, 1992

6. The Constitution (Seventy-third Amendment) Act, 1992

7. World Bank: Overview of rural decentralisation in India, Volume III World Bank, 2000 P 21

❐ ❐ ❐

Issues and Approaches to Drinking Water in Rural Areas

Sakshi Sahni, Simranjot Singh, Sanjay Mishra and Rawal Singh Aulakh

Abstract

According to water.org among its 1.4 billion inhabitants, 678 million in India do not have access to clean water. Extreme water stress, polluted surface water, and restricted access to piped water supplies are the problems of the present. The access to clean water and sanitary facilities of families in India are also impacted by the consequences of climate change, such as droughts and increasing sea levels. This research paper is based on addressing this problem at various levels and will identify various approaches to mitigate the concern at regional level. The paper tries to highlight the problem and mitigation strategies in rural areas through systematic literature review from secondary databases like Scopus, Web of science, and reports of various agencies and derive lessons through them on rural water management and conservation strategies among others.

1 Introduction

The provision of clean water is a fundamental human necessity that remains unmet for a significant portion of the global population. In India, home to over 1.4 billion individuals, the challenge of securing access to potable water is alarmingly pressing. Water.org highlights that an astonishing 678 million people in India lack access to clean water due to extreme water stress, pollution of surface water sources, and limited access to piped water supplies (Water.org, n.d.). Furthermore, the repercussions of climate change, manifesting as droughts and rising sea levels, exacerbate the scarcity of clean water and sanitation facilities, severely affecting countless families across the nation (Amarasinghe, Sharma, Aloysius, Scott, Smakhtin, de Fraiture, ... & Ahmad, 2007).

The nexus between clean water access, public health, economic stability, and community well-being underscores the critical nature of this issue. This research paper endeavors to dissect the complex issue of water scarcity in

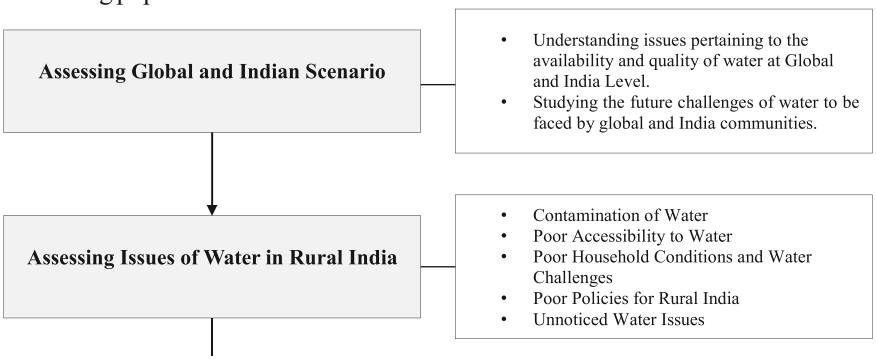
India through a systematic literature review and analysis of secondary databases such as Scopus, Web of Science, and reports from relevant agencies. Mitigation strategies under examination include innovative rural water management practices, conservation techniques, and the deployment of new technologies to improve water accessibility and quality. Drawing lessons from the literature and case studies, this paper seeks to offer valuable insights for developing effective policies and interventions to combat water scarcity in India (Rodell, Velicogna, & Famiglietti, 2009).

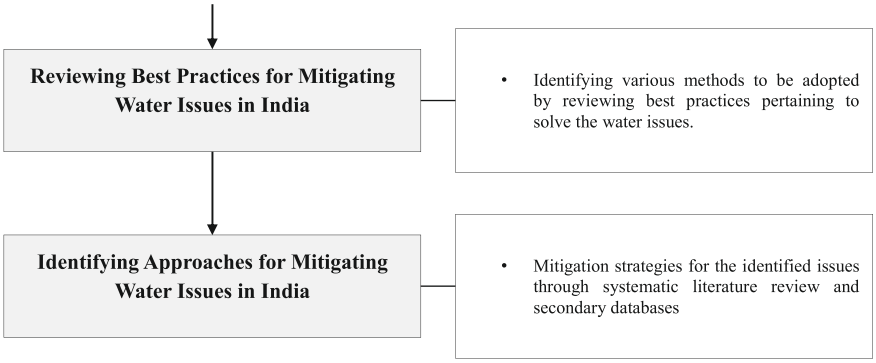
This research underscores the urgency of collective action among policymakers, stakeholders, and communities toward sustainable water resource management. By addressing both the immediate and underlying causes of water scarcity, the paper advocates for comprehensive strategies to ensure the availability of clean water for India's rapidly increasing population.

2 Objectives of Research

The objective of this research paper is to identify and analyze the key issues related to drinking water accessibility and quality in rural areas. The study aims to investigate the challenges faced by rural communities in accessing clean and safe drinking water, including issues of availability, contamination and infrastructure. Additionally, the paper seeks to explore different approaches, strategies and interventions that have been implemented or proposed to address these challenges. By examining both the problems and potential solutions, this research aims to contribute to a better understanding of the complex issues surrounding drinking water in rural areas and to provide insights for policymakers, stakeholders, and researchers working in the field of water resource management and public health.

3 Methodology





4 Water Issues

4.1 Global Water Issues

Water scarcity is a pressing global concern affecting several billion people. According to the UN World Water Development Report 2023, between two and three billion individuals worldwide experience water shortages, a number projected to worsen in the coming decades, particularly in urban areas (UN World Water Development Report, 2023). Approximately 26 percent of the global population lacks safe drinking water, and 46 percent lack access to safely managed sanitation (UN World Water Development Report, 2023). The urban population facing water scarcity is expected to double by 2050 (UN World Water Development Report, 2023).

4.2 Urban and Rural Water Issues in India

India's urban areas face multifaceted challenges in water management (Amarasinghe et al., 2019). Despite significant progress, around 4% of urban residents lack reliable water access, and only 54% have improved sanitation facilities (Rodell et al., 2020). This disparity emphasizes the need for equitable water and sanitation coverage across cities (Shah et al., 2018). Rapid urbanization strains wastewater treatment infrastructure, leading to environmental hazards from untreated or poorly treated wastewater (Ganesh et al., 2021). Many cities lack sufficient facilities to manage the increasing volume of wastewater generated (Gupta & Gupta, 2017).

Water scarcity is exacerbated by over-extraction of groundwater, unsustainable practices, and climate change impacts (Srinivasan, 2019). Dry seasons and droughts intensify this scarcity, highlighting the vulnerability of urban areas (Kumar & Rathore, 2016). Inefficient water management practices like leaky distribution networks and inadequate maintenance

contribute to water loss and inefficiencies (Saravanan & Raghu, 2020). Addressing these challenges requires holistic approaches integrating sustainable water management, improved infrastructure, efficient water use, and robust conservation measures to ensure urban water resilience and reliability (Bhowmick & Nath, 2019).

The health burden stemming from poor water quality is substantial, with waterborne diseases affecting approximately 37.7 million Indians annually (Dwivedi et al., 2020). Tragically, diseases like diarrhea claim 1.5 million children's lives each year, reflecting the dire consequences of inadequate water quality (Mishra et al., 2018). Moreover, waterborne illnesses impose a significant economic burden, amounting to 600 million dollars annually (Singh & Verma, 2019).

India's heavy reliance on groundwater, with 85% of the population depending on it, adds another layer of complexity (Kumar & Prakash, 2015). Despite considerable investments, ensuring safe and secure drinking water remains a persistent challenge, especially with projections indicating that India will become a water-stressed nation soon (Srivastava & Kumar, 2020). These interconnected challenges underscore the urgent need for comprehensive strategies addressing water access, quality, and sustainability in rural India (Wang et al., 2022).

4.3 Issues of Water in Rural India

4.3.1Contamination of Water in Rural India: A Critical Issue

Water contamination in rural India has emerged as a significant concern, impacting the health and well-being of millions of people. The issue of water contamination encompasses various pollutants, including biological, chemical, and physical contaminants, leading to widespread health implications and environmental degradation (Sharma & Kaur, 2020). This essay delves into the major aspects of water contamination in rural India, highlighting its causes, consequences, and potential solutions.

One of the primary causes of water contamination in rural India is inadequate sanitation infrastructure. Improper disposal of sewage contributes to the contamination of surface and groundwater sources (Wang, Vinod, & Bhat, 2019). Additionally, agricultural runoff containing pesticides and fertilizers, industrial waste, and untreated domestic wastewater further exacerbate the problem (Singh, Singh, & Jahan, 2021). These pollutants introduce pathogens, heavy metals, nitrates, and other harmful substances into water sources, posing serious health risks to communities reliant on these contaminated water supplies.

The consequences of water contamination are profound, especially concerning public health. Contaminated water sources are linked to the spread of waterborne diseases such as cholera, typhoid, and diarrheal illnesses, leading to increased morbidity and mortality rates, particularly among children and vulnerable populations (Srivastava & Kumar, 2020). Moreover, chronic exposure to pollutants like arsenic and fluoride in drinking water has long-term health effects, including neurological disorders and cancer (Bhowmick & Nath, 2018).

Addressing the issue of water contamination in rural India requires a multifaceted approach. Investments in improved sanitation infrastructure, including the construction of toilets and wastewater treatment facilities are crucial (Dwivedi et al., 2021). Furthermore, promoting sustainable agricultural practices to reduce chemical inputs and implementing strict regulations on industrial waste discharge are essential steps towards mitigating water contamination (Srinivasan, 2019).

In conclusion, water contamination remains a pressing issue in rural India, with far-reaching implications for public health and environmental sustainability. Efforts to address this challenge must prioritize investments in infrastructure, regulatory measures, and community awareness to ensure access to safe and clean water for all.

4.3.2 Poor Accessibility to Water in Rural India: A Persistent Challenge

In rural India, poor accessibility to water is a critical issue that affects millions of people, particularly in remote and marginalized communities. The lack of access to safe and reliable water sources hinders basic human needs, livelihoods, and overall development (Shah et al., 2020).

One of the primary reasons for poor accessibility to water in rural areas is the limited availability of infrastructure such as hand pumps, borewells, and piped water supply systems (Dwivedi & Dwivedi, 2019). Furthermore, uneven distribution and seasonal variations in water availability exacerbate the problem, leading to water scarcity during dry periods (Ganesh et al., 2021).

The consequences of poor water accessibility are far-reaching. Communities without adequate access to water face challenges in maintaining hygiene, sanitation, and agricultural activities, impacting their health and economic well-being (Saravanan & Raghu, 2018). Women and children often bear the brunt of water scarcity, as they are responsible for fetching water, leading to increased time burdens and limited opportunities for education and economic participation (Pandey et al., 2020).

Addressing the issue of poor water accessibility in rural India requires comprehensive strategies, including investments in water infrastructure, community-based water management initiatives, and sustainable water resource management practices (Kumar et al., 2021). Additionally, promoting participatory approaches involving local communities, government agencies, and non-governmental organizations is crucial for ensuring equitable access to water for all rural residents.

In conclusion, poor accessibility to water remains a significant challenge in rural India, with profound implications for health, livelihoods, and social equity. Efforts to improve water accessibility must prioritize infrastructure development, community engagement, and sustainable water management practices to ensure the fundamental right to water for every individual.

4.3.3 Poor Household Conditions and Water Challenges in Rural India

In rural India, poor household conditions exacerbate water challenges, leading to a multitude of issues that impact health, sanitation, and overall well-being. Many households lack access to adequate infrastructure and resources for water storage, purification, and hygiene practices, creating significant health and environmental risks (Kumar & Prakash, 2020).One of the key issues stemming from poor household conditions is the lack of proper water storage facilities. Inadequate storage containers or open storage methods expose water to contamination, increasing the risk of waterborne diseases (Srinivasan & Prasad, 2019). Additionally, limited access to water purification methods such as filters or boiling techniques further compounds the problem, contributing to poor water quality (Mishra et al., 2021)

Poor sanitation facilities in rural households also contribute to water-related challenges. Improper sewage disposal contaminates water sources, leading to the spread of diseases and environmental pollution (Singh & Patel, 2018). Moreover, cramped living conditions and overcrowded households make it challenging to maintain hygiene practices, increasing the vulnerability to water-related illnesses (Rathore & Mishra, 2020).

Addressing the issues of poor household conditions and water challenges in rural India requires integrated approaches. Investments in improved housing infrastructure, access to affordable water storage and purification technologies, and sanitation facilities are essential (Sharma et al., 2022). Furthermore, community-based education and awareness programs on hygiene practices and water management can

empower households to address these challenges effectively.

In conclusion, poor household conditions exacerbate water challenges in rural India, highlighting the interconnectedness of infrastructure, health, and environmental sustainability. Comprehensive interventions that address housing, water, and sanitation issues are crucial for improving the quality of life and well-being of rural communities.

