Assessment Period 2023-2024

B.M.S. COLLEGE OF LAW, BENGALURU

Bull Temple Road, Basavanagudi, Bengaluru-560019

CRITERION 3–Research, Innovation and Extension

Key Indicator –3.2–Research Publications and Awards

3.2.3–Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during the year

Submitted to

THE NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

3.2.3 – Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during the year

INDEX

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

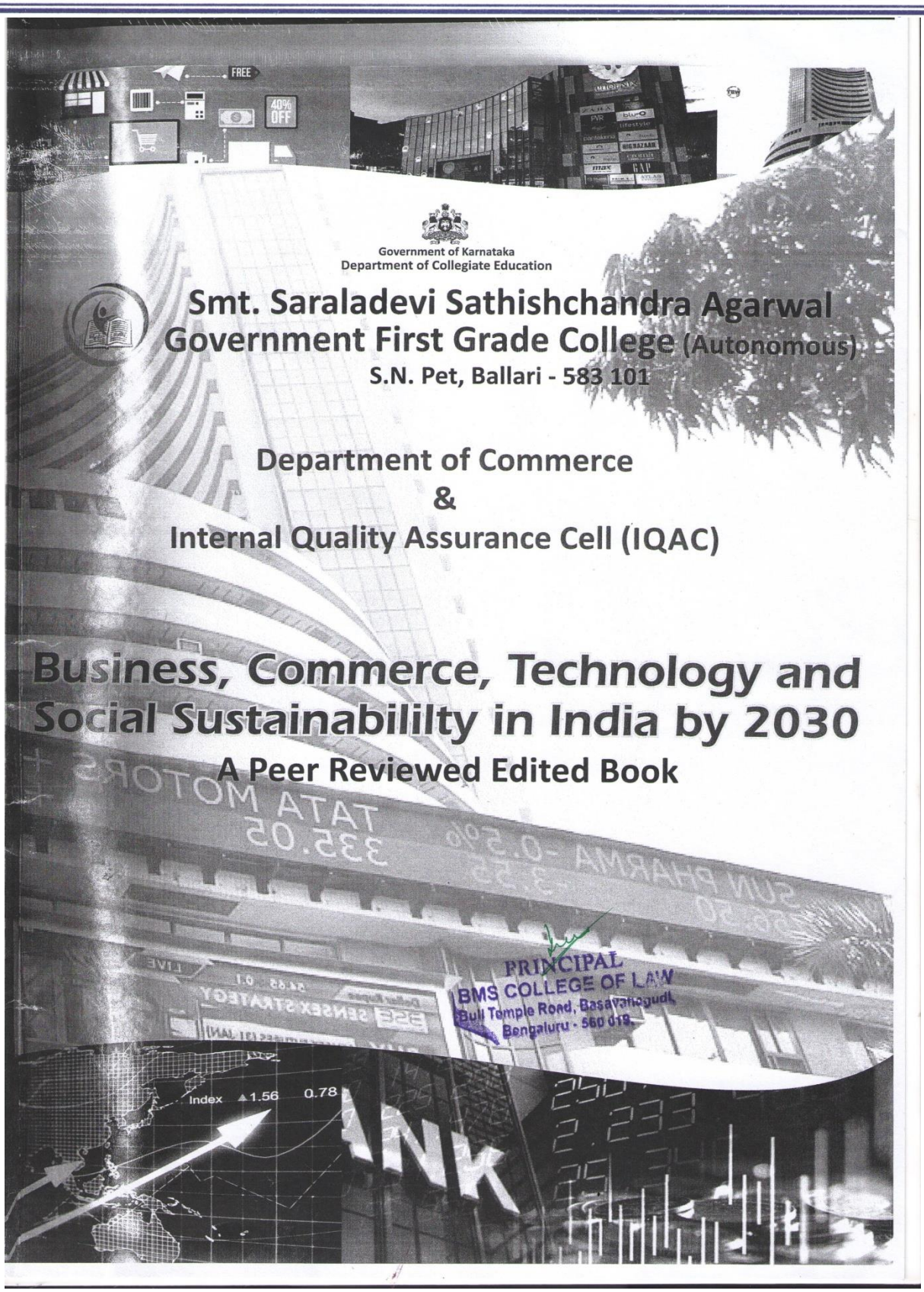
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++



Government of Karnataka
DEPARTMENT OF COLLEGIATE EDUCATION

Smt. Saraladevi Sathishchandra Agarwal
Government First Grade College (Autonomous)
S.N. Pet, Ballari - 583 101

Department of Commerce
&
Internal Quality Assurance Cell (IQAC)

Business, Commerce, Technology and Social Sustainabililty in India by 2030

A Peer Reviewed Edited Book

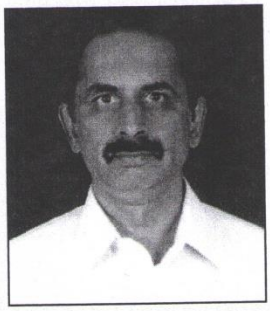
B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

CHIEF EDITOR MESSAGE



The edited book titled **'BUSINESS, COMMERCE, TECHNOLOGY AND SOCIAL SUSTAINABILTIY IN INDIA BY 2030'** is intended to discuss opportunities, issues and challenges vis-à-vis emerging trends in business, commerce, innovation, technology, economic sustainability and social landscape of the country by 2030. A total of 22 chapters were contributed by the academicians and research scholars covering emerging issues and opportunities in commerce, technology and socio-political areas. The subjects and topics discussed in these chapters will help the scholars and readers with more insights in the field of business and commerce. I am thankful to all the chapter contributors, principal, reviewers, editorial board members and my colleagues for their support and encouragement.

[Dr. Prahlad Chowdri G.]

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru-560 019.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

CONTENTS

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

ISSUES AND CHALLENGES OF THE TOURISM INDUSTRY IN INDIA - A LEGAL PERSPECTIVE

Dr. Roopa S
Assistant Professor
B.M.S. College of Law, Basavanagudi Bengaluru - 560 004.

Introduction

Tourism is one of the fifth largest industry in India. It is one of the world's fastest growing sector and plays a catalytic role in accelerating the economic development of the country. It confers social and economic benefits, promotes national integration, creates employment opportunities and earns foreign exchange. Due to surplus income and change in the mindset of consumers, tourism industry has recorded tremendous growth. Tourism is both product as well as service. Travel and tourism is the world's largest industry and generates 10.3% of world's GDP and is expected to reach $500 billion by 2029. Over the past decade, this sector has not shown any signs of slowing down but has grown exponentially. Unlike others sectors, tourism cannot be categorized and confined to one sector because of it's incorporation, interdependence and interaction with many sectors such as hospitality, transport, travel agency and tour operators. It demands continuous trimming, moderation and updating. There are some major issues and challenges in the tourism industry that needs to be addressed. Lack of safety measures proves to be a serious threat to the tourists. There is a need to develop effective marketing strategies for promotion of tourism. The governmental policies towards the industry cannot be effectively implemented as there is inadequate outlay in the five year plans. Although substantial growth in tourism is being recorded, there is untapped potential that needs to be exploited. Tourism is undermined as a luxury and not much importance is paid towards regulation of tourism and protection of tourists. Tourist consumers have for long suffered injustice, pecuniary loss and mental agony on account of unreasonable terms in consumer contracts and have had to face long drawn legal battles for justice. Consumer Protection Act, 2019 provides for unfair terms in tourist consumer contracts. The consumer watchdog Central Consumer Protection Authority has an important duty to regulate consumer contracts in hospitality, travel and tourism sectors and ensure fair play. Owing to the large number of tourist consumer complaints, there is no sector regulator for tourism unlike other sectors such as insurance, telecom, housing and so on. At this juncture, the author makes an attempt to understand the meaning, nature, significance and positive benefits of tourism. The tourism subject is multi-dimensional and is subject to various issues and challenges. It is also important to understand the legal framework for the protection of tourists and the lacunae in the legislations. The chapter is concluded by making various suggestions to address the challenges.

Meaning, Nature and Impact of Tourism

The word 'tourism' is derived from the latin word 'tornus' meaning a circle or a turner's wheel. A 'tourist' denotes a person who travels either for recreation or pleasure. The meaning of 'tourism' is further broadened to include all the activities and arrangements associated with tourism. According to Theobald, the word tourism is derived from the latin word, "tornare" and the greek word "tornos" meaning a circle or the movement around a central point or axis. The suffix 'ism' implies 'an action or process.' Thus the word tourism denotes a journey taken as a round trip where a person leaves a place and then comes back to the place where he started. World Tourism Organization has defined tourists as people who, "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes, not related to the exercise of an activity remunerated from within the place visited."

Tourism is a multi-dimensional activity. Tourism is subjected to study by various authors under different subjects with varied perspectives. Tourism is subject matter of research under various subjects such as history, economics, anthropology, sociology etc. Tourism is understood as a product, system, industry and service.

Tourism is a complex industry of many components. It ranges from a mass tourism with giant airline, huge hotel or a luxurious resort to a lone traveller. The major components of this industry are locale, accommodation, transport, travel agencies and tourism regulatory bodies. Apart from the above primary constituents, there are other secondary constituents

ISBN : 978-81-962730-0-2

such as shops and state emporium, arts and crafts, banks, insurance companies, media, performing artists, publishers, advertisers, hawkers, coolies etc.

In India tourism is one such service sector which has shown considerable dynamism and is expected to grow exponentially. The Ministry of Tourism is the nodal agency for the development and promotion of tourism in India and maintains the "Incredible India" campaign. According to the latest Tourism Satellite Accounting (TSA) research, released by the World Travel and Tourism Council (WTTC):

- India's travel and tourism sector is expected to be the second largest employer in the world. In 2016 it supported 5.8% of direct contribution and 9.3% of total employment and is expected to rise to 6.1% of direct employment and 9.6%of total employment respectively by 2027.
- The report forecasts India that capital investment for travel and tourism would be worth 5.7% of total investment by 2027.
- The visitor exports generated 5.4% of total exports in 2016 and are expected to grow to 6.8% in total exports by 2027.