4.3.4 Poor Policies for Rural India: Examples and Implications for Water Issues

The inadequacy of policies for rural India has profound implications for water management, leading to a range of challenges that impact communities' access to clean and reliable water sources. Several examples highlight the deficiencies in policy frameworks and their consequences on water issues in rural areas.

Firstly, the lack of effective groundwater management policies has resulted in over-extraction and depletion of aquifers in many regions. For instance, in states like Punjab and Maharashtra, intensive agricultural practices coupled with weak regulations have led to groundwater depletion, exacerbating water scarcity (Shah et al., 2021).

Secondly, policies related to industrial pollution control and waste management often fall short in rural areas. Industries located in rural regions frequently discharge untreated wastewater into water bodies, contaminating local water sources and posing health risks to nearby communities (Gupta & Gupta, 2020).

Furthermore, the absence of comprehensive watershed management policies hinders efforts to conserve and sustainably utilize water resources. Many rural areas lack integrated watershed development plans, leading to soil erosion, reduced groundwater recharge, and diminished water quality (Kumar & Rathore, 2019).

These examples underscore the urgent need for improved policies that address water management holistically in rural India. Policy reforms should prioritize sustainable groundwater management, stringent regulations for industrial pollution control, and integrated watershed development strategies to ensure equitable access to clean water and promote environmental sustainability.

4.3.5 Unnoticed Water Issues in Rural India

While certain water issues in rural India receive attention, there are several critical challenges that often go unnoticed but have significant implications for communities' access to clean and sustainable water sources. These unnoticed issues highlight the

complexities and depth of water-related challenges in rural areas.

One such issue is the impact of climate change on water availability and quality. Changing rainfall patterns, increased frequency of droughts, and rising temperatures have profound effects on water sources in rural India, yet these long-term changes are often overlooked in policy and planning (Pandey & Sharma, 2020).

Another unnoticed issue is the gender dimension of water access. Women and girls in rural areas often bear the responsibility of fetching water, and the lack of gender-sensitive water infrastructure and policies can exacerbate their workload and limit their opportunities for education and economic empowerment (Singh & Verma, 2019).

Furthermore, the quality of drinking water in rural households is often overlooked. While access to water sources is important, ensuring that the water is safe for consumption is equally crucial. Contaminants such as arsenic, fluoride, and pathogens can pose serious health risks, yet monitoring and addressing water quality issues remain inadequate in many rural areas (Kumar et al., 2022).

4.4 Approaches

- Awareness campaigns: Educating people about the need of drinking clean water is one of the main problems. There are instances where individuals consume water from contaminated surface sources even while the government provides them with drinkable water. The government must assist groups and civil society that work to raise awareness. Widespread public education about the strategies for avoiding water source contamination may be achieved by an integrated campaign (wateraid.org, Khurana etal, n.d).

- Testing and monitoring for water contamination: It is imperative that the monitoring network be improved by setting up observation stations in every area and conducting seasonal evaluations of all water sources. If contamination is found, a plan of action for addressing the sources should be given (wateraid.org, Khurana et al, n.d).

- Community's Capacity Building: Panchayats are playing a bigger role in society, and community-based solutions to water-related issues are being emphasised. People from the communities must be trained so they can make educated decisions in order to increase community engagement (wateraid.org, Khurana et al, n.d, Khurana et al, n.d).

- Inter-agency coordination: The present institutional framework incorporating many government

agencies has been a significant barrier to the successful design and execution of policies. Numerous authorities are involved in the provision and control of water, and there is a fragmented approach at both the state and federal levels. Effective execution could be ensured by improved departmental and ministry coordination (wateraid.org, Khurana et al, n.d).

- Rainwater harvesting: Aquifer mineral concentrations can be lowered with the use of rainwater harvesting and the groundwater replenishment that follows. Establishing community-based water harvesting units will need building confidence, awareness, and social mobilisation across all facets of the community (wateraid.org, Khurana etal, n.d)

- Government Initiatives, Policies and Programmes: Although the approach has been piecemeal, the Indian government's commitment to tackling water stress has been commendable in rural areas of India. Even while there has been progress, there are still obstacles to overcome, especially when it comes to stepping up initiatives, increasing water usage efficiency, and guaranteeing sustainable water management techniques nationwide (smsfoundation.org). Some of the initiatives the Government has taken are Jal Shakti Abhiyan (JSA), Water Conservation Campaign (2019), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Integrated Watershed Management Program (2015), National Rural Drinking Water Program (NRDWP), Safe Drinking Water Access (2009), Namami Gange, Ganga Rejuvenation (2014), Atal Bhujal Yojana (ABHY), Groundwater Management (2016). All these schemes mentioned have ensured sustainable development practices (smsfoundation.org).

Jal Shakti Abhiyan, which was introduced in July 2019, encourages residents to participate in rainwater gathering and water conservation. It raises public awareness of the significance of water conservation and expedites the execution of water-related programmes. JSA prioritises the development of watersheds, afforestation, and the resuscitation of traditional water bodies in areas that are water-stressed. It has raised groundwater levels, expanded water storage, and raised public knowledge of water conservation measures in a number of places(smsfoundation.org).

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Integrated Watershed Management Program (2015)

In order to offer comprehensive solutions for water management in agriculture, this programme was

introduced in 2015. PMKSY improves on-farm water management, encourages sustainable agricultural practices, and increases the efficiency of water usage. Water collection structures, watershed development, and improvement of livelihoods is the mission's objective (smsfoundation.org).

National Rural Drinking Water Programme (NRDWP) (2009)

The 2009-launched NRDWP aims to serve rural areas with clean and safe drinking water by monitoring water quality, establishing water sources, and guaranteeing piped water supplies to homes. In rural regions, the programme has greatly reduced health hazards and waterborne infections by increasing access to clean drinking water (smsfoundation.org).

- Low-cost water treatment technologies: Water treatment can be implemented both domestically and across the community. When discussing water purifying systems that are based in communities, contribution from community should be encouraged for the maintenance as well (wateraid.org, Khurana etal, n.d)

- Revival of traditional water conservation strategies: India has always used traditional water conservation features including ponds, lakes, and tanks. These collected surface runoff and rainfall to provide people with water sources. But over the last few decades, it has become evident that many of these institutions are malfunctioning (Khurana etal, n.d).

5. Conclusion

Emphasis on community water conservation through revival of traditional ponds, water tanks or tankas can be a major step in conserving water in rural areas. Innovative methods of storage through rain water harvesting can be encouraged in different rural areas according to the topography and climate. The centre and state can play a major role in intervening through various policies and schemes of rural areas. Local solutions can be adopted by innovative and technological interventions. Incentives can be given to the communities for rural water conservation. Therefore, community participation could be the most important input for water conservation and storage in these areas.

6 References

1. Amarasinghe, U. A., Sharma, B. R., Aloysius, N., Scott, C., Smakhtin, V., de Fraiture, C., & Ahmad, M. D. (2007). Spatial variation in water supply and demand across river basins of India. IWMI Research Report 83. Colombo, Sri Lanka: International Water Management Institute.

2. Bhaduri, A., Bogardi, J., Siddiqi, A., Voigt, H., Vörösmarty, C., Pahl-Wostl, C., ... & Lawford, R. (2016). Achieving sustainable development goals from a water perspective. Frontiers in Environmental Science, 4, 64.

3. Bhowmick, S., & Nath, B. (2018). Health implications of arsenic and fluoride contamination in drinking water: A review in the context of rural India. International Journal of Environmental Health Research, 28(2), 160-182.

4. Dwivedi, A., & Dwivedi, R. (2019). Accessibility to drinking water in rural areas of India: Issues and solutions. International Journal of Advanced Research in Engineering and Technology, 10(4), 837-845.

5. Dwivedi, S., et al. (2021). Sustainable solutions for water contamination in rural India: A policy perspective. Water, Air, & Soil Pollution, 232(2), 1-15.

6. Ganesh, T., et al. (2021). Water scarcity in rural India: Causes and consequences. International Journal of Current Microbiology and Applied Sciences, 10(4), 301-307.

7. Gupta, A., & Gupta, S. (2020). Industrial pollution in rural areas of India: A case study analysis. Journal of Environmental Policy and Planning, 22(5), 639-654.

8. Khurana Indira and Sen Romit. (n.d). Drinking water in Rural India: Issues and Approaches, background paper. wateraid.org

9. Kumar, A., & Prakash, S. (2020). Household conditions and water challenges in rural India: A qualitative study. Journal of Rural Health, 36(2), 214-226.

10. Kumar, R., & Rathore, A. (2019). Watershed management policies and their impact on rural water resources: A review. International Journal of Environmental Sciences, 4(2), 127-140.

11. Kumar, S., et al. (2021). Strategies for improving water accessibility in rural India: A policy perspective. Environmental Development, 38, 100618.

12. Mishra, S., et al. (2021). Access to water purification technologies in rural Indian households: A survey analysis. Journal of Water and Health, 19(4), 538-550.

13. Pandey, A., & Sharma, R. (2020). Climate change impacts on water resources in rural India: An unnoticed challenge. International Journal of Climate Change Strategies and Management, 12(4), 527-541.

14. Pandey, S., et al. (2020). Gender dimensions of water accessibility in

rural India. Journal of Development Policy and Practice, 5(2), 45-58.

15. Rodell, M., Velicogna, I., & Famiglietti, J. S. (2009). Satellite-based estimates of groundwater depletion in India. Nature, 460(7258), 999-1002.

16. Saravanan, R., & Raghu, R. (2018). Impact of water accessibility on rural livelihoods in India. International Journal of Applied Research, 4(7), 194-202.

17. Shah, P., et al. (2020). Water accessibility and challenges in rural India: A review. Journal of Water and Health, 18(3), 293-307.

18. Sharma, A., & Kaur, S. (2020). Water quality degradation in rural India: Causes and consequences. International Journal of Environmental Research and Public Health, 17(15), 5472.

19. Sharma, R., et al. (2022). Integrated approaches to addressing household conditions and water challenges in rural India: A policy perspective. Environmental Policy and Governance, 32(1), 52-65.

20. Singh, K., & Verma, S. (2019). Gender dimensions of water access in rural India: Unnoticed challenges and opportunities. Gender, Place & Culture, 26(10), 1441-1456.

21. Singh, R., Singh, A., & Jahan, K. (2021). Contamination of rural water supplies in India: Challenges and solutions. Journal of Water and Health, 19(2), 153-168.

22. Srivastava, P., & Kumar, A. (2020). Impact of water pollution on human health in rural areas of India. International Journal of Environmental Sciences, 5(1), 12-16.

23. Srinivasan, R., & Prasad, S. (2019). Water storage practices and their impact on water quality in rural households of India. Environmental Monitoring and Assessment, 191(5), 1-15.

24. Srinivasan, V. (2019). Addressing water pollution in rural India: Policy challenges and opportunities. Economic & Political Weekly, 54(42), 25-27.

25. Wang, L., Vinod, K., & Bhat, S. (2019). Water quality issues in rural India: A review. Environmental Monitoring and Assessment, 191(9), 549.

26. https://www.smsfoundation.org/how-is-india-managing-water-stress-in-rural-areas/

❐ ❐ ❐

Spatial Distribution and Environmental Implications of Wind Turbines: A Case Study of Hassan District

K. L. Sowmyashree, R. Akash, Arundas, K. Pradeep Kumar

Abstract:

The study examines the socio-economic, environmental, and demographic impacts of wind turbine installations in four villages in Hassan District—Kadadaravalli, Virapura, Kyathanahalli, and Singanahally. Through an analysis of demographic patterns, land use, and environmental assessments, the research aims to understand the community's perception of wind energy and its effects on local life. Findings reveal a generally favorable response toward wind turbines, with minimal adverse impacts on health, environment or quality of life. The trend and spatial distribution of turbines suggest a strategic placement that maximizes wind resources while integrating it with existing infrastructure, minimizing logistical and environmental challenges. Environmental concerns, such as wildlife disruption and noise, are present but considered manageable by most residents. Economic perceptions are shaped especially among lower income households, due to indirect benefits like employment. Hypothesis testing confirms no statistically significant negative impact on socio-economic or environmental conditions, indicating broad community acceptance. This study highlights wind energy as a viable, sustainable model for rural development, demonstrating its potential to balance economic benefits and environmental stewardship in similar settings.

Key words: wind turbines, location, impact, sustainable

1.0 Introduction

The increasing demand for sustainable and clean energy has led to a rapid expansion of wind energy projects worldwide. As a renewable resource, wind energy offers a viable alternative to fossil fuels, reducing greenhouse gas emissions and contributing to climate change

mitigation. In regions with suitable wind conditions, the installation of wind turbines has been widely promoted for its potential to generate significant amounts of electricity with minimal environmental impact. In India, wind energy is a growing sector, and states such as Karnataka have become prominent in harnessing this resource due to favorable topography and wind patterns. Hassan District, in particular, has emerged as a notable region for wind turbine installations, presenting an opportunity to study the patterns, trends, and impacts of these developments on local environments and communities.

The present study focuses on analyzing the spatial distribution and growth patterns of wind turbines in Hassan District, examining factors such as elevation, infrastructure availability, and land use compatibility that influence turbine placement. Understanding these patterns is crucial for optimizing future installations, ensuring they align with both energy efficiency and minimal ecological disruption. In addition to spatial analysis, this research explores the effects of wind turbines on local demographics, land use, and environmental conditions. Given the mixed land use in Hassan, which includes agriculture, forestry, and settlements, assessing how turbines fit within these contexts can provide valuable insights into the compatibility of renewable energy projects with existing land management practices.

The social and environmental impacts of wind turbines on human and animal life are also central to this research. Concerns over potential issues, such as noise pollution, wildlife collisions, and habitat disruption, make it essential to evaluate these effects thoroughly. The study includes perspectives from residents in proximity to turbine sites, examining how their quality of life, health, and economic conditions are influenced by wind energy development. By analyzing both quantitative data and community feedback, this research seeks to provide a comprehensive view of the benefits and challenges associated with wind energy in Hassan District. The findings will inform best practices for sustainable wind energy expansion in similar rural settings, contributing to balanced economic growth and environmental conservation.

2.0 Objectives:

The main objectives of the study are,

1. To analyze the trends and patterns of wind turbines in Hassan District.

2. To examine the impacts of wind turbines on environment (human and animal life).

3.0 Methodology:

The study was conducted in four villages within Hassan District—Kadadaravalli, Virapura, Kyathanahalli, and Singanahally —which were chosen for their varied demographics, presence of wind turbines, and diverse land use patterns. These locations provided a representative sample to evaluate the social, economic, and environmental impacts of wind energy in rural settings, allowing for generalizations applicable to similar regions.

Data collection involved both primary and secondary sources. Primary data was gathered through structured surveys and interviews with residents to assess perceptions of wind energy, demographic characteristics, socio-economic impacts, and any health concerns related to turbine installations. A simple random sampling method was used to ensure representation across demographics such as age, income, and gender. Additionally, field observations were conducted at turbine sites and surrounding areas to evaluate land use compatibility, environmental impacts, and infrastructure accessibility. Secondary data was sourced from land use and land cover (LULC) maps, allowing for a temporal analysis of land use changes in areas surrounding wind turbine sites. The information of distribution of wind turbines in Karnataka State and Hassan District have been collected from Karnataka Renewable Energy Development Limited (KREDL) report.

Data Analysis included several components. Socio-economic and demographic survey data were statistically analyzed to know the socio-economic status such as income and education. Environmental impact analysis focused on data from field observations to assess potential ecological effects, such as wildlife disruption, habitat changes, and noise impact. Geographic Information System (GIS) tools were used to map turbine locations and overlay, highlighting potential conflicts or synergies between turbine locations.

Hypothesis testing was conducted to evaluate the statistical significance of wind turbines' effects on socio-economic and environmental conditions, and quality of life. Chi-square test, were applied with a p-value threshold of 0.05 to assess the significance of observed impacts. Results below this threshold indicated a meaningful effect, while results above it were interpreted as minimal or insignificant impact, thereby confirming the broader acceptance of wind energy projects in these communities.

Limitation: Wind speed was not taken into consideration for the analysis,

which is one of the main drawbacks of this study.

4.0 Trends and patterns of wind turbines distribution in Hassan District:

The distribution of wind turbines in Hassan district follows specific trends and patterns influenced by geographic and environmental factors. Turbines are typically concentrated in areas with higher elevations and consistent wind currents, optimizing energy production. The patterns reflect efforts to balance turbine placement with land use compatibility, avoiding densely populated areas while integrating with agricultural and open lands.

Table 1 Distribution of Wind Turbines in Karnataka State

Districts	No. of Wind Turbines
Gadag	815
Koppala	238
Belagavi	465
Chithradurga	793
Davangere	340
Ballari	160
Tumakuru	54
HASSAN	**87**
Shivamoga	57
Raichur	158
Haveri	167
Dharwada	109
Vijayanagara	21
Vijaypura	556
Yadgiri	30
Kalaburagi	30
Bagalkote	47
Madikeri	05

Source: KREDL

Table No.1 provides a detailed distribution of wind turbines across various districts in Karnataka. The data reveals a significant disparity in turbine numbers, with Gadag and Chitradurga leading the state with 815 and 793 turbines, respectively. This concentration highlights the favorable wind conditions in these regions, which attract substantial investments in wind energy. In contrast, districts such as Hassan, with 87 turbines, have a smaller share of the total installations, being one of the main districts in South Karnataka. Interestingly, a few districts, such as Madikeri with only 5 turbines, show minimal wind energy development, likely due to either inadequate wind speeds or prioritization of other economic activities. This distribution pattern suggests that while Karnataka is a prominent player in wind energy, certain districts have maximized this potential more effectively than others. Hassan district is a key region in southern Karnataka for wind energy development, contributing significantly to the growth of renewable energy sources in the state.

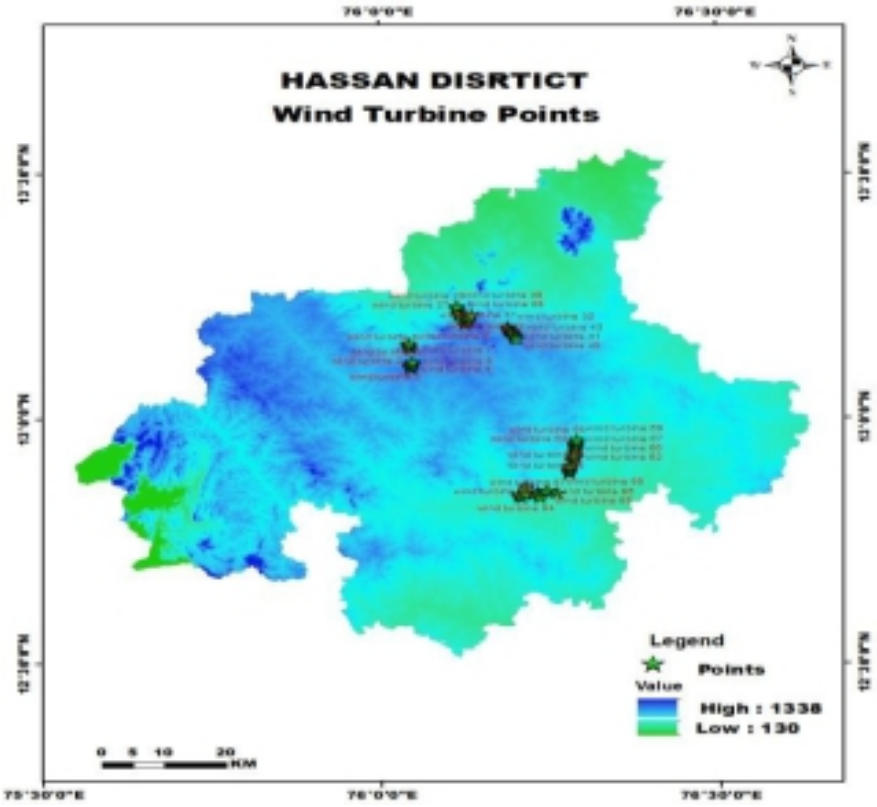
Table 2 Trend of Wind turbines installations in Hassan District

Year	No. of WTGs installed
2007	17
2008	25
2009	11
2010	05
2011	10
2012	19

Source: KREDL

Table 2 shows the progression of wind turbine installations (WTGs) in Hassan District from 2007 to 2012. The number of installations varies each year, with a notable increase in 2008, where 25 turbines were installed, compared to just 17 in the previous year. This upward trend indicates the district's growing interest and investment in wind energy. However, thereafter is a fluctuation in installations, with only 5 turbines added in 2010, suggesting potential challenges in sustaining steady growth in wind energy infrastructure. By 2012, the cumulative installations reached 87 turbines, demonstrating a consistent commitment to developing the wind energy sector in the region despite periodic slowdowns.

Map 1 Distribution of Wind Turbines in Hassan District



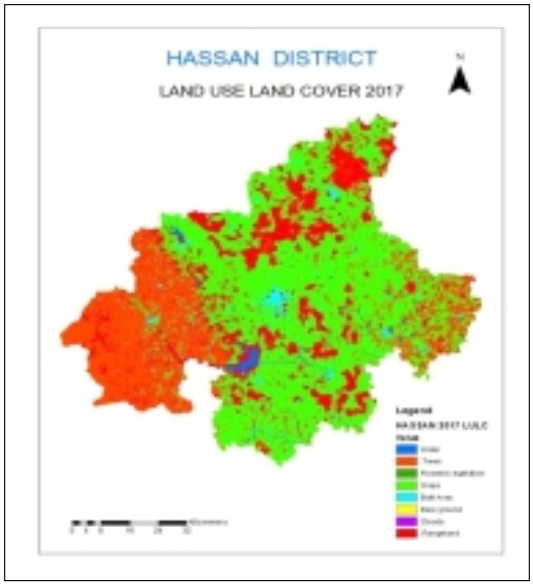
The Map.1 of Hassan District displays the distribution of wind turbines alongside the district's elevation gradient, highlighting key factors that influence wind energy generation in the region. Wind turbines are marked by distinct points scattered throughout the district, indicating areas where clusters of turbines have been strategically installed. This distribution is guided by factors such as favorable wind conditions, elevation, accessible infrastructure, and suitable land for wind energy development. Higher concentrations of turbines are seen in locations selected for their consistent wind currents, optimal elevation, and proximity to essential infrastructure like roads and transmission lines, which facilitate maintenance and operation.

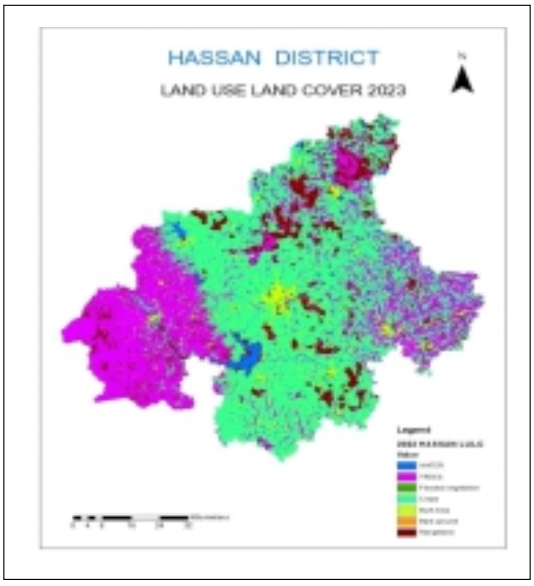
The map also features an elevation gradient, represented by a color scale from dark green to dark blue, indicating elevations from 1138 to 1330 meters. Elevation plays a significant role in determining the suitability of areas for wind energy, as wind speeds generally increase with altitude, making higher locations more favorable for capturing wind energy. However, these elevated areas can also pose logistical challenges due to accessibility and construction costs. By displaying both wind turbine distribution and elevation, the map provides a comprehensive understanding of how geography shapes wind energy development in Hassan District, reflecting the district's efforts to harness renewable energy in an optimized and cost-effective manner.

Table 3 Distribution of Wind turbines with Elevation in Hassan District

Elevation(M)	Number of wind turbines
900-940	3
941-980	18
981-1020	20
1021-1060	17
1061-1100	12
1001-1140	6
1141-1180	5
1181-1220	4
1221-1260	2
1261-1300	1

Map 2 Land Use Land Cover (LULC) Map of Hassan District





Source Map

According to the Table.3, majority of the wind turbines are situated at elevations between 941 to 1060 meters.

5. Impact of Wind turbines on Land Use Land Cover (LULC) of Hassan District

The installation of wind turbines has led to localized changes in areas converted for turbine bases and access roads. While the impact on overall land cover is minimal, some shifts from agricultural or open land to infrastructure related uses are observed around turbines sites.

Map 2 provides an in-depth analysis of land use and land cover changes in Hassan District, highlighting the driving factors and environmental implications of these transformations over time. The assessment examines land use patterns around wind turbine sites to identify any conflicts or synergies between wind energy development and other land uses, such as agriculture, forestry, and settlements. Understanding these interactions is essential to ensure compatibility between wind energy projects and existing land uses. Additionally, a comprehensive environmental impact assessment considers factors such as noise pollution, visual impact, and ecological effects of the turbines. Mitigation strategies and best practices are suggested to minimize any adverse effects on the environment and local communities. By examining the rate and patterns of land use and land cover transitions, this study provides insights into the dynamics of landscape transformation in Hassan District. This holistic approach aids in understanding the interactions between wind energy development, land use, and environmental impact, offering valuable guidance for sustainable land management and renewable energy planning in the region.

Finally, the map indicates that there have been minimal changes in land use and land cover in the areas where wind turbines are located. The changes in land use and land cover around these turbine sites are very limited and minimal.