Significance of Tourism

As the country grows rich, people normally work for less number of hours and enjoy great leisure time as people trade off increased income in return for free time. For over 25 years, the World Travel and Tourism Council (WTTC) has been providing the evidence quantifying the impact of travel & tourism on employment and economy in general. According to the World Tourism Organization, tourism is the world's number one export earner, ahead of automotive products, chemicals, petroleum and food. It thus generates substantial economic benefits to both host countries and tourists' home country. The significance of tourism can be understood under different heads:

a) Tourism –Tool for Poverty Alleviation

The potential of tourism to expand globally and create employment opportunities leads to reduction of poverty particularly in rural and remote areas. It includes activities ranging from smallest roadside eatery to airlines, multi-national hotel chains and major international tour operators. Tourists spend on accommodation, food, souvenirs and so on at the places visited. It has the potential to transform developing economies to middle income economies within a short period of time. The new approach towards tourism development is to maximize benefits of tourism to the poor through the active participation of the local people in the development of tourism product. Tourism's potential for contributing to poverty alleviation was highlighted in the UNWTO report presented before the Third United Nations Conference on Least Developed Countries.

b) Tourism - An Instrument of World Peace

The United Nations and other international bodies have recognized the role of tourism as an ambassador and vehicle of international understanding and peace. Tourism provides an opportunity for people to understand each other's customs, culture and way of life, thus promoting social cohesion. It is also a means of establishing and improving political relations with other countries. There are different levels of international relations that are developed due to tourism. Firstly, at the non-governmental level, private citizens of different nations experience culture which is different from their own. Second one is public-level of international relation which is dealings between governments such as agreements on immigration, custom procedures, air transport etc. Finally there is corporate sector- government level of international relations wherein there is interaction between the government and foreign private investment in relation to tourism. Corporations may be airlines, banks, hotels and tour operators.

c) Tourism - Foreign Exchange Earner

There are various factors which influence the tourism earnings of a country. It depends upon the total tourist arrivals, the number of days spent in the host country, the percentage of money spent by the tourists, the multiplier effects of tourism and the percentage of package tourists to total visitor arrivals. Tourism is the primary source of foreign exchange earnings in 46 out of 49 least developed countries. Tourism brings most foreign exchange to countries such as Maldives, Bali, Fiji, Mauritius, Carribean Islands etc. whose economy is totally dependent on tourism. Of late, there is a change in the thinking of the government and the slogan is 'count the dollars and not the heads'. So, it is not the number of tourist arrivals, but the money spent by the tourists which is important. The earnings by the domestic tourism cannot be undermined, which is referred to as 'sleeping giant'. Internal tourism generates more income and employment opportunities through tourist spending than international tourism.

ISBN : 978-81-962730-0-2

d) Tourism - The Employment Generator

Tourism is highly labour- intensive as it creates more employment opportunities given the capital investment. It should be noted that apart from the direct employment which is created by tourism, indirect employment is also created in other sectors of the economy which supply goods and services to those who serve tourists directly. Again employment is induced throughout the economy as the income derived from direct and indirect employment are spent and re-spent.

e) Tourism - The Perpetrator of Economic Development

Tourism is also the source of various amenities for the resident population of the tourist destination. The tourist infrastructure in the form of public transport, shopping and entertainment facilities which are much beyond what the destination country could afford shall be provided. The infrastructure provided may act as base and stimulus to diversification of the economy and for the development of other industries. Thus tourist expenditure stimulates economy beyond the sector concerned with tourism.

f) Tourism and the Balance of Payments

As a result of international travel, tourism has its impact on the balance of payments of the individual countries. There are a list of monetary movements and transactions which arise between the countries due to tourism. It may be in the form of expenditure by tourists, purchase of capital goods, import and export of goods for tourism purpose, fare payments and foreign capital investment on various tourist facilities.

Issues and Challenges faced by Tourism Sector in India

The analysis of the growth of tourism in India shows that although India has registered all round substantial development in the country, it has not been exploited to the fullest extent. It contributed 7.3% of India's total GDP in 2021 and has generated 90 million jobs. But compared to smaller countries such as Singapore and Hong Kong, India is still lagging behind. The restricted growth of tourism is due to various factors. The following are the issues and challenges faced by tourism sector in India:

a) Tourism is a subject matter for study under different disciplines such as history, geography, anthropology, archaeology, law etc. Tourism can be understood as a system, product, industry and service. Tourism being a diverse subject, it is difficult to introduce an integrated policy covering varied aspects and components of tourism.

b) Tourism in India is treated as luxury which is reflected in the sparse allocation of resources under the five year plans which has reduced the pace of development of tourism. The role of tourism in the economic development of the nation is not recognized. Lack of an integrated tourism promotion programme during five year plans hindered the growth of tourism. There is no uniformity amongst states in conferring industry status on tourism which has inhibited the growth of the industry. There is no regular flow of funds and time bound managed development. The indifferent attitude towards tourism due to undue emphasis placed by authorities on foreign tourism is evident.

c) The UNWTO has approved Tourism Satellite Account methodology. It is recognized by the United Nations statistical Commission which provides necessary statistics on tourism growth and impact. Tourism is the first sector to have international standards for measuring its economic impact in the most credible manner. Unfortunately India has not adopted this system to measure the various activities of tourism which is useful for the government to understand its importance and frame policies accordingly.

d) There are various tourism bodies and organizations for travel agents, tour operators, hoteliers and so on. None of the tourism bodies in India have inbuilt complaint handling mechanism or Code of Ethics for travel agents. So the tourism bodies in India serve no purpose. Although the Global Code of Ethics for Tourism has imposed duty on both public and private sector to implement the Code, there is no serious effort made in this direction in India.

e) Lack of proper infrastructure- It includes various elements such as transportation, health, uninterrupted connectivity and human resources. India is positioned in 48th place in ICT Readiness Component and ranks 34th in health and hygiene components of WEF's Travel and Tourism Competitiveness Index 2020. This reflects poor quality of infrastructure which is due to improper allocation of financial resources to tourism sector. There are many beautiful destinations which are not accessible due to poor connectivity. Inadequate airline capacity particularly during peak tourist seasons, sub-standard airports, delay in booking and delay in flight cancellation render air travel in India a nightmarish experience. Railways are in appalling condition due to which the tourists hesitate to travel. There is lack of hygienic and comfortable

ISBN : 978-81-962730-0-2

accommodation for the tourists. Many places with rich cultural heritage are located in rural areas with poor internet connectivity and lacks basic amenities.

f) Human resources and planning- tourism demands highly skillful and potential men and women. It is equally important to upgrade the skills of people already employed. Tourism in India is not yet viewed as a full time employment sector, Thus there is high demand in both hospitality and tourism sectors. There are limited number of multi-lingual trained guides and limited understanding and awareness of the benefits and responsibilities associated with tourism industry which proves to be the major constraint for growth of tourism.

g) Insufficient digital promotion and marketing- In India there is a need to move from colossal conventional marketing techniques to modern digital marketing. Tourist Information Centres are poorly managed making it difficult for domestic and foreign tourists to access information with ease. Absence of up to date information system with slow retrieval facilities causes inconvenience to tourists. Lack of awareness about facilities due to inefficient marketing strategies continues to be a challenge.

h) Taxation issues - There is high imposition of taxes on airlines, hotels and tour operators. This is the most significant reason for losses in the tourism industry.

i) Security issues- Increasing rate of sexual abuse of women, robbery, identity theft, food poisoning, terrorism, naxalism have highly affected tourism. The safety and security of tourists at both domestic and international level is the most pertinent task that the government should work towards.

j) Entry or exit issue- Despite the introduction of an E-visa facility, the tourists find the procedure still cumbersome. Many visitors to India find E-visa facility complicated and not so efficient governmental initiative.

k) Tourist segments or circuits- India has various tourist destinations but few circuits. Also many announced tourist circuits are yet to be implemented.

l) No major change in the Department of Tourism has taken place since its creation in 1958, except for minor expansions here and there.

m) Insolvency protection to tourists in case of insolvency of travel organizer or retailer may be in the form of refund or repatriation which is unique in countries like UK. In India there is no insolvency protection to tourists in case the travel company, tour operator or travel organizer becomes insolvent.

Critical Evaluation of Allied Legislations in India for Consumer Protection and Tourism

There are various general legal provisions for the protection of tourists as consumers. Before the passing of the Consumer Protection Act, 1986 the tourist consumers obtained protection under certain general laws along with others. They are Indian Penal Code, Criminal Procedure Code, Indian Contract Act, Torts, Sale of Goods Act and Insurance Regulatory Authority of India Guidelines. Let us briefly examine the same:

a) Indian Penal Code, 1860

Adulteration of food and drink is one of the specific instances of nuisance covered under Chapter XIV of Indian Penal Code and provides punishment for the same. This provision can be applied for tourists as well.

b) Criminal Procedure Code, 1973

The District/Sub divisional/Executive Magistrate enjoys certain powers under Section 133 relating to public nuisance caused by trade or occupation or goods injurious to the health or physical comfort. This provision can be availed by tourists as well. The major drawback of criminal law is that it punishes the offender but fails to provide any remedy or compensation to the tourist victim.

c) Indian Contract Act, 1872

Contract is an agreement enforceable by law. It may be entered into between tour operator, travel agent and tourist. Contract is discharged by fulfilment of objects or impossibility of performance, by agreement or breach. The tourist shall be compensated or restored with the rights in case of breach of contract. In *D. M. Southern Railway* v. *Abu Baker Haji,* it was held that the act of issuing AC reservation tickets by the railways to the complainant amounted to 'contract of service'. The railways could not attach the AC car due to mechanical defects. Alternative arrangements could not be made due to unavoidable circumstances beyond their control. As a result of which the contract stood frustrated due to subsequent impossibilities. The railways refunded the amount, restitution had taken place and railways are not liable for negligence.