6. Impact of Wind Turbines on Environment and Human Life

The environmental impact of electricity generation from wind power is minimal when compared to that of fossil fuel power. Wind turbines have some of the lowest global warming potential per unit of electricity generated: far less greenhouse gas is emitted for the average unit of electricity, so wind power helps limit climate change. Wind power consumes no fuel, and emits no air pollution, unlike fossil fuel power sources. The energy consumed to manufacture and transport the materials used to build a wind power plant is equal to the new

energy produced by the plant within a few months.

The impact of wind turbines on wildlife, most notably on birds and bats, has been widely document and studied. The research found evidence of bird and bat deaths from collisions with wind turbines and due to changes in air pressure caused by the spinning turbines, as well as from habitat disruption.

Sample villages survey in Hassan District:

The villages selected for this study are Kadadaravali, Virapura, Kyathanahalli, and Singanahally. These four villages are the primary sites for the installation of wind turbines and are situated within 0-10 km of the turbines. The respondents for the primary data collection are also residents of these villages.

Table 4 Population of selected sample villages

Population	Kadadaravalli	Virapura	Kyathanahalli	Singaranahally
Male	19	21	25	22
Female	11	09	5	8
Total Population	**30**	**30**	**30**	**30**

Source: Primary Data

The Table.4 provides an overview of the population distribution by gender in each village, with a sample size of 30 individuals in each. In Kadadaravalli, there are 19 males and 11 females; in Virapura, 21 males and 9 females; in Kyathanahalli, 25 males and 5 females; and in Singanahally, 22 males and 8 females.

Table 5 Literacy rate and Education level of selected sample villages

Village	No of Literate	No of Illiterate	Total	Up to 7th	7th to SSLC	PUC	Degree& Above	Total
Kadadaravalli	26(87%)	4(13%)	30	07	11	05	03	30
Virapura	27(90%)	3(10%)	30	06	13	06	02	30
Kythanahalli	26(87%)	4(13%)	30	11	09	04	02	30
Singanahally	23(77%)	7(23%)	30	09	10	04	00	30

Source: Primary Data (In the Parenthesis indicate %)

The Table.5 presents literacy rates and education levels of sample villages. The table indicates the number of literate and illiterate individuals, along with percentages in parentheses to illustrate the literacy rate. Kadadaravalli, for example, has a literacy rate of 87%, with 26 literate

and 4 illiterate individuals. Further, the table breaks down the education levels of the literate population into categories: up to 7th grade, 7th grade to SSLC (Secondary School Leaving Certificate), PUC (Pre-University Course), and Degree and above.

Table 6 Income Level in Sample villages where wind turbines are located

Villages	10k to 50k	50k to 1L	1L to 1.5L	1.5L&above	Total
Kadadaravalli	09(30%)	17(15%)	03(10%)	01(03%)	30
Virapura	11(37%)	12(40%)	06(20%)	01(03%)	30
Kythanahalli	05(17%)	21(70%)	04(13%)	00	30
Singanahally	09(30%)	19(64%)	02(6%)	00	30

Source: Primary Data (In the Parenthesis indicate %)

The Table.6 categorizes households in the sample villages by income level, showing the economic distribution in terms of income ranges: 10,000 to 50,000 INR, 50,000 to 1 Lakh INR, 1 Lakh to 1.5 Lakhs INR, and 1.5 Lakhs in INR & above. The percentage of households in each income category is also provided. For instance, in Kadadaravalli, 9 households fall within the 10,000 to 50,000 INR range (30%), while 17 households earn between 50,000 to 1 Lakh INR (56%). This income distribution data highlights the economic conditions of the sample villages and can help assess the financial impact of wind turbine installations on local populations.

The profile shows the sample villages in terms of population structure, educational background, and economic conditions. The data is essential for understanding the socio-economic landscape in areas affected by wind turbine installations, offering insights into how such projects impact rural communities in Hassan District.

Table 7 Effects of wind turbines on wildlife in sample villages

Village	Collation	Habitat disruption	Total
Kadadaravalli	23	07	30
Virapura	25	05	30
Kythanahalli	21	09	30
Singanahally	24	06	30

Source: Primary Data

The Table.7 captures the impact of wind turbines on local wildlife through incidents of collisions and habitat disruption. The data reveals that a significant number of collisions were reported in each village: Kadadaravalli (23), Virapura (25), Kyathanahalli (21), and Singanahally (24). Habitat disruption, which can affect biodiversity and the movement of animals, was also noted, though in smaller numbers: 7 in Kadadaravalli, 5 in Virapura, 9 in Kyathanahalli, and 6 in Singanahally. This table highlights the potential ecological costs associated with wind energy, suggesting that while clean energy production is beneficial, it may come with unintended consequences for wildlife in these areas.

Table 8 Effects on Human Health in Sample villages

Village	Physical Symptoms		Mental health or Strain	
	YES	NO	YES	NO
Kadadaravalli	02	28	00	30
Virapura	01	29	00	30
Kythanahalli	02	28	00	30
Singanahally	03	27	00	30

Source: Primary Data

The Table.8 provides data on health effects among the residents of the sample villages, specifically separating physical symptoms and mental health strain related to wind turbines. The physical symptoms reported by a minority include issues like dizziness; sleep disturbances, or headaches, with Kadadaravalli and Virapura having only 2 and 1 residents respectively reporting symptoms, while Kyathanahalli and Singanahally report slightly higher cases (2 and 3 residents respectively). In terms of mental health or strain, there were no reports from any village, indicating that while there are minor physical symptoms associated with proximity to wind turbines, mental health effects appear to be non-existent among these populations.

Table 9 Noise levels generated from wind turbines

Villages	Not noticeable	Disturbing	Very Disturbing	Total
Kadadaravalli	09	21	00	30
Virapura	12	18	00	30
Kythanahalli	10	20	00	30
Singanahally	16	14	00	30

Source: Primary Data

The Table.9 focuses on the noise levels perceived by residents living near the wind turbines. The responses are categorized into three levels: "Not noticeable", "Disturbing", and "Very Disturbing". In Kadadaravalli, 9 residents found the noise "Not noticeable," while 21 found it "Disturbing". In Virapura, the majority (18) felt disturbed, and only a few (12) reported the noise as "Not noticeable". In Kyathanahalli, 10 residents did not notice the noise, while 20 found it disturbing. Singanahally had a higher tolerance, with 16 residents finding it "Not noticeable" and 14 reporting it as "Disturbing" Interestingly, none of the villagers reported the noise as "Very Disturbing", suggesting that while noise from turbines is noticeable and occasionally bothersome, it has not reached an intolerable level for these communities.

The above tables offer an in-depth perspective on the broader impact of wind turbine installations on local wildlife, human health, and noise pollution in the surrounding communities. The information suggests that while wind turbines provide a renewable energy source, they also pose certain ecological and health-related challenges that should be considered when planning future installations.

Table 10 Effect of wind turbine on quality of life in selected sample villages

Villages	Positive	No impact	Negative
Kadadaravalli	00	30	00
Virapura	03	27	00
Kythanahalli	02	28	00
Singanahally	00	30	00

Source: Primary Data

Table.10 examines the impact of wind turbines on residents' quality of life, categorized as positive, no impact, or negative. The data indicates that, for most villages, the presence of wind turbines had no impact on quality of life. For instance, in Kadadaravalli,and Singanahally all 30 respondents reported no impact, and similarly, 27 in Virapura and 28 in Kyathanahalli reported no effect on their quality of life. However, Virapura had a small portion (3 residents) who perceived a positive impact, suggesting that for some individuals, wind turbines may be viewed favorably, possibly due to the associated economic benefits. The overall trend, however, reflects a neutral sentiment toward the influence of wind turbines on daily life.

Table 11 Support for increased wind turbines installation in selected sample villages

Villages	Support	Neutral	Oppose	Total
Kadadaravalli	20(67%)	04(13%)	06(20%)	30
Virapura	15(50%)	05(17%)	10(33%)	30
Kythanahalli	21(70%)	03(10%)	06(20%)	30
Singanahally	19(63%)	06(20%)	05(17%)	30

Source: Primary Data

Table 11 focuses on the level of support for increased wind turbine installations in the villages. The responses are divided into support, neutral, and oppose. Kyathanahalli exhibited the highest level of support, with 70% (21 individuals) in favor of additional turbines, indicating a strong acceptance of wind energy expansion in that village. Kadadaravalli and Singanahally also showed high levels of support, at 67% and 63% respectively. Conversely, Virapura had a lower support rate, with only 50% in favor and a notable 33% opposing further installations. This table highlights varied community attitudes toward wind energy, with most villages demonstrating a positive or neutral stance, though resistance exists in certain areas.

Table 12 Community Perception of wind turbines compared to other energy sources in selected Sample Villages

Villages	Good	Very Good	Bad/Worst	Total
Kadadaravalli	11	19	00	30
Virapura	07	23	00	30
Kythanahalli	09	21	00	30
Singanahally	04	26	00	30

Source: Primary Data

Table 12 compares wind energy to other energy sources based on residents' opinions, categorized as good, very good, or bad/worst. Singanahally showed a particularly favorable opinion, with 26 residents rating wind energy as “Very Good”. Kyathanahalli also had high ratings, with 21 respondents rating it as “Very Good”. Kadadaravalli and Virapura had a mix of “Good” and “Very Good” ratings, with minimal or no respondents rating wind energy negatively. This table suggests that wind energy is generally perceived positively compared to other energy

sources, with residents appreciating its benefits. This favorable opinion could stem from the environmental or economic impacts of wind energy, which residents might view as beneficial compared to conventional energy sources.

Finally, the tables collectively indicate that while wind turbines are mostly viewed neutrally in terms of quality of life impact, there is substantial community support for expanding wind energy in these villages, particularly in Kyathanahalli and Singanahally. Moreover, the comparison with other energy sources underscores a generally positive perception of wind energy, indicating that the communities are largely supportive of renewable energy initiatives in their area. This information is valuable for policymakers and energy planners considering future renewable energy projects in similar rural settings.

Hypothesis Test:

In the study, a hypothesis test was conducted to examine whether wind turbines have a significant effect on the environment and socio-economic life of people in the selected villages. The hypotheses were formulated as follows:

Null Hypothesis (H0): Wind turbines have no significant effect on the environment and socio-economic life of people.

Alternative Hypothesis (H1): Wind turbines have a significant effect on the environment and socio-economic life of people.

To evaluate this, a Chi-Square test was employed. The results yielded a Chi-Square statistic (X^2) of 6.28 with 3 degrees of freedom. The corresponding p-value was 0.099. Since the p-value (0.099) is greater than the chosen significance level of 0.05, we fail to reject the null hypothesis.

Based on the results of the Chi-Square test, we do not have sufficient evidence to conclude that wind turbines have a significant effect on the environment and socio-economic life of the people in the studied areas. This suggests that, according to the data collected, wind turbines may not substantially influence these aspects in the selected sample villages.

8.0 Findings and Conclusion:

The study of the selected villages—Kadadaravalli, Virapura, Kyathanahalli, and Singanahally—offers a comprehensive view of the impacts and community perceptions surrounding wind turbine installations. The demographic analysis shows a balanced gender ratio, high literacy rates, and varied income levels, with a significant portion of respondents in the lower-income bracket. This economic background may influence the favorable perception of wind turbines,

as many see them as a source of indirect economic benefits, including employment.

The analysis of the trend and pattern of wind turbine distribution indicates a strategic placement of turbines in locations that maximize wind resources and align with available infrastructure, such as roads and transmission lines. This pattern supports efficient energy generation and minimizes logistical challenges, which has contributed to the acceptance of wind energy in these villages.

Environmentally, there are some concerns about wildlife collisions and habitat disruption, but these issues are not severe enough to reduce overall support for wind energy. Health impacts are minimal, with most residents reporting no physical or mental health issues related to the turbines. While some noise is noted, it is generally considered unnoticeable or only mildly bothersome, showing that turbine noise has a limited impact on daily life.

The impact on quality of life is mostly neutral, with some residents experiencing positive effects, likely due to indirect benefits such as job opportunities. There is strong support for additional turbine installations, particularly in Kyathanahalli and Singanahally, where residents view wind energy as both sustainable and economically advantageous. Compared to other energy sources, wind energy is rated favorably, especially in these two villages, where it is considered an environmentally friendly and beneficial option.

The hypothesis testing further validates these findings, revealing no statistically significant negative effects of wind turbines on the environment or socio-economic conditions, with a p-value above the 0.05 significance level. This indicates that wind turbines are largely accepted, with minimal adverse impacts on health, environment, or quality of life.

In conclusion, the study demonstrates that the trend and pattern of wind turbine installations have been strategically planned to optimize energy production while minimizing disruptions. Wind energy development in these villages is viewed positively, providing sustainable energy with limited negative impacts. This model presents a promising framework for renewable energy expansion in similar rural settings, balancing economic growth, environmental sustainability, and community well-being.

9.0 Recommendations:

Based on the findings, this study recommends several measures to optimize wind energy development in

Hassan District while minimizing its socio-environmental impacts. First, future wind turbine installations should prioritize areas with minimal ecological sensitivity to reduce disruptions to wildlife and natural habitats. Regular environmental monitoring should be conducted to track any potential changes in local biodiversity, and mitigation measures such as wildlife-friendly turbine designs can be explored. To address community concerns, noise management strategies, like installing sound barriers or adjusting turbine placement, should be implemented near residential areas. Additionally, community engagement and awareness programs can help improve perceptions of wind energy, ensuring that local residents understand the benefits and are actively involved in decision-making. Integrating wind turbines with other land uses, such as agriculture, should be carefully managed to prevent conflicts and maintain local livelihoods. By following these recommendations, Hassan District can enhance the sustainability and community support for wind energy, setting a model for similar rural renewable energy initiatives.

Acknowledgment

We would like to express our sincere gratitude to the University of Mysore (DOS in Geography) for providing the necessary support and resources for our research work. The data utilized in preparing this paper was collected as part of the dissertation report.

Bibliography:

1. Ahmed, S., & Sharma, K. (2010). Wind energy resource assessment in Karnataka. In Proceedings of the National Conference on Wind Energy and Its Applications (pp. 45–54).

2. Archer, C. L., & Jacobson, M. Z. (2005). Evaluation of global wind power. Journal of Geophysical Research: Atmospheres, 110(D12).

3. Bhowmik, C., Bhowmik, S., Ray, A., & Pandey, K. M. (2017). Optimal planning of distributed generation using wind-solar biomass hybrid renewable energy system: A review. Renewable and Sustainable Energy Reviews, 71, 964–989.

4. Blanco, M. I. (2009). The economics of wind energy. Renewable and Sustainable Energy Reviews, 13(6–7), 1372–1382.

5. Joselin Herbert, G. M., Iniyan, S., Sreevalsan, E., & Rajapandian, S. (2007). A review of wind energy technologies. Renewable and Sustainable Energy Reviews, 11(6), 1117–1145.

Web sources:

https://www.nrel.gov/wind

http://www.kredl.karnataka.gov.in

https://www.iea.org/topics/renewables/wind

http://www.windpro.org

https://wwindea.org

❐ ❐ ❐

Analysing Profiles of Panchayat Representatives in Punjab: A Socio-Economic Study of Majha Region

Sewa Lal

Abstract

It is the era of micro-level studies. Policy makers, social scientists and political activists are focusing on micro-level studies for obtaining insightful and in-depth analysis and seeking adequate solutions to the social problems. The following study introduces an alternative approach to examine the socio-economic profiles of the Panchayat representatives with special focus on Dalits in Majha region of Punjab. The purpose of academic exercise is to locate the Dalit Panchayat representatives in general and particularly in comparison to non-Dalit Representatives of the Panchayats on socio-economic scale. The study tries to examine the selected population in a micro-scale setting to obtain relevant observations with the assistance of structured interview schedule. The empirical outcomes of the study are based on 408 in-depth interviews of the respondents. Further, this study gives an idea of socio-economic challenges of the Dalit Panchayat representatives and where they need assistance of state and society. Moreover, an effort has also been made to find out reasons for the same.

Introduction

The Panchayati Raj Institutions (PRIs) have been going through various ups and downs to make the grassroot politics more inclusive and democratic since independence of India. Among those, the 73rd Amendment Act 1992 is considered to be an important one. It enhances the level of participation of marginal communities particularly of Scheduled Castes (SCs)/Scheduled Tribes (SCs) and women candidates in PRIs. The said act empowers individuals to participate but participation is just an initial step towards representation. To attain efficient level of representation in any political set up, economic and social prosperity also play a significant role.

Laski once said that without economic equality political liberty is just a myth (Sherzai, 2012). Accordingly, there is a close relationship of socio-economic profile and political performance of a political representative. Therefore, it is impossible to ignore social and economic characteristics as they determine the level of representation and decision-making process. Further, socio-economic features depict disparities among the individuals as well as communities which help us to understand their status in social-configuration. Moreover, social and economic environment of a particular person or community directly affects their political behaviour. Also, socio-economic parameters shape up their ideas, aspirations and efficiency to work. Therefore, an empirical analysis of social and economic conditions of different social categories helps us to understand political performance of a particular person. The SCs also known as Dalits are one of the socio-economically marginal groups lagging behind at every front in human life due to the restriction imposed by traditional caste theory in the Indian society in generally and particularly in Punjab. After independence, Indian state took several steps to protect them socially and economically through various constitutional provisions and 73rd Amendment Act is also a significant step to boost their participation in PRIs. The Punjab is considered to be an agriculturally prosperous state. A significant proportion of population around 34 percent belong to the Dalit community. They are mostly engaged in agricultural and construction labour. Therefore, present study is worth to investigate them socially and economically and also locate them in comparison to the non-Dalit caste candidates.

Research Gap

Plethora of research work is available regarding social and economic status of Dalit Representatives in the Panchayats across Indian sub-continent and in Punjab too. But, it is hard to discover a study which gives an insight to understand Dalits in microscopic sense, particularly in comparison to non-Dalit representatives in the same settings. The following work introduces a new methodology by which an effort is made to locate Dalit representatives in general and particularly in comparison to non-Dalit counterparts.

Methodology

It is basically a primary study. In order to obtain relevant facts, a comprehensive structured interview schedule has been designed. The study is limited to a cultural region of Punjab known as Majha covering area between Ravi and Beas. It includes four border districts i.e., Amritsar, Gurdaspur, Taran Tarn and Pathankot. The entire universe

is comprised of 34 development blocks. Further, from each development block, three village Panchayats have considered from a list authorised by district administration in 2013-18. Besides, from each village Panchayat, men and women from both categories i.e., Dalit and non-Dalit have been interviewed for making an analysis. In this regional case study, the views of 34*3*4=408 elected representatives of panchayats have been consulted for obtaining empirical observations.

Social Profile

The social profile stratified different sets of individuals according to their status in social configuration. The set of social dimensions is to be answered to enable make useful observations of an individual's personality, perspectives, and way of life. It explains a generalized set of ideas of the social community or category. The idea of social profile enables us to generalize features of a particular community and social change that has been taking place. It also explains the nature of sub-co-cultures in a specific region.

Age

The age of individuals in chronological order, is also considered as a model of stratification in the society. An age group is socially constructed phenomenon and classifies a set of people who are in same-age group. Furthermore, age group is defined as division of the respondents in variety of chronological age section (Anther, 2007). Age of the individual states his/her level of psychological and physical maturity. The age-wise classification of the population is useful to in order to form an opinion of their level of mobilization and perspective for researchers. Generally, social scientists consider five phases of an individual's life such as infant stage, childhood stage, adolescence stage, adulthood stage and older stage. The minimum age to become a member of Panchayat or a Sarpanch is 21 years according to the rules of election to Panchayati Raj Institutions. Therefore, in this portion of inquiry researcher seeks appropriate responses and divides them in three age groups young (21-35 Years), middle (36-50) and old (51 and above). The Table-1 depicts the age wise distribution of the respondents who hold the post of head of Panchayat or members of the elected body. The data shows age wise classification of the respondents, in which it is clear that 64 percent of the total respondents belong to middle aged group and around 32 percent respondents fall in the category of old aged group. It is also found that only 4 percent respondents fall in young aged category.

The data from field study reveals that the respondents of Dalit category from young and middle age groups were slightly more likely to participate

Table-1-Age of the Respondents

Age Group of the Respondents	Dalits	Non-Dalit	Total
Young Aged	10	7	17
(21-35 years)	5%	3%	4%
Middle Aged	133	127	260
(36-50 years)	65%	62%	64%
Old Aged	61	70	131
(51 and above years)	30%	34%	32%
Total	204	204	408
	100%	100%	100%

Source: Survey

in grass root democracy as compared to Non-Dalit castes. Whereas, in old-age section (51 and above years), the participation of Non-Dalits was higher as compared to their counterparts. There is significant reason behind the higher participation of young and middle-aged Dalit respondents. It is due to the proliferation of education among Dalits in Punjab which has changed significantly in the time period from 1971 to 2011. The literacy rate of Dalits has been raised from 16.12 percent to 68.41 percent (Government of Punjab, 2011). In this study, it is found that education covered most of the Dalits born in near 1980's and 1990's onwards under the age section of young and middle aged. It shows that education among the Dalits is newly emerged factor. Consequently, consciousness and awareness of the young and middle-aged Dalits about their constitutional and human rights have increased. Therefore, young and middle age Dalit respondents were more likely to participate in village politics.

Religion

Religion is one of the important identities in the existing social realities. Religion is sacred set of faith and practices towards the divine power. This principle stands on set of beliefs rather than empirical evidences (Macionis, 2006). It is an organized perception of the relationship of real world and divine world generally known as God. The functional school of sociology states that every human being has a sense of religiosity and to some extent it would be fulfilled if needed. In our universe of the study, the respondents followed three

different religions i.e., Hinduism, Sikhism and Christianity. Table-2, shows that about seventy percent (69%) of the total respondents followed Sikhism and slightly more than one-fourth respondents (28%) followed Hinduism. The balance 3 percent followed Christianity.

Table -2- Religion of the Respondents

Religion	Dalits	Non-Dalits	Total
Hindu	67 32.8%	48 23.5%	115 28.2%
Sikhism	137 67.2%	144 70.6%	281 68.9%
Christian	0 0%	12 5.9%	12 2.9%
Total	**204** **100%**	**204** **100%**	**408** **100%**

Source: Survey

The State of Punjab is known as Sikh majority state at the national level and two districts i.e. Amritsar, Taran Tarn of the Majha region are famous as centre of Sikhism. On the other hand, Gurdaspur and Pathankot have their own demographic variations. Pathankot is the only district of Punjab having nearly ninety percent Hindu population. Therefore, more than half of the total Hindu respondents belong to Pathankot District and rest of Hindu respondents related to areas of Dinanagar, Narot Jamial Singh and some of other parts of Gurdaspur District. Another fact is that most of the area belonging to Gurdaspur and Pathankot have historically been influenced by Arya Samaj movements particularly the area of Dinanager, Narot Jaimal Singh and Bamial. Some of the religious and educational institutions are named after the famous personalities of Arya Samaj. Therefore, the percentage of Hindu respondents has increased to more than one-fourth. If we see the table, we can derive an inference that about 1/3rd of Dalit respondents followed Hinduism which was higher than the Non-Dalit respondents. Sikhism followers are more or less same in percentage irrespective of the category. In our sample, tiny representation was from Christianity.

Caste Profile

Caste had been a very fundamental basis of social stratification in Indian sub-continent on which a hierarchy of social groups had been designed. The

institution originally had their basis in occupational patterns of different social groups but now it is working on hereditary pattern. Once a person took birth in a social group, he/she cannot change their status of caste through the life span. Table 3 reveals the variation in the caste profile of the respondents. It is found that all the respondents belong to 22 different castes. As regards Dalits, some of the highly representative caste groups like Mazbi Sikh constitute more than half of the total respondents in Dalits, other than that Ramdassia Sikh (7 percent) and Ravidassia (7.4 percent) constitute approximately 15 percent. It is notable in the Table 3 that Megh, Duma/Mahasha and Bazigars constituent about 11 percent, 10 percent and 4.5 percent respectively within the Dalits. Remaining Dalit respondents like Sansi, Raigar and Batwal are very small in number. On the other side, in General category, it is stated that most dominated class Jatt Sikh composed one-fourth (25 percent) of the total sample in the non-Dalit category. Other than that Rajput about 12 percent, Ramgarias 8 percent, Sainies 7 percent, Mehra Sikh 7 percent, Christians 7 percent and Kamboj 4 percent of the total respondents falling under Non-Dalit category. The remaining, i.e., Brahmins, Khatri, Ghumiar, Nai, Goldsmith and Cheemba are very small in numbers.