The agency provisions contained in the Act are relevant and apply to tourists as well, wherein the travel agent and tour operator may be brought under the purview of principal and agent relationship. The Principal is bound by the acts of

ISBN : 978-81-962730-0-2

the agent towards the third person. In case of fraud or misrepresentation by an agent while making an agreement on behalf of the principal, the principal shall be vicariously liable for the acts of the agent in the course of business. In *Indian Airlines, New Delhi* v. *S. N. Sinha*, the complaint was filed because a piece of metallic wire came into the mouth of the complainant along with rice and curry served by Indian Airlines on the flight from Patna to Ahmedabad. It was held that provision of food by Airlines which is charged under ticket fare amounts to rendering of service. The caterers who supplied food can only be regarded as agent of the Airline and in the event of defect in the food supplied by the caterers, the principal namely the 'Indian Airlines' will have to bear responsibility. However, the State Commission ordered meagre compensation of Rs. 2,000.

This Act is not specific to tourists but contains few provisions for protection of interests of tourists. The compensation ordered under Contract Act is too less. The greatest disadvantage is the doctrine of Privity of Contract which limits the scope of remedies under the Act because according to it, only parties to the contract can seek remedy and not the third party. The Contract Act fails to provide effective remedy due to the doctrine of Privity of Contract.

d) Law of Torts

Tort is a civil wrong for which the appropriate remedy is common law action. Under the Law of Torts, tourist consumers are entitled to damages for loss caused due to deceit, negligence or wilful act by tour operators. Tort of deceit is committed by making reckless statement, whether true or false with intent to induce a person to rely upon it, with the result that the person acts upon it and suffers damage. The tour operator should be careful while advertising or making statements in brochures, for, if the statements turn out to be made recklessly, then liability for tort of deceit arises.

The tort of negligence is the most relevant tort committed in tourism service which provides that the defendant has a duty of care and a breach of this duty causes damage to the plaintiff. So, whenever there is negligence on the part of tour operator or travel agent, they shall be liable to tourists for damages.

The principle of vicarious liability provides that master is vicariously liable for the acts of its servants. In *S. Pushpavanam* v. *General Manager,* the questions before the court of law were whether wrong reservation of railway ticket amounted to deficiency of service and whether the railway administration is liable for the negligence of its employees. The reservation clerk at Trichy confirmed reservation of the complainant by Chennai Express after getting confirmation from Madras for the day on which actually the train never plies between Madras and Bombay. It was clearly a case of patent negligence on the part of railway staff and hence the railway administration was held vicariously liable for the acts of its servants.

An Analysis of Consumer Protection Act, 2019

The enactment of Consumer Protection Act, 1986 is a significant milestone in the history of consumer movement in the country and for tourism sector as well. This is the first ever legislation to recognize tourism as service and tourist as a consumer. The legal provisions under other laws were not adequate enough to protect the tourists and hence the Act filled the lacuna to a certain extent. The 1986 Act failed to address online transactions, unfair terms in consumer contracts and misleading advertisements in the digital era. Thus the 32 year old archaic law was replaced by Consumer Protection Act, 2019. The new Act provides for the protection of interest of consumers and for the said purpose to establish authorities for timely and effective administration and settlement of consumer disputes. It will have significant influence on tourism sector as well. The following are relevant provisions applicable to tourism:

a) Consumer

The term consumer means one who buys, hires or avails any goods or services and is said to include offline or online transactions through electronic means or by teleshopping or direct selling or multi-level marketing. This covers tourists wherein service is contracted over telephone or online. In *General Manager, South Eastern Railway* v. *Anand Prasad Sinha*, it was held that passengers travelling by train on payment of stipulated fare charged for the ticket are 'consumers' and the facilities of railway transportation provided by railway administration is 'service' rendered for consideration as defined under the Act. The complainant got tickets reserved in AC compartment, but on the day of the journey his name was missing from the chart and had to travel in second class. It was held that the complainant is 'consumer' and the act of railways amounted to 'deficiency of service' within the meaning of the Act.

b) Deficiency of Service

The term 'deficiency' includes negligence as well as

ISBN : 978-81-962730-0-2

liberate withholding of information apart from fault, perfection, inadequacy in the quality, nature and manner of :formance. The travel agent or tour operator shall be liable hey do not disclose the information which they knew about ices or facilities. Service means service of any description iich is made available to not only actual users but also tential users and includes tourism, transportation, tertainment and amusement. In transportation, change of ght schedule, cancellation or delay of flight without imation, downgrading of class, causing discomfort in travel, oviding sub-standard food, injury to passenger, denial of served seat, charging excess fare, providing ticket to non-ining train are regarded as deficiency in service.

Deficiency in Service extends to tours and travels as ell. Cancellation of booking and facilities not provided as presented amounts to deficiency in service. In *Cox & Kings idia) Pvt. Ltd. and another* v. *Tej Narain Sharma*, the mplainant aged about 82 yrs had booked package tour to igland and four other countries on the assurance that ecial care would be taken of senior citizens. In London, ey got down for sight seeing, got lost, managed to reach e place where bus was parked but by then the bus had ready left. The tour operator's London branch office arranged ur to Paris but then missed trip to France and Belgium hich was included in the package. The Tour operator's ntention that they waited but had to leave to cover other aces was not acceptable. The District Forum ordered mpensation of Rs. 39,358/- considering the helpless situation id mental agony, the old man experienced in an unknown ace.

Unfair Trade Practice

It is a trade practice which uses any unfair or deceptive actice to promote sale or supply of goods or services. It overs various cases amongst others such as: false presentation that the service is of particular standard, that e supplier has affiliation or approval from any organization body; materially mislead the public regarding price; offering f gifts, prizes only to create impression that it is offered free f charge when already covered under the charged transaction. he term ' unfair trade practice' under the 1986 Act is further panded to include non-issuance of receipts for goods or rvices sold, refusal to withdraw or refund goods or services ithin 30 days and disclosure of personal information provided y consumer to any other person or body. This definition can e interpreted to cover various practices of tour operators egarding the price and quality of trip or that they are accredited to international travel organizations or offering as free trips along with the package when already paid for it as a whole. In *Cox & Kings (I) Pvt. Ltd.* v. *Joseph A. Fernandes*, the appellant Star Cruise Company made an advertisement of tour consisting of two nights and three days. The Cruise Company deliberately timed departure of cruise at 11.59 p.m. i.e. one minute short of midnight and counted that one minute as one full day. The cruise lasted only for one and half days which were as against that promised in advertisement as two nights and three days. The complaint was filed alleging deficiency in service and unfair trade practice as one minute was equated with 23:59 hrs of service. The Court further held that it is not only case of misrepresentation through misleading advertisement but also an unfair trade practice.

d) Advertisement

The term advertisement means any audio or visual publicity, representation, endorsement or pronouncement made by means of light, sound, smoke, gas, print, electronic media, internet or website and includes any notice, circular, label, wrapper, invoice or other documents. This covers advertisement in the form of travel brochures, newsletters and travel websites. Misleading Advertisement means false description, false guarantee, deliberate concealment of information or unfair trade practice in relation to good or service.

e) Unfair Contract

A contract is said to be unfair if it contains the following terms: payment of excessive deposits, imposing disproportionate penalty for breach of contract, refusal to accept early repayment of debts, right to terminate the contract without reasonable cause, transfer of contract to third party without the consent of the other party to his detriment and imposing of unreasonable charge or obligations which put the consumer to disadvantage.

f) Regulatory and Adjudicating Body

The Act provides for establishment of Central Consumer Protection Authority (CCPA) to regulate matters relating to violation of rights of consumers, unfair trade practices and false or misleading advertisements which are prejudicial to the public or consumer interests and to promote, protect and enforce the rights of consumers as a class. It performs investigation functions and issues safety notice to tourist consumers as well. The characteristic feature is the power of central authority to take suo motu action and powers of investigation. It has powers to order reimbursement of price paid for services and order discontinuation of unfair trade

ISBN : 978-81-962730-0-2

practice. It can issue directions and penalties against false or misleading advertisements. An appeal shall lie from Central Authority to National Commission within 30 days. The adjudicating bodies include District Commission, State Commission and National Commission at various levels.

g) Mediation Cell

The unique feature of the Act is that it provides for the establishment of Consumer Mediation Cell to be attached to each of the District Commissions, State Commissions of respective State and National Commission. The settlement report shall be forwarded to the Commission to be recorded and suitable orders shall be passed. Thus the matters relating to tourism can be settled amicably through mediation as well.

h) Offences and Penalties

The Chapter on Offences and Penalties is quite elaborate and detailed. The penalty for non-compliance of directions of Central Authority is imprisonment for a term which may extend to six months or with fine which may extend to Rs. 20 lakh or both. The punishment for false or misleading advertisement is imprisonment for a term which may extend to two years or fine which may extend to Rs. 10 lakh and for subsequent offence it may extend to five years imprisonment or fine up to Rs. 50 lakh.

The Consumer Protection Act, 2019 has limited impact on consumers due to lack of consumer awareness about the Act and its provisions. Many are not aware that tourism is a service, tourist is a consumer and remedy is available under the Act in case of deficiency of service. The redressal agencies are not able to deliver justice quickly in a cost effective manner. Lack of skill and knowledge of the members in the consumer commission is another disadvantage. There is no separate department for consumer affairs at the state level and has been merged with the food and civil supplies department which shows lack of governmental priority for protection of consumers. The Consumer Protection Councils established at District, State and National level have remained purposeless with no effective steps to promote consumer interests. The significant drawback of Consumer Protection Councils is its toothless nature because they cannot file a complaint before the Consumer Redressal Forums as the rights are not justiciable. Although it provides for redressal against unfair or restrictive trade practice, it cannot act on behalf of the victim-consumer. The Central or State government can file complaint for its own interest and not on behalf of aggrieved consumer. The provisions relating to unfair terms in contract, improved unfair trade practice provisions and arbitration for consumer disputes are the key features which will help in better protection of tourist consumers. The CCPA's role as regulator and its efficacy needs to be examined in its future activities. Enhancement of pecuniary jurisdiction is useful on one hand as most of the tourism related cases may get disposed of at the district level and on the other hand the State and National Commission would be left with no workload as most of the cases get disposed off at the district level. Penalties for non-compliance of orders of CCPA and punishment for misleading advertisements may act as deterrent for the future violators.