Table-3- Caste of the Respondents

Caste	Dalits	Non-Dalits	Total
Brahmin	0 0%	4 2%	4 1.0%
Rajput	0 0%	24 11.8%	24 5.9%
Jatt Sikh	0 0%	102 50%	102 25%
Mazbhi Sikh	118 57.8%	0 0%	118 28.9%
Ramdassia Sikh	14 6.9%	0 0%	118 3.4%
Ravidassia	15 7.4%	0 0%	15 3.7%
Sansi	3 1.5%	0 0%	3 0.7%

Caste	Dalits	Non-Dalits	Total
Bazigar	9 4.4%	0 0%	9 2.2%
Duma/Mahasha	20 9.8%	0 0%	20 4.9%
Mehara Sikh	0 0%	14 6.9%	14 3.4%
Nai	0 0%	1 0.5%	1 0.2%
Ramgharia	0 0%	17 8.3%	17 4.2%
Ghumiar	0 0%	2 1%	2 0.5%
Suniar/Goldsmith	0 0%	1 0.5%	1 0.2%
Kamboj	0 0%	9 4.4%	9 2.2%
Batwal	1 0.5%	0 0%	1 .2%
Christen	0 0%	12 5.9%	12 2.9%
Raigar	2 1%	0 0%	2 .5%
Megh	22 10.8%	0 0%	22 5.4%
Saini	0 0%	14 6.9%	14 3.4%
Khatri	0 0%	3 1.5%	3 0.7%
Cheemba	0 0%	1 0.5%	1 0.2
Total	**204** **100%**	**204** **100%**	**408** **100%**

The numbers and categories vary across different districts. It is noticed that in the Dalit category there is substantial number of Mazbi Sikhs in Amritsar, Tarn Taran and some of areas of Gurdaspur. They represent more than half of the total Dalits respondents. Apart from that variation in Dalits is from Gurdaspur and Pathankot, where it is found that most of the Ramdassia Sikhs belong to Gurdaspur. It is seen that the representation of Megh caste comes from hilly areas of Pathankot and also different parts of Gurdaspur. Interestingly, Duma/Mahasha caste is prominent in numbers and politically assertive in Dinanager, Narot Jamil Singh, Bamial and some of other areas of Gurdaspur and Pathankot, and therefore they became notable figure in the sample. In non-Dalit category most dominant caste, namely, Jatt Sikh is prominent in Amritsar, Tarn Taran and Gurdaspur whereas Rajputs and Sainies represent Gurdaspur and Pathankot belt. Other than that, most of respondents belong to Kamboj caste from Khadoor Sahib and some other parts of Tarn Taran. Some of the respondents declared themselves as Christians. It is notable that all the Christian respondents are result of religious conversions in Christianity during phase of mass movement. These mass movements converted some of Scheduled Castes such as Mazbhi Sikhs, Balmikies and Chamars from 1861 to 1881 (Mathews, 1955). All these converted castes had enjoyed same social status in Christianity. It is also noted that the Christian respondents lead homogeneous way of life and their economic disparities were not too high.

Marital Status

In the Table-4, the data depicts that 99 percent candidates are married and only 2 candidates found unmarried in each category. In our sample only 2 widows are found.

Table-4

Marital Status	Dalits	Non-Dalits	Total
Married	202 99.0%	202 99.0%	404 99.0%
Unmarried	1 0.5%	1 0.5%	2 0.5%
Widow	1 0.5%	1 0.5%	2 0.5%
Total	**204** **100.0%**	**204** **100.0%**	**204** **100.0 %**

Data in the table reveal that married people were more interested in the grassroot politics whether they belonged to Dalits or Non-Dalit Category. Representation of widows was found from the villages named Jhawar in Gurdaspur development block and another from Qadian development block of Gurdaspur district.

Educational Status

Education is an integral part of empowerment. It is important ingredient of socio-political awareness and understanding of an individual in general. Individual learning is ongoing process throughout life by formal and informal institutions. But for academic exercise social scientists and researchers prefer to take into consideration formal education which respondents have received from educational organizations. Table 5 illustrates the education level of the respondents. In our study it is found that about 20 percent respondents were illiterate and around 7 percent were only able to mark their signature. One third of the total respondents are matriculation passed and 25 percent have completed primary education. About 4 percent have done middle class and 3 percent completed their senior secondary class. Table also shows that only around 8 percent respondents have done their degree or diploma.

Table-5-Level of Education

Education	Dalits	Non-Dalits	Total
Thumb Impression	51 25.0%	30 14.7%	81 19.9%
Literate/Signature	21 10.3%	6 2.9%	27 6.6%
Primary	54 26.5%	48 23.5%	102 25.0%
Middle	11 5.4%	7 3.4%	18 4.4%
Matriculation	51 25.0%	83 40.7%	134 32.8%
Senior Secondary/10+2	8 3.9%	6 2.9%	14 3.4%
Higher Degree/ Diploma Holder	8 3.9%	24 11.8%	32 7.8%
Total	**204 100.0%**	**204 100.0%**	**408 100.0%**

Source: Survey

The study shows that as we go from lower education level to higher level of education, the Dalit respondents are less educated compared to the non-Dalit category. Data also show that more Dalits as compared to their counterparts are still illiterate and could only mark their signature. If we see the higher education level, the trends are not different and from respondents of non-Dalit category around 12 percent hold degree/diploma, which is three times more than Dalits in this section.

Economic Ownership

Economic ownership is the current status of different economic sources that an individual owns. Ownership stands for control over property. The economic profile reveals hierarchy of social status which is based on economic sources that are possessed by an individual. Social scientists classified respondents based on economic parameters and gradual gathering of monetary resources. In the present study, respondents are observed through the prism of different variables such as occupation, type and size of residential house, land holdings and their size, and availability of domestic equipment and income of household.

Occupational Status

Occupation is the standard choice to generate employment by the individuals for their livelihood. Social Scientists considered general classification of occupational patterns as sign of social prestige of individuals. Occupations are parameter of different social classes on the basis of economic resources they owned. In this attempt, occupational ranking has been used to taking care of social prestige and autonomy of different occupations for generating data.

The outcome from data of this study reveals that about 13 percent respondents were involved in agriculture or other allied occupations and around 18 percent used labour as occupation for livelihood. There were 7 percent out of total respondents falling under the skilled labour section. About 15 percent are covered under business and industrial section. There were 4 percent posts held by Ex-servicemen. The table also confirms 43 percent respondents are housewives and did not engage in any profession.

Table-6- Occupational Status

Occupation of the Respondent	Dalits	Non-Dalits	Total
Agriculture	4 2.0%	50 24.5%	54 13.2%
Labour	66 32.4%	9 4.4%	75 18.4%
Skilled Labour	20 9.8%	8 3.9%	28 6.9%

Business and Industry	27 13.2%	32 15.7%	59 14.5%
Ex-Serviceman	8 3.9%	9 4.4%	17 4.2%
Housewife	79 38.7%	96 47.1%	175 42.8%
Total	**204** **100.0%**	**204** **100%**	**408** **100.0%**

Source: Survey

It is observed from the data of the study that the Dalit respondents engaged in agriculture are very few as compared to non-Dalit respondents. On the other hand, in labour section they were greater in number as compared to non-Dalit category. In the skilled labour section, Dalit respondents hold more skill-oriented occupation than the other category. The trends of business and industrial class depict the Dalits slightly lower as compared to the non-Dalit category. This shows that a good number of Dalits adopted entrepreneurship. The study shows same trend as study conducted by Gurpreet Bal (2010) in two districts of Punjab which gives an idea of emerging entrepreneur class among Dalits in his study. It is worth mentioning that a greater number of Dalit female representatives participate in the workforce/ agricultural labour and other allied occupations than the female representatives of non-Dalit background. It is historically true that females of Dalit category participate in labour-force for managing the financial needs of their families.

Residential House

The place of residence is a very important parameter of economic condition of an individual. Therefore, in this study, we mentioned it as a variable of economic status. The stated table denotes the condition of residential place of the respondents. The survey reported that about 98 percent respondents live in Pakka house while other 2 percent still live in Kaccha House.

Table-7-Type of Residential House

Type of House	Dalits	Non-Dalit	Total
Kaccha House	6 2.9%	3 1.5%	9 2.2%
Pakka House	198 97.1%	201 98.5%	399 97.8%
Total	**204** **100.0%**	**204** **100.0%**	**408** **100.0%**

Source: Survey

If we consider those who reside in Kaccha house, it is seen that number of Dalit respondents is twice as compared to the non-Dalit. In addition to that

further investigation has been done with regard to size of residential house. The size of residential house indicates strength of economic condition of respondents; therefore, it is taken as indicator of economic strength. In the table 8 we found that more than half (53percent) of the total respondents hold 200 square yard residential house and while 27 percent living in 400 square yard residential house. On the extreme upper end, we can see that nearly 5 percent respondents reside in the above 400 squares yard houses.

It is concluded from the above table if we club 100 square yard and 200 square yard statistics near about 80 percent Dalits reside in under 200 square yard land size residential house while we compare them with non-Dalits this percentage is 47 percent. On the other side, it is mention that 400 square yard and above 400 square yard residential houses owned by 52 percent non-Dalit respondents, it is only 9 percent among the Dalits those who occupied big houses more than 400 square yard land size houses. The data clearly shows the economic strength of both the categories which make sense that Dalits are lagging behind and but most of them have their owned house with medium land size.

Table-8- Size of Residential House

Size of Residential House	Dalits	Non-Dalits	Total
100 Square Yards	51 (25.0%)	13 (6.4%)	64 (15.7%)
200 Square Yards	133 (65.2%)	84 (41.2%)	217 (53.2%)
400 Square Yards	19 (9.3%)	89 (43.6%)	108 (26.5%)
Above 400 Square Yards	1 (0.5%)	18 (8.8%)	19 (4.6%)
Total	**204 100.0%**	**204 100.0%**	**408 100.0%**

Source: Survey

Land Holdings

The assets of an individual determine his/her economic class. In this study, land holding of the respondents is taken as indicator of economic strength. The Table-9, explains data regarding the land holdings and nature of land holding. The field study shows that around 43 percent respondents are land holders and 54 percent respondents mentioned

that they did not own any piece of land. Only 3 percent took land on contract or rent.

The analysis of above data show that 77 percent non-Dalit respondents are land holders while for Dalits this

Table-9-Land Holdings

Land Holdings of The Respondents	Dalit	Non-Dalits	Total
Yes	17 8.3%	157 76.9%	174 42.6%
No	175 85.8%	47 23.0%	222 54.4%
Contract	12 5.9%	0 0.0%	12 2.9%
Total	**204 100.0%**	**204 100.0%**	**408 100.0%**

Source: Survey

percentage slips down to only 8 percent. As regards contractual land holders, they all are Dalits. It can be easily observed from analysis that there is clear cut divide between Dalit and non-Dalit respondents with regard to the ownership of land. A large number of Dalits are landless and very few of them have taken land on contract for livelihood.

Land Holdings in Acres/ Ghuma

The land holding of an individual also determines rating of an individual's prosperity and economic strength particularly in Punjab. Therefore, this variable is also chosen to analyse economic strength of individuals. Table-10 shows the range of land-size in Acres/Ghuma owned by the respondents. The table indicates that about 54 percent respondents have no land and about one fourth (24percent) own land up to 5 Acres/Ghuma. 13 percent respondents said that they owned land between 6 to 10 Acres/Ghuma. Around 7 percent having land between 11 to 20 Acres/Ghuma and only 2 percent stated that they hold above 20 Acres/Ghuma land.

On a comparative scale it is seen that about 86 percent Dalits said they have no land and this number among non-Dalits is 23 percent. If we compare statistics of those who owned land, 39 percent non-Dalit respondents said they owned up to 5 Acres/Ghuma of land and this percentage goes down to 9 percent in the case of Dalits which shows a large gap in the ownership of this asset by the two categories. Looking at land range of

Table-10- Size of Land Holdings

Land Holdings in Acres	Dalits	Non-Dalit	Total
No land	175 (85.8%)	47(23.0%)	222 (54.4%)
Less than or equal to 5 Acres	18 (8.5%)	79 (38.7%)	97 (23.8%)
6 to 10 Acres	11 (5.4%)	42 (20.6%)	53 (13.0%)
11 to 20 Acres	0(0.0%)	28 (13.7%)	28 (6.9%)
Above 20 Acres	0 (0.0%)	8 (3.9%)	8(2.0%)
Total	**204 (100.0%)**	**204(100.0%)**	**408(100.0%)**

Source: Survey

6 to 10 Acres/Ghuma, it also shows that non-Dalit respondents hold four times more land than the Dalit respondents. The data of larger size land holders (More than 10 Acres/Ghuma) shows that all the respondents are non-Dalit respondents and their percentage is about 9 percent. It can be observed from the data that small number of Dalits owned their own land; on the other hand, non-Dalit representatives dominated in ownership of large size land holdings.

Availability of Domestic Appliances

The availability of domestic appliances is also an indicator of an individual's economic condition.

Table-11-Availability of Domestic Appliances

Availability of Domestic Appliances	Yes	Percentage	No	Percentage
Electric Supply				
Dalits	204	100%	0	0%
Non-Dalits	204	100%	0	0%
Availability of Domestic Appliances	**Yes**	**Percentage**	**No**	**Percentage**
Electric Supply				
Total	**408**	**100%**	**0**	**0%**

Television				
Dalits	201	98.5	3	1.5%
Non-Dalits	204	100%	0	0%
Total	**405**	**99.30**	**3**	**0.70%**
Refrigerator				
Dalits	188	92.2%	16	7.8%
Non-Dalits	199	97.5%	5	2.5%
Total	**387**	**94.9%**	**21**	**5.1%**
Washing Machine				
Dalits	126	61.8%	78	38.2%
Non-Dalits	184	90.2%	20	9.8%
Total	**310**	**76%**	**98**	**24%**
Bank Account/Post Office Account				
Dalits	182	89.2%	22	10.8%
Non-Dalits	189	92.6%	15	7.4%
Total	**371**	**90.9%**	**37**	**9.1%**
Air Conditioner				
Dalits	14	6.9%	190	93.1%
Non-Dalits	60	29.4%	144	70.6%
Total	**74**	**18.1%**	**334**	**81.9%**
Two-Wheeler				
Dalits	170	83.3	34	16.7%
Non-Dalits	186	91.2	18	8,8%
Availability of Domestic Appliances	**Yes**	**Percentage**	**No**	**Percentage**
Electric Supply				
Total	**356**	**87.3**	**52**	**12.7%**

Tractor				
Dalits	8	3.9%	196	96.1%
Non-Dalits	107	52.5%	97	47.5%
Total	**115**	**28.2%**	**293**	**71.8%**
Car				
Dalits	24	11.8%	180	88.2%
Non-Dalits	85	41.7%	119	58.3%
Total	**109**	**26.7%**	**299**	**73.3%**

Source: Survey

Electric Supply: Electricity is lifeline of overall development of every household. In the above table it is stated that all the respondents are having electricity connection whether they are Dalits or non-Dalits.

Television: Television is one of the basic equipment of entertainment and affects the socio-political awareness of an individual. In our study it is found that 99 percent respondents have a television set. Only 3 respondents said that they do not have a television set and all these respondents were Dalits.

Refrigerator: Refrigerator is also a basic necessity of a household. The data shows that 95 percent of the total representatives have their own refrigerators. Comparative statics reveals that approximately 92 percent Dalits have a facility of refrigerator in the household and this number goes up among the non-Dalit respondents to 98 percent. It is observed that the number of Dalits not having refrigerator in their household is more than non-Dalits.

Washing Machine: it is observed from the sample survey that 76 percent respondents owned washing machine in their households. If we compare the data of Dalits and non-Dalit categories for this, approximately 62 percent Dalits owned washing machine as compared to 90 percent of non-Dalit respondents. It can be seen that the number of Dalits respondent who don't have washing machine in the household is four times more as compared to the non-Dalit respondents.

Bank Account/ Post Office Account: It is noted from the data that 91 percent respondents had a bank account/post office account. Comparatively, 89 percent Dalits and 93 percent non-Dalit respondents get connected with the bank or post

offices. It is observed that the number of Dalits is slightly less than general in above segment.

Air Conditioner: Air conditioner in the household is the indicator of economic prosperity. Therefore, it is included in interview to trace exact economic level of an individual. It is revealing from the data segment that only 18 percent of the total respondents owned air conditioners in their household. Further, it is observed that 7 percent of Dalits and 29 percent of non-Dalit respondents are having air conditioner in their house. It is concluded from the data that the number of Dalits having air conditioner is very less as compared to general respondents.

Two-Wheeler: It is found in present study that total 87 percent respondents owned two-wheeler. The statistics reveal that 83 percent Dalits and 91 percent non-Dalit respondents were having two wheelers. The data shows that the number of Dalits is lagging behind as compared to non-Dalit respondents.

Tractor: The state of Punjab is an agriculture-based society and tractor is a major equipment used for ploughing the agricultural land. In present study it is found that 53 percent non-Dalit respondents owned tractors and this number goes down to only 4 percent in case of Dalits.

Car: The availability of private four- wheeler in particular family is an indicator of self-sufficiency and economic independence. The data reveals that approximately 27 percent of the total respondents owned their private car. Which shows that near about one fourth of the total families enjoyed economic prosperity. Around 42 percent non-Dalits and 12 percent Dalits owned their private cars. The data shows that the number of non-Dalit respondents is four times that of the Dalits.

Household Income

The range of family income also shows the livelihood and standard of individuals. It is an economic indicator that makes economic analysis more reliable. In the present study it is found that 37 percent of the total respondents fall in the income range under 10000 rupees per month. 25 percent said that their income range 10001 to 20000. Around 29 percent respondents listed their income range 20001 to 50000 rupees and rest of 10 percent respondents fall in the category of income range above 50000 rupees per month.

In the above table, it is observed that Dalits slip down on every scale of income as compared to the non-Dalit respondents. It is noted that on the income scale of less than 5000 rupees, total Dalits comprise about 13 percent of respondents and only 3 percent are

Table-12-Family income of the respondents

Income of the Family	Dalits	Non-Dalits	Total
Less than or Equal to 5000/-	27 (13.2%)	7 (3.4%)	34 (8.3%)
5001 to 10000/-	88 (43.1%)	27 (13.2%)	115 (28.2%)
10001 to 20000/-	48 (23.5%)	52 (25.5%)	100 (24.5%)
20001 to 50000/-	37 (18.1%)	83 (40.7%)	120(29.4%)
Above 50000	4 (2.0%)	35(17.2%)	39 (9.6%)
Total	**204 (100.0%)**	**204 (100.0%)**	**408 (100.0%)**

Source: Survey

from non-Dalits. Further, it is seen that 43 percent Dalits and 13 percent non-Dalit respondents having income range 5001 to 10000 rupees. Approximately 24 percent Dalit and 26 percent non-Dalit respondents said their income range is 10001 to 20000 rupees. While considering the income range 20001 to 50000 rupees, the number of Dalits is 18 percent as compare to 41 percent of their non-Dalit counterparts. On extreme upper level of income approximately 17 percent non-Dalit respondents earned above 50000 rupees and this number slips down in the Dalit respondents with 2 percent only which is very low. The inferences of the table show the huge income inequalities between Dalits and non-Dalit respondents. There are reasons behind the low level of income among the Dalits. Most of the respondents in higher income groups having land and other assets belong to non-Dalit castes. Secondly, most of the Dalits are land less and majority of them are engaged in labour and skill-oriented occupations which do not provide sound earnings and this is the reason that approximately 80 percent of the Dalits are having their monthly income of less than 20000 rupees.

Conclusion

The socio-economic profile of people enables them to think and act as per people of different strata of society. In this case of study, it is found that young Dalit representatives are more active in the panchayats in comparison to non-Dalits. The main reason of this particular finding is consistent improvement in literacy level of the Dalits. While exploring religious profile of the respondents, it is noted that the number of Dalit representatives was more than the non-Dalit category who followed Hinduism. While in

Sikhism this number was more or less same. This is due to geographic and socio-cultural reasons. The districts Gurdaspur and Pathankot geographically attached with Dev Bhomi Himachal Pradesh and Jammu both are Hindu dominated areas. Due to the influence of geographical effect, the Dalits who reside in areas of Pathankot followed Hinduism. Even the representatives of Saini caste of this particular region enlist themselves as Hindu Sainis. Secondly, it is noted that there are linguistic connections between people of Pathankot, Jammu, and Himachal Pradesh and particularly the influence of Dogri sub-language. Third reason is rooted in the history that some areas of Gurdaspur particularly Dinanagar and Pathankot have been centres of Arya Samajis. Therefore, such religious variations are found in present study. In case of Christians, no Dalit is found to be Christian. But there are documented evidences which claimed that these Christians are found due to the conversions of three Scheduled Caste communities to the Christianity during the British era. looking at caste variations, it is found that more than half of the total Dalits belongs to the Mazhbi Sikh caste. The reason behind it is that intensive population of Mazbhi Sikhs in Amritsar, Taran Tarn, and some of the parts of Gurdaspur such as Shri Hargobindpur, Batala, Qadian and Kahnuwan is settled here. Other notable Dalit castes are listed as Ramdassia Sikhs, and Mahasha/Duma. It is noted that Dalits listed as Mahasha/Duma caste politically assert and mobilize in Dinanagar and Bamial areas. In non-Dalit category, half of the representatives belong to the Jat Sikh caste. Other non-Dalit castes notable figures are found of Rajputs, Sainis, Ramgarhias, Mehra Sikhs, Christians and Kamboj. It is clearly mentioned here that in this study, the figures of Rajputs and Sainis belonging to the Pathankot and Gurdaspur particularly Dinanagar areas. Apart from this, the representation of Kamboj caste came out from Khadoor Sahib and allied areas. The study reveals that Dalit respondents are found less educated than general category. It is also found that the number of illiterate respondents belongs to the Dalits but most of them are from old aged category.

In a nutshell, economic profile analysis shows that in occupational patterns Dalit sections are more engaged in labour and skilled-labour oriented occupations while non-Dalit respondents are involved in agriculture and business or industrial occupations. Despite the above finding it is also found that the percentage of Dalits involved in business and industry slightly differ from the non-Dalit representatives. It indicates emerging business and industrial class among the Dalits. It is also found that women representatives of Dalit category are

more active participants in occupational structure than the non-Dalit category. The reason is that historically Dalit women are engaged in labour-oriented works and outdoor activities to manage their livelihood. As a result, the level of communication and speaking skill are more developed among Dalit women representatives of panchayat which help them to raise the issues of the local community. It is reported that the number of Dalits are double as compare to general respondents those who reside in Kaccha house. Analysis also shows that more than half of the total non-Dalit respondents reside in 400 square yards or above residential houses while nearly 90 percent Dalit respondents reside in under 200 square yards residential houses. Taking note of land, it is found that nearly 77 percent general respondents are land holders and half of them hold from 6 to 20 and above Acres/Ghumas of land. It is found that nearly 8 percent Dalits hold land and most of them hold not above 5 Acres/Ghumas. The analysis of availability of domestic appliances reveals that except electricity supply, television, refrigerator and washing machine there is no comparison of Dalits and non-Dalit category. On every aspect such as air conditioner, two-wheeler, tractor and cars, owners are intensively belonging to general category, while this number is very less in Dalits. Lastly, on income patterns it was found that on every income scale Dalits are lower down as compared to the general castes. The data revels that half of the total Dalit respondents fall in up to 10000 rupees scale while more than half of the total general respondents fall in 20001 to 50000 and above income scale. Only those Dalits fall in 10001 and above rupees scale who said that their family members were employed in salaried category, whether private or government, and business and industrial occupational section.

From the above analysis it is seen that there is improvement on certain socio-economic-political indicators in the context of Dalits but on overall scale, there is a huge difference in comparative socio-economic conditions among Dalits and non-Dalit representatives. In Dalits, there is rapid rate of development in terms of socio-economic parameters taking place which indicates positive change is occurring among them. Steps should be taken to minimise socio-economic disparities between the two social-categories.

References

1. Anther, J. (2007), Sociology: Encyclopaedia of Social Science, Delhi, IVY Publishing House, p 15.

2. Bal, G. (2010). Innovations, Entrepreneurship and Development: A Study of Scheduled Castes in Punjab, The Journal of Entrepreneurship, 19 (1):43-62.

3. Government of Punjab. (2011). Population statistics of Punjab (1971-2011) publication no – 947. Accessed from https://www.esopb.gov.in/Static/PDF/Publications/PopulationStat/PopulationStatistics-1971-2011.pdf

4. Macionis, J. J. (2006). Sociology, Delhi, Pearson Publication, p. 489.

5. Mathews, J. K. (1955). South of the Himalayas: One Hundred Years of Methodism in India and Pakistan, Lahore: Board of Missions of the Methodist Church, p. 88-89.

6. Sherzai, D. (2012). "Political Liberty without Economic Equality is a Myth". Accessed from http://outlookafghanistan.net/topics.php?post_id=5484

❐ ❐ ❐

Guidelines for Authors

- This is a Peer-Reviewed journal.
- Contributions need to be in English.

  The journal is dedicated to governance and developmental issues. Therefore, submissions could be related to governance and development related subjects – urban, rural or tribal, i.e., issues confronting cities, villages, peri-urban areas, issues related to urban and rural local bodies, issues related to education, public health, livelihood, urban and/or rural poverty, gender equality, etc. We however do not wish to limit the scope of authors' contributions to these areas. These are only indicative.
- Normally length could be 3000 to 4000 words though we do not wish to limit the size.
- Authors are requested to ensure that they follow all guidelines and practices applicable for this kind of work, in particular to ensure the following:
  - That the work is original, not previously published, does not infringe on others' rights and that reproductions from other sources are appropriately credited to the source and permissions taken where required. In other words, the authors shall remain solely responsible for the content provided by them
  - All persons who have contributed to the work are credited as authors or co-authors or otherwise appropriately. Further that persons credited as above have actually contributed to the work
- As we print in black & white, tables, charts, graphs, images, etc. if included, need to be compatible and easy to understand in printed form.
- We reserve the right to edit for sense, style, space, etc.
- Contributions may be sent as a Word file by email to aiilsgquarterlyjournal@aiilsg.org or info.algq@aiilsg.org
- In case of submissions selected for publication, the author would be sent a copy of the printed journal by post. However, it may not be possible for us to respond to individual queries from contributors enquiring about the status of their submissions.
- The Publisher reserves the right of publication.
- We publish quarterly, usually for the quarters January - March, April - June, July - September and October - December. The publication is usually at the end of each of these quarters.
- We do not levy any submission/processing/publication charges.