Measures for safeguarding the rights of tourists

The Ministry of Tourism has taken following steps to safeguard the rights of tourists and tourism agencies:

a) Adoption of code of conduct for safe and honourable tourism.

b) Grant of financial assistance by central government to state government for setting up of Tourist Facilitation and Security Organization on a pilot basis.

c) Issue of guidelines to state government on safety and security of tourists.

d) Formulation of voluntary scheme for approving travel agents and tour operators to encourage quality, standard and service in these categories.

e) The launch of a 24/7 toll free multi-lingual tourist helpline in 12 languages including Hindi and English and multi-lingual helpdesk in designated languages.

f) Issue of advisory to state government/ union territory administration for creation of tourist police.

The tourist consumers should enjoy the following rights as and how laid down by the Consumer Protection Act:

a) Right to equality in the consumer market and protection against discriminatory marketing practices.

b) Right to privacy

c) Right to choose

d) Right to disclosure of information

e) Right to fair and honest dealing

f) Right to fair, just and reasonable terms and conditions

g) Right to fair value, good quality and safety

h) Right to accountability from suppliers

ISBN : 978-81-962730-0-2

Feasibility of an Exclusive Central Tourism Legislation

The maintenance of worldwide image of the country as a tourist spot, the need to raise revenue, to upgrade facilities, create employment opportunities and to protect the travelling public from being exploited by the unscrupulous or incompetent hoteliers, tour operators and travel agents are some of the reasons to justify the scope and stringency of supervision through the provision of legislation. Past experience in India reveals that whatever little regulation exists, now needs industry-wide self-policing. To meet the demand for protection of public interest against false advertising, misrepresentation and similar frauds, Travel legislation is required.

The Travel Law should not be a licensing statute. It should define travel consultant to include any person, firm, corporation, partnership or association who as an agent, sells or offers for sale any travel tickets or orders for transportation, or negotiates for or holds himself out by solicitation, advertisement or otherwise as one who sells, provides, furnishes, conducts or arranges for such travel tickets on orders for transportation. Any violation of the statute including intentionally misleading, advertising prohibited activities, misconduct and breach of principal-agent relationship should be treated as misdemeanor and should result in civil or criminal penalties. The legislation must provide for the hounding of such persons, firms or corporations for license suspension or revocation. Or it may alternatively provide for imposition of fine or issue reprimand in lieu of suspension or revocation. Any person conducting such a business without a license or operating such a business after revocation of his license should be deemed to have committed misconduct. Voluntary Code of Ethics and Voluntary Accreditation Scheme for travel agents would ensure discipline and professional standards in the industry. There should be an in-built complaint handling process on the model of Australian law to resolve disputes and impose sanctions on the travel agents who breach the code. This is possible only with industry-specific legislations.

The Travel Legislation should also provide for Travel Agents Registration Authority to be established under the Department of Tourism, with power to issue regulations. The Act must require the travel agents to compulsorily obtain a certificate of registration by meeting specified standards and demonstrating financial responsibility which helps in maintaining high degree of professionalism. The Board or authority should have powers to revoke or suspend the certificate in case of fraud, misrepresentation or concealment of material facts at the time of registration.

The tourist regulations should cover grey areas such as child labour, sex tourism and the state of small service providers. Thus taking into consideration that diverse actions and situations have an impact on tourist operations and activities, common tourism legislation is a herculean task. However, the efforts in this direction must be tempered by the fact that tourism law must have a broad perspective and not be viewed just as a weapon to safeguard the interests of tourism sector.

Suggestions and Conclusion

The Prime minister of India emphasized the importance of tourism and promised to make India a global hub for tourism and urged each citizen to visit at least 15 tourist destinations by 2022. In this pursuit it is necessary to develop tourism. The following are viable suggestions to overcome the issues and challenges encountered by tourism:

a) Tourism is a multi-sectoral activity requiring co-ordination from all other departments. There should be co-ordination and complementarity between Ministry of Tourism and other ministries dealing with matters such as transport, education, science, training, foreign affairs, border security, employment, workplace relations etc. This will help in better policy and action. There should also be effective co-ordination between tourism board, government and tourism stakeholders. Establishing of tourism department should be a mere symbolic gesture. Its role should be to influence other departments and impact policy. A Standing Committee of tourism should be set up which shall effectively associate the state government ministers.

b) In the era of digital marketing, where increased numbers of tourists are using computers for booking, designing websites in different languages makes tourism accessible to people around the world. Route planning apps on android will help the tourists. The local tourism bodies should provide accessible and timely information to tourists through apps regarding nearest bank, hotel, hospital etc. so that they can revert in cases of necessity.

c) Tourism being the second largest foreign exchange earner should attract more outlay in the five year plans. The allocation of resources would result in successful planning and implementation of tourism projects. Liberal policies towards airlines and establishment of training

 ISBN : 978-81-962730-0-2

institutes to improve the skills of tourism personnel are of utmost importance. It is necessary to have policies of realistic targets with proper allocation of funds.

d) It is dire need to have methodical system for regulating the activities of travel agents and make the travel agents more accountable for their activities. There should be coherent way of addressing the needs of tourists in case of insolvency of the travel agents or tour operators. This can be made possible by compelling the travel agents to obtain travel insurance or depositing monies in the trust which can be utilized in case of insolvency.

e) In order to improve the quality of tourism, it is necessary to promote tourism as a structured career so that tourism is taken as a profession. The professionalism improves the quality of service extended in tourism.

f) A campaign focusing on domestic tourism that showcases what the nation offers to Indians is a pivotal step in promoting tourism.

g) Transportation infrastructure has to be enhanced. Developing tourism-oriented trains, development of islands will automatically create jobs for islanders and enhance connectivity through infrastructure projects.

h) Conservation and development of all heritage sites should be undertaken and completed through either government funding/NGOs/ CSR activities.

i) Leveraging technology can play a significant role in creating hassle free environment, creating connectivity and ensuring safety.

j) The responsibility of tourism should be considered as responsibility of both state and central government. The central government should frame policies, develop infrastructure, encourage investment, promote marketing and improve data base. The State should be in-charge of maintaining the places of attraction, infrastructure, transportation, recreation facilities and information services. There should be effective collaboration between the governments and both should enjoy legislative as well as executive competence in tourism matters.

k) The offences and penalties provisions for breach of law committed by individuals and body corporates should be different as in Australian model. Maximum penalties should be imposed on corporations so that it acts as a deterrent to future violators.

The emergence of tourism as an important activity has brought into focus the need for harmonious relationship between tourists and providers of tourist services. The absence of conventional rules governing commerce is the basis of a lot of tourism issues. The economic importance of tourism as well as current stage of development demands an appropriate central legislation to coordinate and control industry activities and also ensure adherence to high ethical standards commensurate with the needs or demands of international activity. This is all the more necessary because tourism in neighbouring countries is becoming increasingly competitive.

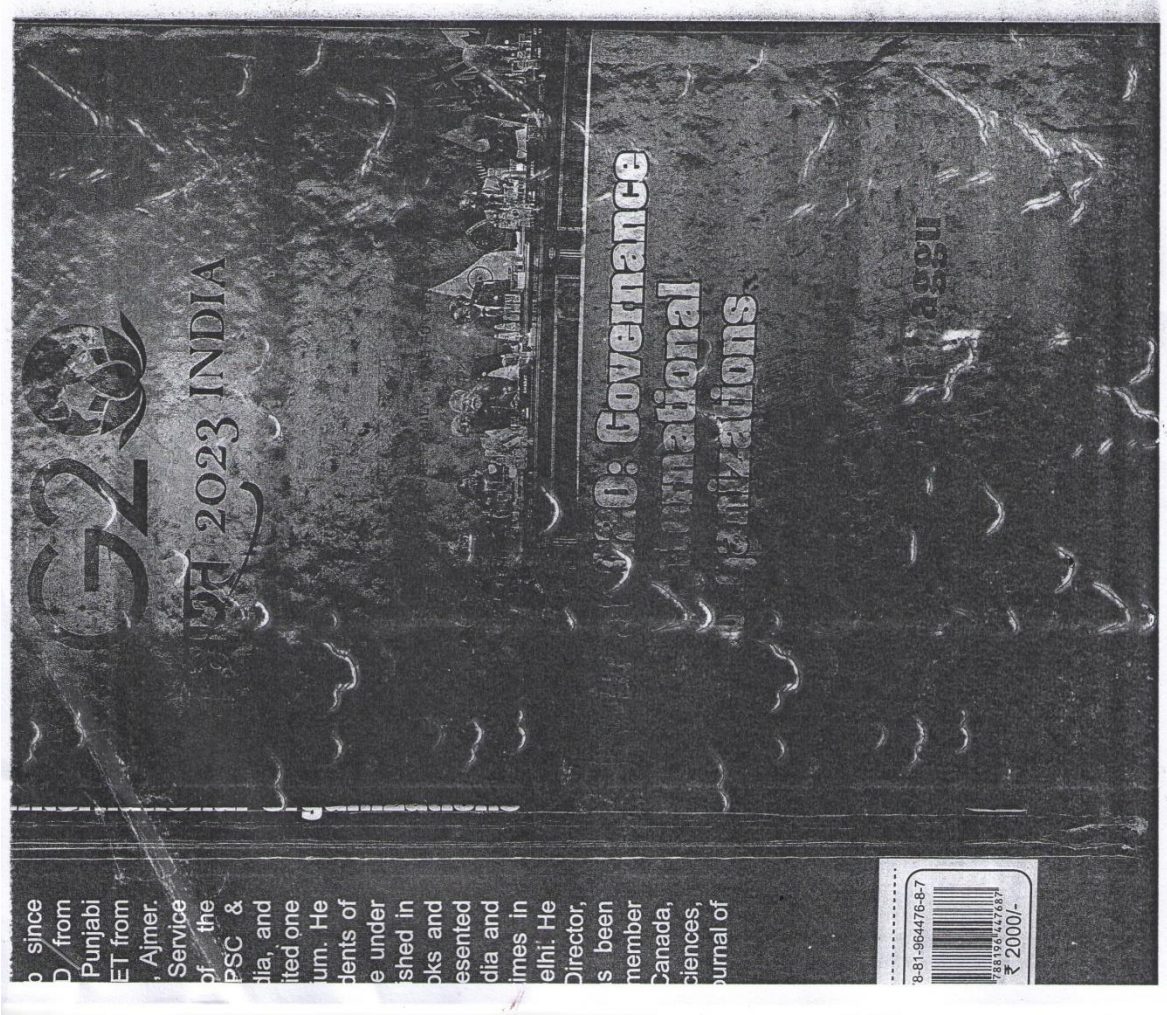
References

1. B.K.Goswami & G.Ravindran (2001), *A Text Book of Tourism*, Har Anand Publications Pvt. Ltd
2. Dr. Usha Bala (1990), *Tourism in India: Policy and Perspectives* (1st ed.), Arushi Prakashan
3. Rajesh Singh (2011), *Tourism Sector: Facing the Challenge* (1st ed.), Sonali Publications
4. Bholanath Dutta (2011), *International Tourism Management* (1st ed.), Himalaya Publishing House
5. Pushpinder S. Gill (2005), *Tourism: Economic and Social Development*, Anmol Publications
6. Mohammed Kamalun Nabi (2015), *Consumer Rights and Protection in India*, New Century Publications
7. Sushma, Sonia Khan & Chander Mohan (ed.) (2002), *Tourism in the New Millennium*, Abhishek Publications
8. B.S.Badan & Harish Bhat (2006), *Encyclopaedia of Tourism in 21st Century* (Vol.13), Common Wealth Publishers
9. Arpitha Mathur (2011), *Fundamentals of Travel and Tourism*, Ane Books Pvt. Ltd.
10. Krishnan K. Kamra & Mohinder Chand (ed.) (2009), *Basics of Tourism: Theory, Operation and Practice*, Kanishka Publishers
11. Sunethra Roday, Archana Biwal &Vandana Joshi (2009), *Tourism-Operations and Management*, Oxford University Press
12. K.S. Nagapathi (2012), *Tourism Development-A New Approach*, Prateeksha Publications
13. Roy A. Cook, Laura J. Yale & Joseph J. Marqua (ed.) (2006), *Tourism: The Business of Travel*, Dorling Kindersley (India) Pvt. Ltd.
14. Charles R. Goeldner & J.R. Brent Richie (2003), *Tourism: Principles, Practices, Philosophies*, John Wiley & Sons
15. Sampad Kumar Swain & Jitendra Mohan Mishra (2012), *Tourism: Principles and Practices*, Oxford University Press

ISBN : 978-81-962730-0-2

16. L.K.Singh (2008), *Trends in Travel and Tourism and Laws*, Isha Books
17. Geethanjali (2010), *Tourism Policy and Planning*, ABD Publishers
18. S. Gupta & L. Sharma (2012), *Introduction to Travel and Tourism*, Centrum Press
19. Stephen J, Page and Joanne Connell (2006) , *Tourism: A Modern Synthesis* Thomson Learning
20. Prem Nath Dhar (2000), *International Tourism: Emerging Challenges and Future Prospects* (2nd ed.), Kanishka Publishers & Distributors
21. Dr. M. Sajnani & Dr. V. K. Goswami (2002), *Tourism: Growth, Management and Incentives*, Kalpaz Publications
22. Ratanlal & Dhirajlal (2010), *The Indian Penal Code* , 32nd, Lexis Nexis Butterworths Wadhwa, Nagpur
23. S. C. Mitra (2012), *Law of Contracts* (Vol.1), Orient Publishing Co.
24. S. P. Sen Gupta (2014), *Commentaries on the Consumer Protection Act* (3rd ed.), Kamal Law House
25. Justice D.P. Wadhwa and N.L.Rajah (2006), *The Law of Consumer Protection* (1st ed.), Wadhwa and Company

 ISBN : 978-81-962730-0-2



India at G20: Governance and International Organizations
Dr. Mohan Singh Saggu

Copyright ©	:	Reserved
Edition	:	2023
ISBN No.	:	978-81-964476-8-7
Price	:	2000.00
Published by	:	Interdisciplinary Institute of Human Security & Governance
Registered Office	:	C-144, Sarvodoya Enclave, New Delhi – 110017, India
Branch Office	:	N19, Hill View Garden, Bhiwadi, Alwar, Rajasthan - 301018, India
Laser Typesetting	:	Kumar Computer, Delhi.
Printed at	:	Balaji Offset, Delhi - 32

PRINTED IN INDIA

Content

Uri and Balakot surgical strikes conventional weapons were used by India. Being a nuclear power India can use its nuclear weapons but "no first use" will always remain one of its major priorities.

Endnotes:-

1. *1.) Dr. H.N Sethna, India's Atomic Energy Programme, IAEA Bulletin Vol. 21 No.5, International Atomic Energy Agency.*
2. *https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull21-5/21505090211.pdf*
3. *2.) Jasjit Singh (2021) , India's nuclear diplomacy and the non-proliferation regime, New Delhi Papers.*
4. *https://capsindia.org/wp-content/uploads/2021/10/New-Delhi-Paper-6.pdf*
5. *3.) Dr. Arnab Dasgupta, (2023, May) , G20, G7 and Nuclear Diplomacy, Manohar Parikar Institute for Defense Studies and Analyses.*
6. *https://www.idsa.in/issuebrief/g20-g7-nuclear-diplomacy-adas-averma-190523*
7. *4.) Premesha Saha, (2023, May), The 1998 Pokhran nuclear tests: reactions and responses from the Indo-Pacific. Observer Research Foundation.*
8. *https://www.orfonline.org/expert-speak/the-1998-pokhran-nuclear-tests/#:~:text=It%20was%20said%20that%20the,but%20also%20imposed%20economic%20sanctions*
9. *5.) Priyanka Deo (2023, March), India's nuclear balancing act: Between disarmament and deterrence. Times of India*
10. *https://timesofindia.indiatimes.com/india/indias-nuclear-balancing-act-between-disarmament-and-deterrence/articleshow/98964614.cms?from=mdr*
11. *6.) Atomic Energy Regulatory Board (AERB), GOI, Nuclear Power Plants*
12. *https://www.aerb.gov.in/english/regulatory-facilities/nuclear-power-plants*
13. *7.) Toru Takahashi (2023, Aug), India's dependence on Russia for nuclear power raises U.S. concerns, NIKKEI ASIA*
14. *https://asia.nikkei.com/Politics/International-relations/India-s-dependence-on-Russia-for-nuclear-power-raises-U.S.-concerns*

19

Maritime Piracy in the Indo-Pacific: Historical Trends and Contemporary Challenges

Gurvinder Kaur

Introduction

The maritime realm has been a significant factor in influencing the trajectory of human history, since it has facilitated commerce, promoted cultural interchange, and supported economic development. Nevertheless, in addition to their many advantages, the vast waters of the globe have also served as a breeding ground for a more sinister aspect - piracy. Maritime piracy, which encompasses acts of violence, robbery, or hijacking occurring at sea, has consistently posed a significant threat to the security and stability of coastal states and global commercial routes. The Indo-Pacific area presents a particularly notable difficulty in this regard, since it comprises a large expanse of water that includes some of the most heavily trafficked and strategically important maritime passageways globally. The Indo-Pacific region has significant strategic importance as a worldwide economic centre, distinguished by its critical trade routes and essential resources. Consequently, it has become a central topic of discussion in the wider debate around marine security. This study examines the dynamic strategies and underlying incentives of contemporary pirates, spanning acts of hijacking, armed theft, and abductions for monetary demands. Moreover, this analysis examines the significant consequences of piracy on commerce,

maritime corporations, and coastal communities, unveiling the complex network of interrelated interests and vulnerabilities that characterise this matter.

The Indo-Pacific area has seen a multifaceted historical development of maritime piracy, spanning many centuries. The expansive maritime region under consideration has seen a cyclical occurrence of piracy, influenced by a diverse range of socio-economic, political, and cultural elements. This phenomenon is characterised by active trade routes and the region's strategic importance. The origins of piracy in the Indo-Pacific region may be attributed to historical periods characterised by the activities of pirates and privateers who sailed the seas, engaging in acts of looting against commercial ships and coastal communities. The pirates often sought refuge in the many islands and quiet coves dispersed throughout the area, allowing them to consolidate their forces and replenish their resources(Bateman & Hanich, 2013). During the colonial period, the Indo-Pacific region had a significant increase in pirate activities, mostly driven by the competition of colonial powers for dominance over marine territory. Resistance organisations against colonial control have used piracy as a strategy to proclaim their independence and impede imperial commerce. The convergence of pirate, anti-colonial movements, and colonial conflicts created a conducive environment for the proliferation of maritime lawlessness.

The Indo-Pacific region saw a transformation in piracy throughout the twentieth century, as it became intertwined with political instability and wars, notably shown by the occurrences of pirate episodes during World War II. The cessation of colonialism and the subsequent rise of newly formed nation-states introduced an additional level of intricacy to the pirate domain, as some governing bodies had challenges in asserting authority over their marine domains.

Colonial and Post Colonial Piracy

The occurrence of piracy throughout the colonial and post-colonial eras in the Indo-Pacific area is an intriguing and often tumultuous facet of its nautical past. In the colonial period, European nations engaged in competition to establish dominance over strategic trade routes and regions abundant in valuable resources, resulting in instances of officially authorised piracy. In the context of European colonialism, it was very uncommon for colonial powers to enlist privateers in order to engage in hostilities

against ships belonging to other colonial governments. This practise often resulted in a blurring of the boundaries between acts of piracy and lawful naval warfare. The historical era in question was characterised by a multifaceted interaction of geopolitical competitions, economic motivations, and instances of piracy(J. L. Anderson, 1981).

The Indo-Pacific region saw substantial transformations throughout the post-colonial era, characterised by the emergence of newly independent states. This time also posed other obstacles, including territorial conflicts and political instability. Pirates were driven by a variety of objectives, spanning from economic interests to the endorsement of nationalist or separatist causes. During this period of significant upheaval, governmental authorities had challenges in establishing and maintaining jurisdiction over their marine territories, so impeding their ability to effectively address the issue of piracy. Contemporary maritime security dynamics are nevertheless influenced by the lasting effects of historical geopolitical rivalry and unsolved territory conflicts. In order to effectively tackle these challenges, it is essential to adopt a comprehensive strategy that considers the historical context as well as the contemporary economic, political, and security dynamics at play in this crucial maritime area(Arase, 2010). This approach acknowledges the intricate interplay of forces that have influenced the development of this region.