Ethics Policy

The Local Government Quarterly has been instituted and is being published with a view to promote the knowledge and sharing of ideas on subjects related to local governance - urban and rural, in India and overseas. It seeks to address related subjects including, but not limited to, education, public health, livelihoods, urban and rural poverty, gender equality.

The publication aims to contribute to the development effort in these and related areas by taking a positive approach so that achievement of favourable outcomes is made possible. The aim is to enable positive impacts in all sections of society including the poor, vulnerable and disadvantaged. The publication aims to add value to the efforts of all stakeholders particularly those working in these and related fields from all sectors - government, non-government organisations, academia, research and industry.

The publication is committed to a fair and equitable approach in all its pursuits and is bound to act without any ideological bias, in a non-adversarial, non-discriminatory and positive manner. The publication is committed to respect diverse views of stakeholders, especially of the contributing authors provided these are not against or unfair to any section/s of society or could create disharmony among or hurt the sentiments of any section/s of society – actually or potentially.

Readers and all concerned may note that the views expressed in the published contributions would represent the personal opinions of the authors and would not necessarily reflect the opinion of the publisher.

The publication will act in full compliance with all laws and regulations that are applicable to it and will act in a purposeful manner to rectify any inadvertent non-compliance that may be brought to its notice.

`On the part of authors, the publication expects similar fair, equitable and inclusive approach to be reflected in the contents of the contributions. In particular, authors are required to ensure the following:

- That the work is original, not previously published, does not infringe on others' rights and that reproductions from other sources are appropriately credited to the source and permissions taken where required. In other words, the authors shall remain solely responsible for the content provided by them
- All persons who have contributed to the work are credited as authors or co-authors or otherwise appropriately. Further that persons credited as above have actually contributed to the work
- All other ethical guidelines that are applicable for such work

We commit ourselves to the standard ethical norms.

Publication and Peer-review Policy

Local Government Quarterly is being published by All India Institute of Local Self-Government by incorporating research papers and articles contributed by diverse stakeholders including academicians, urban planners, practitioners and others with, among others, the following objectives:

- To bring to the fore and highlight issues regarding governance and development especially in India. The issues could include urban, rural or tribal ones covering an array of topics including education, public health, poverty, livelihood and gender.
- The aim is to generate debate and deliberation with the objective of seeking solutions to challenges in the above areas.
- To contribute to capacity building of institutions and personnel working in the related fields thereby improving their response to the issues being confronted in these sectors.
- Contributions are invited from authors in accordance with the 'Guidelines for Authors' published separately.
- Those contributions which are found to be as per the 'Guidelines for Authors' would be provided to some member/s on our panel for 'Peer-review'. In case found necessary, the feedback of the panel member/s could be provided to the concerned author for any modifications he/she may like to make based on the feedback and resubmit the work.
- The publisher reserves the right to publish.

For submission of papers/contributions, kindly note the changed e-mail IDs

aiilsgquarterlyjournal@aiilsg.org

or

info.algq@aiilsg.org

Report Review

NITI Aayog India Electric Mobility Index 2024 (IEMI) – Report

Read the full report here:

https://niti.gov.in/sites/default/files/2025-08/India-Electric-Mobility-Index -2024-Report.pdf

Urbanisation is among the defining trends during the current decade. Population growth in the global south, population ageing in the developed world, and rural-urban migration comprise the other important trends. Urbanisation is a trend which is enabling unlock possibilities for rapid development of large populations around the world and contains prospects of delivering better quality of life for citizens everywhere. Earlier viewed as a major challenge akin to a disaster, urbanisation is now proving to be an opportunity for ensuring the well-being of millions on this planet. Yet this opportunity is accompanied by several challenges – providing affordable housing, inclusive healthcare, education, etc. Urban mobility occupies an important place in the urban sphere given its rapid growth particularly personal transportation, pollution, congestion, and road safety issues. Electric (non-fossil fuel based) mobility has emerged as an important pillar of sustainable mobility in our cities.

In this context, India Electric Mobility Index 2024 brought out recently by NITI Aayog will be of much interest to students, researchers, policymakers, industry players and others. As stated in the sub-title, the document tracks electric mobility trends in Indian states.

The Report contains a Foreword by Suman Beri, Vice-Chairman of NITI Aayog wherein he states that the global momentum towards sustainable mobility presents a timely and compelling opportunity for India to leapfrog conventional trajectories and position itself as a frontrunner in clean, connected and shared mobility solutions. There are other forewords by dignitaries of NITI Aayog and the CEO of WRI India which has supported this initiative of NITI Aayog.

The **Introduction** sets the context and the background of the report. It states that motor vehicles emissions account for a significant portion of urban air pollution containing carbon dioxide, particulate matter, nitrogen oxides and others which needs urgent attention. At the same time, India's automotive sector is a very significant player in India's economic landscape accounting for 7.1 percent of the country's GDP and about 49 percent of manufacturing GDP. India is among

the leading players in 2W, 3W and passenger cars production in the world. It also plays a vital role in job creation. In this backdrop, electric mobility will play a crucial role in decarbonizing the economy and advancing India's commitment to achieving net-zero by 2070. The next chapter describes India's e-mobility ecosystem. It describes the significant growth in e-vehicle sales during recent years driven by policy initiatives, private investments and consumer demand. Charging infrastructure is described as a key enabler of transition to e-mobility and presents much opportunity. The role of states including their policy interventions to push e-mobility is noteworthy. **Chapter 3** is titled 'Importance of State Action'. States play an important role given the fact that they govern key areas such as road transport, power distribution, manufacturing industry, and urban planning. The Report notes that so far, 29 states and UTs have notified EV policies. It highlights the urgent need for recognition of high performing states, a platform for sharing among states, identification of key success factors, etc.

Chapter 4 talks about the Index itself. It is titled 'About IEMI'. It states that the Index developed by NITI Aayog in partnership with WRI India is based on the core principles of comprehensiveness, data-driven assessment, actionability, inclusivity and transparency. States will be enabled to benchmark their progress. The need for the IEMI, its objectives, and key features are discussed in this chapter.

Chapter 5 is IEMI Framework. The IEMI themes comprise the demand drivers (Transport Electrification), supply-side ecosystem (EV Research and Innovation) and allied infrastructure (Charging Infrastructure) which is required to support e-mobility progress. These themes encompass 16 performance indicators (parameters), categorized as enablers and outcomes. Outcomes are metrics that measure the tangible results or impacts of policies, actions and initiatives aimed at promoting e-mobility. Enablers refer to the conditions, resources, policies, actions and initiatives supporting and driving e-mobility. If we consider the Charging Infrastructure Readiness theme, for example, the enablers are capital subsidies for the infrastructure, share of RE generation capacity, building bye-laws for charging, power availability, and infrastructure development initiatives. The outcome is EV to EV charger ratio.

Chapter 6 is titled 'Methodology Overview'. IEMI methodology involves selecting indicators, data selection, and evaluation of states. **Chapter 7** is 'IEMI Results 2024'. Here are given the IEMI Score for each state as also the scores on individual themes – transport electrification progress,

charging infrastructure readiness, and EV research and innovation status - for each state. Based on the scores the states are classified as Frontrunner (score 65 to 99), Performer (score 50 to 64), and Aspirant (score 0 to 49). Scores on various outcome indicators are also given thereafter.

Chapter 8 is titled 'Quarterly State Progress'. This is interesting since it tracks the progress (ranking) of each state over the 4 quarters of 2024. To note, for example, Delhi and Maharashtra have been ranked 1 and 2 respectively in each of the four quarters of 2024. In other words, their achievements have been stable and consistent across the four quarters. On the other hand, Uttar Pradesh has been ranked 13, 11, 8, and 7 in quarters 1, 2, 3, and 4 respectively, indicating steady progress during the year. This performance data is represented in graphs and charts and is interesting to read.

In the next chapter, i,e, **Chapter 9**, the profiles of each of the state and UTs are given. For each state, the IEMI rank and score is given. Also the theme scores for each of the 3 themes, and also the quarterly theme scores for each theme are given. These are represented by coloured bar charts making the presentation appealing as also easily readable. For each state/UT, after these charts, are mentioned highlights and USPs in a few bullets and thereafter are recommendations also in bullet points.

For example, in the case of Uttar Pradesh, the highlights and recommendations are:

Highlights and USPs

- As on 31st January 2025, the state recorded the highest number of EVs with over 1.1 million Evs.
- The state has attracted over 50 EV manufacturers, bringing in Rs 10,000 crore in investments and creating 20,000 jobs.

Recommendations

- To boost private EV adoption, focus on initiatives such as incentives for vehicle scrapping and conversion kits, permit exemptions for commercial EVs and improving purchase subsidy schemes.
- Establish R&D centres for skill development and introduce courses on e-mobility.
- Improve EV charging infrastructure by providing capital subsidies for public charging stations and implementing a single-window system for approval processes.

Chapters 10 and 11 cover Annexure 1 Indicator Values for 2024 and Annexure 2 Methodology Documentation 2024.

All in all, this Report by NITI Aayog supported by WRI India is a very useful document for individuals and organisations who work in the area of mobility, specially e-mobility. It helps understand the progress made so far by individual states and UTs on various parameters, as also the recommendations for the future. This Report could be useful for policy makers in their efforts to steer e-mobility in their states/UTs.

V. Vijaykumar

Our Contributors

- **Gopi Madaboyina**

  Dr. Gopi Madaboyina is Assistant Professor, Department of Political Science and Public Administration, Adikavi Nannaya University, MSN Campus, Kakinada

- **Sakshi Sahni**

  Dr. Sakshi Sahni is Assistant Professor, Guru Ram Das School of Planning, Guru Nanak Dev University, Amritsar

- **Simranjot Singh**

  Simranjot Singh is Ph.D Research Scholar, Guru Ram Das School of Planning, Guru Nanak Dev University, Amritsar

- **Sanjay Mishra**

  Sanjay Mishra is Ph.D Research Scholar, Guru Ram Das School of Planning, Guru Nanak Dev University, Amritsar

- **Rawal Singh Aulakh**

  Dr Rawal Singh Aulakh is Assistant Professor, Department of Architecture, Guru Nanak Dev University, Amritsar

- **K L Sowmyashree**

  Dr K L Sowmyashree is Guest Lecturer, DOS in Geography, University of Mysore, Manasagangotri, Mysore

- **R Akash**

  R Akash is DOS in Geography, University of Mysore, Manasagangotri, Mysore

- **Arundas**

  Prof Arundas is Chairman, DOS in Geography, University of Mysore, Manasagangotri, Mysore

- **Pradeep Kumar K**

  Dr Pradeep Kumar K is Guest Lecturer, Department of Geography, Maharaja's College, University of Mysore, Mysore

- **Sewa Lal**

  Sewa Lal is Assistant Professor, Department of Political Science, S.P.S.K Khalsa College, Begowal, Kapurthala

- **V Vijaykumar**

  V. Vijaykumar is Senior Advisor, All India Institute of Local Self-Government

OBJECTIVES

The main emphasis of the Institute's work is to see that the local bodies can contribute more effectively to the development process and provide the citizens with better living conditions by meeting their aspirations in terms of required amenities, infrastructure and better environmental conditions, thus contributing to social and economic development of the society as a whole by better management of the human settlements. While these are the long-term objectives, the immediate ones are:

- To advance knowledge of the principles and practices of Local Government by conducting research and by organising training courses and programmes at various centres in India for officials and elected representatives in the local bodies.
- To strengthen and improve Local Government Institutions by improving their performance through education, orientation and bringing them together for common endeavor by organising specialised conferences, conventions and seminars.
- To make available a platform for members of local bodies and officials for exchange of views and ideas related to urban development and administration.
- To represent the views of local authorities supported by research work to the concerned higher authorities from time to time.
- To publish bibliographies, articles, books and other literature on matters of interest to local bodies.
- To publish journals, bulletins and other literature on different aspects of Local Government and on the working of Local bodies in different states.
- To undertake research studies in public administration, problems of local bodies and also in related topics of urban and environmental factors and arrange for their publication etc.
- To establish and maintain an information-cum-documentation service for local bodies.
- To undertake consultancy assignments in various areas of urban development and problems of local bodies with a view to improve and develop organisational, managerial and operational efficiency.

In view of the above, the Institute has been collaborating with the relevant government departments, Central and State, Universities, Organisations and Research Institutions. The work of the Institute covers several aspects involving a multi-disciplinary teamwork.

All India Institute of Local Self-Government

M. N. Roy Human Development Campus, Plot No.6, 'F' Block,
TPS Road No.12, Bandra (E), Mumbai – 400051.
Tel : +91- 86576 22550 / 51 / 52 / 54
E-mail : aiilsgquarterlyjournal@aiilsg.org, info.algq@aiilsg.org
Website : www.aiilsg.org