Contemporary Maritime Piracy in the Indo – Pacific

The Indo-Pacific area is now facing a complex problem in the form of contemporary maritime piracy, which is characterised by constantly changing methods and ongoing threats. The expansive maritime region under consideration, which has significant importance for international commerce, has been the site of many acts of piracy, including incidents such as hijackings, armed robberies, and abductions carried out with the intention of obtaining ransom. Contemporary pirates operating in the Indo-Pacific region have embraced advanced armament and technology, hence facilitating their ability to navigate expansive distances and often elude discovery(Geiss & Petrig, 2011). The motivations behind acts of piracy exhibit a wide range, covering economic incentives, political goals, and ideological elements. The activities of these pirates have adverse effects on both international trade and local industries, since they not only target cargo vessels but also fishing boats. The ramifications of piracy extend beyond financial

The motivations of pirates in the area are multifaceted, including a wide range of variables that include economic incentives as well as political or ideological objectives. Comprehending these underlying motivations is of utmost importance in formulating efficacious tactics to combat piracy(Aneta Nowakowska-Krystman, 2016).

The Indo-Pacific region is home to many of the most heavily trafficked trade routes globally, hence exerting a significant influence on international commerce. The act of piracy has a significant impact on maritime transportation routes, resulting in detrimental consequences such as financial losses, escalated insurance expenses, and the prolonged shipment of products. The ramifications of this phenomenon extend globally, exerting influence on sectors that transcend geographical boundaries.

The occurrence of piracy has significant geopolitical implications, since it has the potential to intensify regional tensions and complicate international ties. The occurrence of incidents may be attributed to territorial conflicts and political battles, hence becoming piracy a matter of both security and diplomatic significance(Anthony & Inbar, 2012).

The plight of mariners caught in hostage situations is a significant humanitarian concern. Crew members often experience adverse circumstances, and the process of obtaining their release may be lengthy and psychologically demanding.

Legal problems arise in the prosecution and extradition of pirates, particularly in cases occurring in international waterways or contested areas. The proper resolution of these difficulties requires international cooperation(Natalie Klein et al., 2009).

The environmental impact of piracy extends beyond its primary unlawful operations, including other illicit practices such as illegal, unreported, and unregulated (IUU) fishing. These activities have the potential to inflict damage upon maritime ecosystems and hinder endeavours aimed at achieving sustainable resource management.

In order to effectively tackle these current difficulties, it is essential to adopt a comprehensive and collaborative strategy. Regional collaboration, information dissemination, efficient naval patrols, and active involvement with the maritime industry are integral elements of endeavours aimed at countering piracy in the Indo-Pacific region. These measures are essential for

safeguarding the security of maritime routes and the welfare of those who depend on them.

Role of International Organizations in Combatting Maritime Piracy in the Indo -Pacific Region

The role of international organisations in combating maritime piracy in the Indo-Pacific region is crucial for addressing this multifaceted and transnational problem. Multiple organisations play essential roles in coordinating efforts, exchanging information, and promoting maritime security in the region.

The United Nations has been actively engaged in combating piracy in the Indo-Pacific region. The United Nations Security Council has adopted resolutions authorising international naval forces to combat piracy off the coast of Somalia. In addition, UN agencies such as UNODC (United Nations Office on Drugs and Crime) offer technical assistance to strengthen the capacity of nations to prosecute piracy.

International Maritime Organisation (IMO): The IMO establishes global standards for international shipping's safety, security, and environmental performance. It encourages the adoption of measures and best practises to enhance maritime security, such as the creation of the International Ship and Port Facility Security (ISPS) Code(Klein, 2012).

Regional Organisations: In order to combat piracy, regional organisations such as the ASEAN Regional Forum (ARF) and the Indian Ocean Rim Association (IORA) facilitate dialogue and cooperation between regional nations. They provide platforms for the exchange of information, coordinated patrols, and the establishment of regional mechanisms to enhance maritime security.

CMF is a transnational naval partnership operating in the Indo-Pacific region to combat piracy, terrorism, and other maritime hazards. It comprises task forces specifically concentrated on counter-piracy efforts, such as Combined Task Force 151.

Information Sharing Centres: Entities such as the Information Sharing Centre (ISC) of the ReCAAP (Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia) play a crucial role in collecting and disseminating piracy-related information, improving situational awareness, and facilitating coordinated responses(Amneus & Svanberg-Torpman, 2004).

Non-Governmental Organisations (NGOs): Oceans Beyond Piracy and other NGOs combat piracy in the Indo-Pacific through research, advocacy, and capacity-building. They frequently work with governments and international organisations to resolve the complexities of maritime piracy.

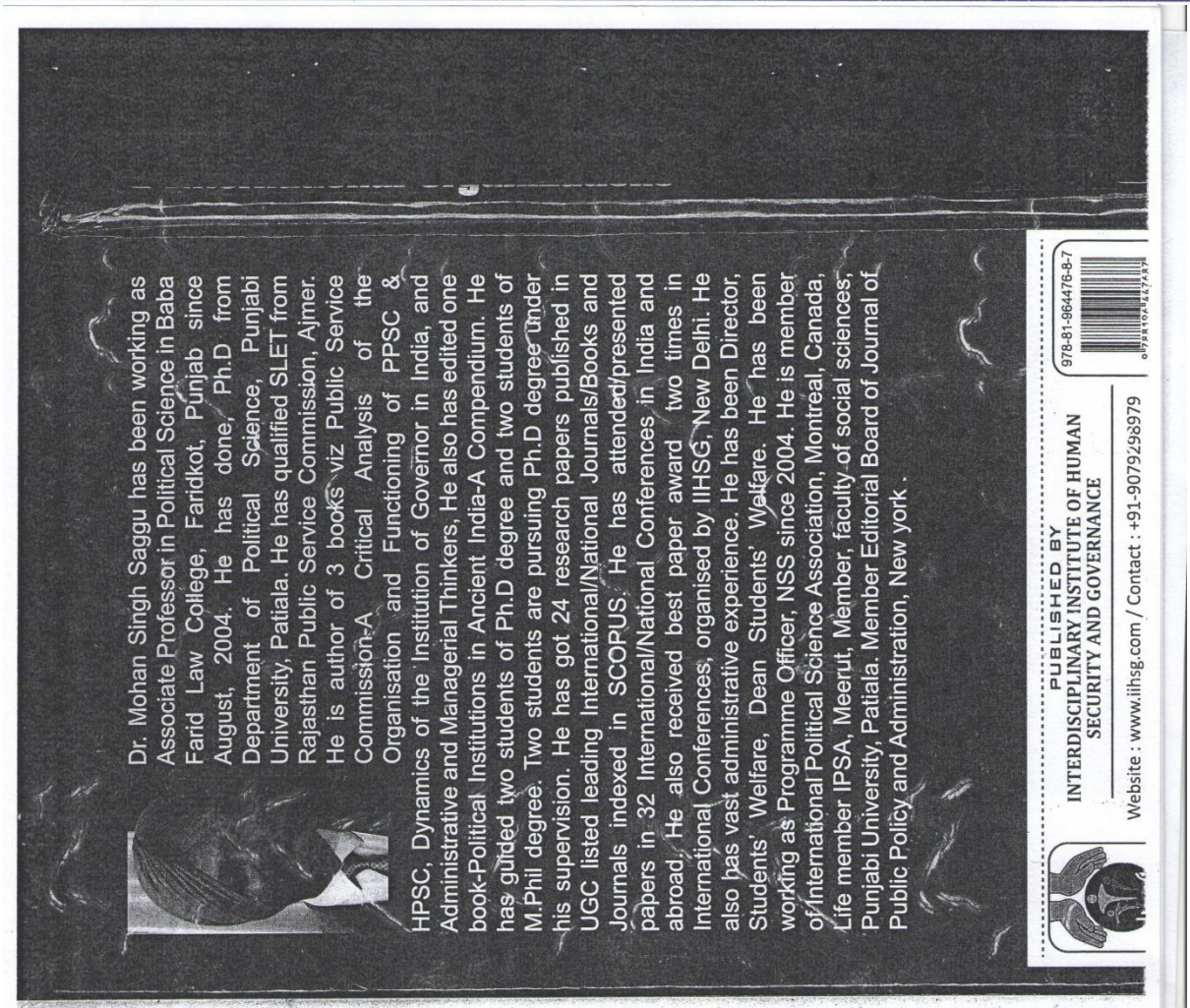
These international organisations serve as vital forums for cooperation, nurturing regional stability, and protecting maritime trade routes in the Indo-Pacific. Combating the evolving threats of piracy and maintaining the prosperity and security of this vital maritime region requires their combined efforts.

Conclusion

The research article offers a comprehensive analysis of the evolution of piracy in this vital region. It illustrates the intricate interplay of geopolitics, economics, and resistance movements to explain how colonial and post-colonial eras influenced piracy. The study then transitions to modern piracy, emphasising its diverse techniques, such as hijackings, armed assaults, and ransom kidnappings, as well as its multifaceted motivations. In addition, the research highlights the challenges facing contemporary maritime security, such as the evolution of piracy tactics and the global impact of trade. It recognises the essential role of international organisations, such as the United Nations, International Maritime Organisation, regional authorities, and nongovernmental organisations, in fostering cooperation, information sharing, and security measures to effectively combat piracy. This research equips policymakers with a holistic comprehension of piracy's persistent hazards and the Indo-Pacific's maritime stability and prosperity by combining historical context and contemporary analysis.

References

1. *Amneus, D., & Svanberg-Torpman, K. (Eds.). (2004). Peace & Security: Current Challenges in International Law. Studentlitteratur AB.*
2. *Aneta Nowakowska-Krystman. (2016). Maritime Piracy as a Form of Organized Crime A Strategic Management Approach . Connections, 15(3), 41–54.*
3. *Anthony, B., & Inbar, E. (2012). COOPERATION ON NON-TRADITIONAL SECURITY MATTERS from The wattle and the olive: A new chapter in Australia and Israel working together on JSTOR. https://www.jstor.org/stable/resrep04237.8?searchText=Non+Traditional+Security&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3DNon%2BTraditional%2BSecurity&ab_segments=0%2FSYC-6744_basic_search%2Ftest-2&refreqid=fastly-default%3A6b765054f10722c95327ecfc0a27*
4. *Arase, D. (2010). Non-traditional security in China - ASEAN cooperation the institutionalization of regional security cooperation and the evolution of East Asian regionalism. Asian Survey, 50(4), 808–833. https://doi.org/10.1525/AS.2010.50.4.808*
5. *Bateman, S., & Hanich, Q. (2013). Maritime Security Issues in an Arc of Instability and Opportunity. Security Challenges, 9(4), 87–105. https://www.jstor.org/stable/26462943?searchText=Maritime+Security&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3DMaritime%2BSecurity%26efqs%3DeyJjdHkiOlsiYW05MWNtNWhiQT09Il0sImRpc2MiOltdfQ%253D%253D&ab_segments=0%2FSYC-6744_basic_search%2Ftest-2&refreqid=*
6. *Chalk, P. (2008). The maritime dimension of international security : terrorism, piracy, and challenges for the United States. RAND.*
7. *Currun Singh, & Arjun Singh Bedi. (2016). War on Piracy The conflation of Somali piracy with terrorism in discourse, tactic, and law . Security Dialogue, 47(5), 440–458.*
8. *Geiss, R., & Petrig, A. (2011). Piracy and armed robbery at sea : the legal framework for counter-piracy operations in Somalia and the Gulf of Aden. Oxford University Press.*
9. *J. L. Anderson. (1981). Piracy and World History: An Economic Perspective on Maritime Predation. Journal of World History, 6(2), 175–199. https://doi.org/10.2307/1918775*
10. *Klein, N. (2012). Maritime Security and the Law of the Sea. OUP Oxford.*
11. *Levy, M. A. (1995). Is the Environment a National Security Issue? International Security, 20(2), 35. https://doi.org/10.2307/2539228*
12. *Natalie Klein, Joanna Mossop, & Donald R. Rothwell. (2009). Maritime Security: International Law and Policy Perspectives from Australia and New Zealand. Routledg.*
13. *Youde, A. J. (2007). Contemporary maritime piracy in Southeast Asia: History, causes and remedies. In Contemporary Maritime Piracy in Southeast Asia: History, Causes and Remedies. Institute of Southeast Asian Studies.*



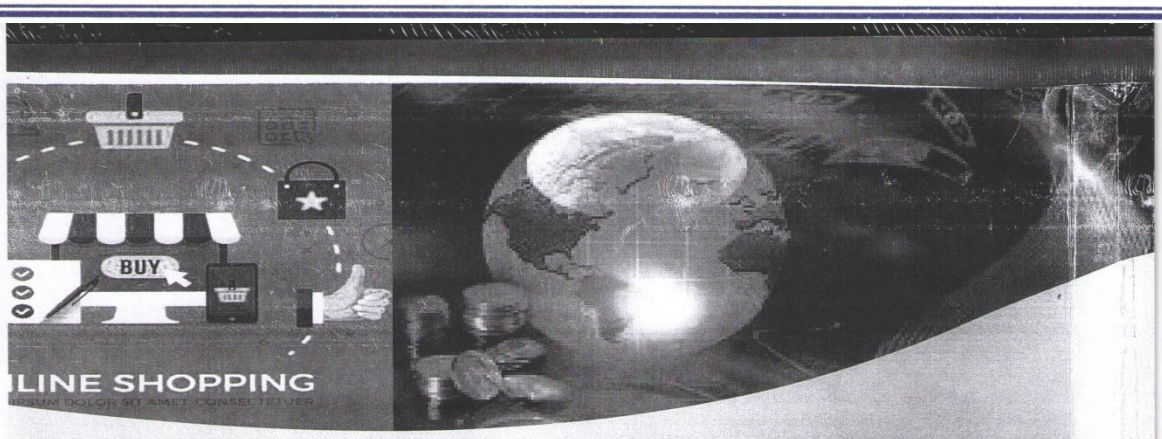
Dr. Mohan Singh Saggu has been working as Associate Professor in Political Science in Baba Farid Law College, Faridkot, Punjab since August, 2004. He has done, Ph.D from Department of Political Science, Punjabi University, Patiala. He has qualified SLET from Rajasthan Public Service Commission, Ajmer. He is author of 3 books viz Public Service Commission-A Critical Analysis of the Organisation and Functioning of PPSC & HPSC, Dynamics of the Institution of Governor in India, and Administrative and Managerial Thinkers. He also has edited one book-Political Institutions in Ancient India-A Compendium. He has guided two students of Ph.D degree and two students of M.Phil degree. Two students are pursuing Ph.D degree under his supervision. He has got 24 research papers published in UGC listed leading International/National Journals/Books and Journals indexed in SCOPUS. He has attended/presented papers in 32 International/National Conferences in India and abroad. He also received best paper award two times in International Conferences, organised by IIHSG, New Delhi. He also has vast administrative experience. He has been Director, Students' Welfare, Dean Students' Welfare. He has been working as Programme Officer, NSS since 2004. He is member of International Political Science Association, Montreal, Canada, Life member IPSA, Meerut, Member, faculty of social sciences, Punjabi University, Patiala. Member Editorial Board of Journal of Public Policy and Administration, New york .

PUBLISHED BY
INTERDISCIPLINARY INSTITUTE OF HUMAN SECURITY AND GOVERNANCE

Website : www.iihsg.com / Contact : +91-9079298979

978-81-964476-8-7

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bangalore - 560 019.



Smt Saraladevi Sathishchandra Agarwal Government First Grade College (Autonomous), Ballari, Karnataka is a pioneer institution offering UG and PG programs in Commerce and Management, Arts and Science disciplines and has achieved many milestones since its establishment. The Department of Commerce has played a pivotal role in the development of the college, which is the first Government college to receive the Autonomous Status in Kalyana Karnataka Region. Presently offering two under graduate and one post graduate programs viz, B. Com, B. Com (Vocational) and M. Com with a total number of 1460 students in the department. Apart from regular curricular activities, the department has organised many seminars, conferences, Faculty Development Programs (FDP's), workshops, training programs and research publications for the faculties and students.

ISBN : 978-81-962730-0-2

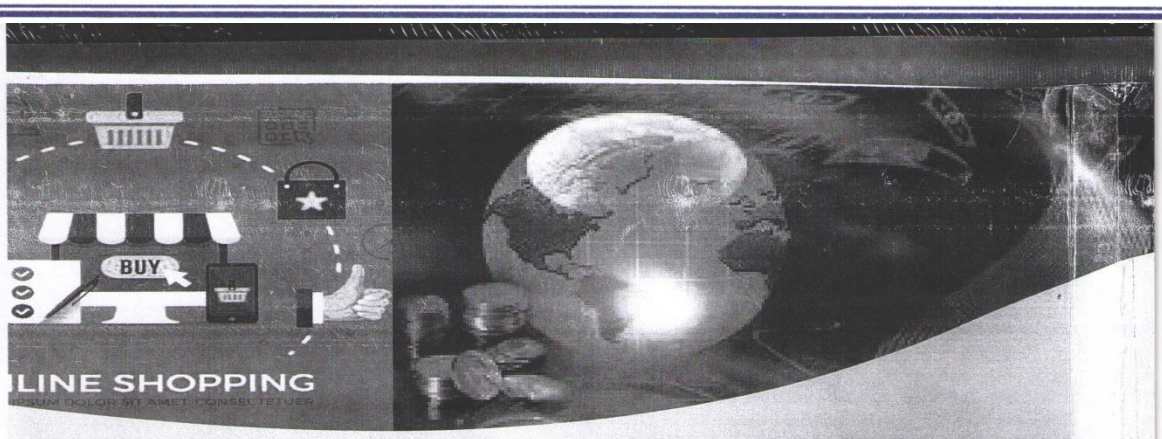
PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

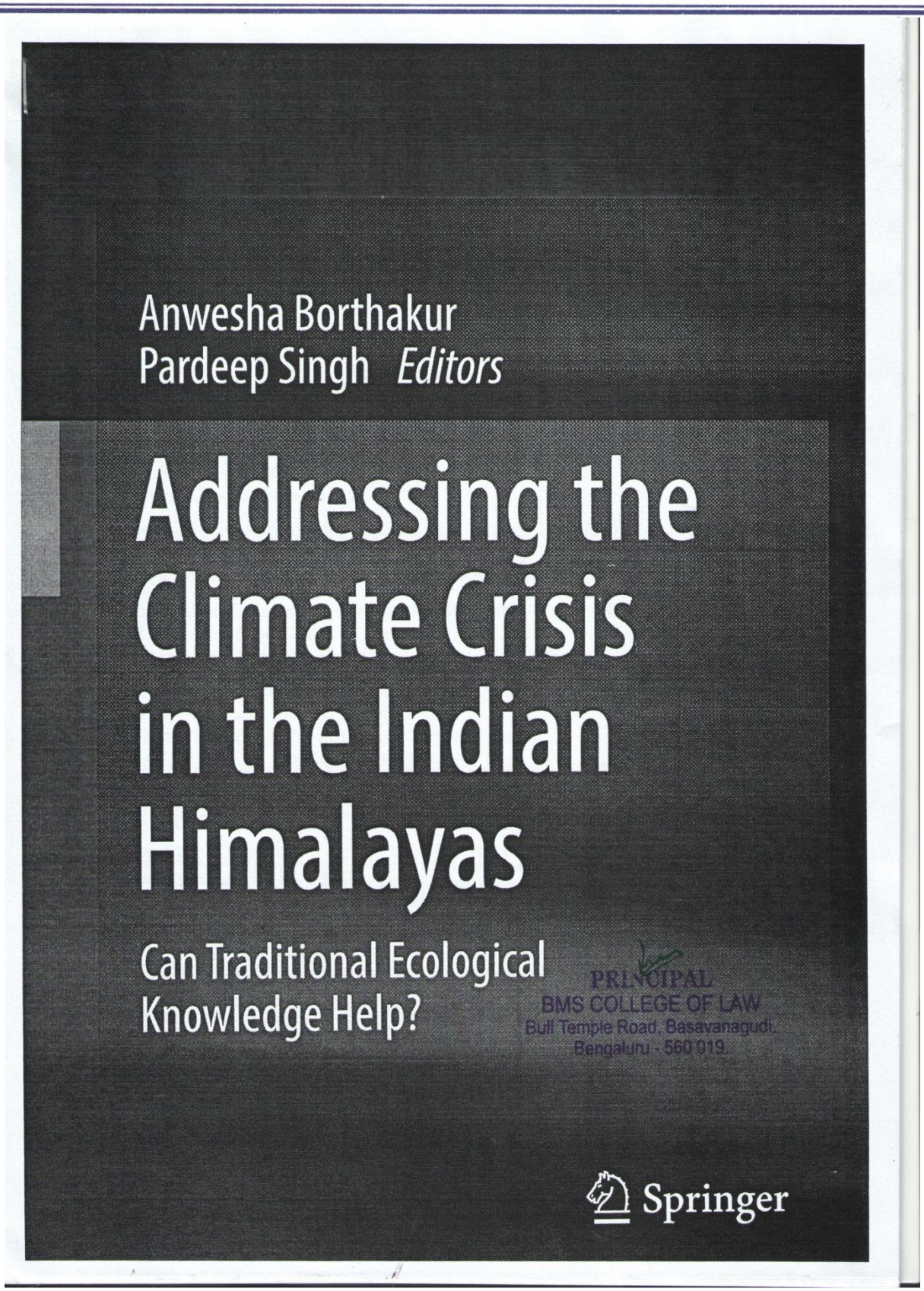
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++



Smt Saraladevi Sathishchandra Agarwal Government First Grade College (Autonomous), Ballari, Karnataka is a pioneer institution offering UG and PG programs in Commerce and Management, Arts and Science disciplines and has achieved many milestones since its establishment. The Department of Commerce has played a pivotal role in the development of the college, which is the first Government college to receive the Autonomous Status in Kalyana Karnataka Region. Presently offering two under graduate and one post graduate programs viz, B. Com, B. Com (Vocational) and M. Com with a total number of 1460 students in the department. Apart from regular curricular activities, the department has organised many seminars, conferences, Faculty Development Programs (FDP's), workshops, training programs and research publications for the faculties and students.

ISBN : 978-81-962730-0-2

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi
Bengaluru - 560 019.


Anwesha Borthakur
Pardeep Singh Editors
Addressing the Climate Crisis in the Indian Himalayas
Can Traditional Ecological Knowledge Help?
PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019
Springer

Editors
Anwesha Borthakur
University of Leuven (KU Leuven)
Leuven, Belgium

Pardeep Singh
PGDAV College
University of Delhi
New Delhi, India

ISBN 978-3-031-50096-1 ISBN 978-3-031-50097-8 (eBook)
https://doi.org/10.1007/978-3-031-50097-8

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Paper in this product is recyclable.

Contents

Traditional Ecological Knowledge Repository in the Indian Himalayas: An Overview

P. Sahana Florence and Achyutananda Mishra

Abstract "Traditional ecological knowledge" (TEK) refers to a body of information that is also referred to as "local knowledge," "traditional knowledge," "native knowledge," and "indigenous technological knowledge." A number of studies show the role of traditional ecological knowledge in decision-making in social-ecological systems that support sustainability and resilience. International agencies have also highlighted and emphasised the importance of TEK practises in the preservation of biological variation. For instance, the UN Convention on Biodiversity, Article 8 (j), makes it very plain that "respect, maintain, and promote innovation and practises of indigenous and aboriginal populations connected with sustainable use of biological diversity" are essential. The benefits of TEK for sustainable forest management were acknowledged in the 2005 Millennium Ecosystem Assessment Report by the World Bank. As environmentalists, anthropologists, and arborists share interests in TEK for academic, social, or economic reasons, this highlights the significance of TEK in difficulties relating to biodiversity protection. Numerous components of TEK are seen favourably by experts in fields of forestry, irrigation, architecture, ethnobiology, irrigation, agriculture, medicine, sun and water conservation, conventional weather prediction, adaptation to climate change, and disaster risk reduction. Indian Himalayan Region (IHR) is predominantly populated by indigenous peoples and local societies, which are quite diverse in terms of socio-culture and race. The region has nearly 40% of all of India's indigenous tribes. This area is also special for its traditional ecological knowledge. Many of the TEK-based practices have supported local communities in earning a livelihood. The indigenous people's expertise and experiences are said to play a crucial part in preventing climate change, and they may give important information on the implications of climate change. Hence, sustaining biodiversity in the IHR is also a means of defending indigenous peoples' rights. By making the TEK the focal point of governance systems at the IHR, the variety of options for sustainable growth and even the co-production of the body of knowledge would be expanded. Therefore, it seems sensible to get knowledge from the TEK before it is lost to the onslaught of modernity. However, there are numerous

P. Sahana Florence (✉) · A. Mishra
School of Law, Christ (Deemed to be University), Bengaluru, India
e-mail: mssahana.florence@res.christuniversity.in

A. Borthakur and P. Singh (eds.), *Addressing the Climate Crisis in the Indian Himalayas*, https://doi.org/10.1007/978-3-031-50097-8_12

problems or issues with traditional ecological knowledge in India, including ignorance in considering conservation policies by the Indian government and the lack of effective documentation of this priceless knowledge. To develop sustainable and culturally suitable management techniques, it is currently a challenge to combine indigenous knowledge standards and management methods with Western science. Realising the above, this chapter attempts to comprehend the concept of TEK and its application throughout a variety of resource management contexts throughout a variety of resource management scenarios. Further, it will explore various issues and challenges and examine the regulations thereof. Lastly, this chapter concludes by highlighting the strategies and suggestions for an effective repository of traditional ecological knowledge in the Indian Himalayan Region.

Keywords Biodiversity · Traditional ecological knowledge · Repository · Indigenous peoples · IHR

1 Introduction

Traditional ecological knowledge (TEK), which implies local knowledge, traditional knowledge, native knowledge, indigenous technological knowledge, etc., is widely acknowledged as an intellectual endeavour and is described as such by a variety of environmental, cultural, and social factors (Tynsong et al., 2020). A TEK is a crucial component in terms of the social values used in developing countries to generate food, improve health, and mould local views and perspectives on the world and people (Finn et al., 2017). Traditional ecological knowledge was transmitted from one generation to the next, and over time, it was enhanced and honed into a corpus of profound local knowledge and customs (Nautiyal & Goswami, 2022). Furthermore, in addition to providing ecosystem benefits, TEK and management strategies may help us understand systems for adaptive and socio-ecological management (Pandey, 2002). TEK is a crucial resource for addressing issues with socio-cultural practises, food security, the environment, and biodiversity (Rai & Mishra, n.d.). Unfortunately, when looking at natural resources in underdeveloped countries, TEK and its merits are generally overlooked. Regulations in India, such as the Biological Diversity Act of 2002, the Forest Rights Act of 2006, and intellectual property rights, have been developed to own TEK and share benefits with the local population (Pandey, 2002). TEK has been preserved, promoted, and documented with a lot of effort on both the national and international levels. However, there hasn't been any influence at ground level (Harisha et al., 2023). Traditional ecological knowledge encompasses multiple facets of climate change adaptation, medicine, weather forecasting, irrigation, agriculture, ethnobiology, and disaster risk reduction. If TEK were placed at the centre of environmental governance, the variety of opportunities for ecological sustainability and the co-production of a body of knowledge would indeed be enlarged (Traditional Knowledge System in the Himalayan Region: Key to Sustainable Development – Kalinga Institute of Indo-Pacific Studies, 2023). Therefore, it

makes sense to get knowledge from the TEK before it is lost to the forces of modernity (Rai and Mishra, n.d.). In light of the aforementioned, this chapter makes an effort to comprehend the idea of TEK and how it may be used in diverse resource management scenarios.

2 Traditional Ecological Knowledge: A Conceptual Framework

2.1 Concept and Meaning of TEK: Meaning and Significance

Traditional ecological knowledge (TEK) is a notion that has many other names, including local knowledge, traditional knowledge, native knowledge, indigenous technical knowledge, etc. (Rai and Mishra, n.d.). It refers to indigenous and other traditional understandings of regional resources. The term "traditional" is a bit abstract in this notion. For some groups of people, the term "traditional" denotes a continuing adherence to outdated practices or a belief system rooted in superstition (Tynsong et al., 2020). While for many others, TEK means possessing or understanding information in various ways, it is distinct from the actual dimension of knowledge because it is formed in a manner that preserves the communities' traditions. TEK is adapted to the indigenous ecosystem and developed from the experiences gathered over the ages (Rai and Mishra, n.d.). Generally speaking, it has to do with understanding the composition and operation of nearby natural ecosystems and how to utilise them sustainably for human benefit (Tynsong et al., 2020).

TEK can be defined as the assimilation of knowledge acquisition and dissemination more straightforwardly. Any community, society, or culture's traditional indigenous knowledge is a special form of local knowledge (Jenkins, 2022). TEK is focused on how living things—including humans—interact with their surroundings and with the social groups that make up their traditional communities. Indigenous knowledge (local knowledge), though not a term that all communities use, refers to a set of information, traditions, or practices that have a strong place component (Usher, 2000). When few environmental baselines have been scientifically recorded, such information is used for managing natural resources to either replace or augment Western scientific approaches to ecological management (Jenkins, 2022). TEK can also be thought of as a self-management system, a very important source of environmental expertise that helps indigenous or other remote native cultures protect and maintain their way of life (Nautiyal & Goswami, 2022). It serves as the foundation for local decisions about social, economic, and political organisation, resource management, education, health, hunting, and agriculture. It is widely acknowledged that there is a connection that cannot be broken between biological and cultural variation (Nautiyal & Goswami, 2022). The biotic and abiotic environments, which vary depending on the types of society and culture, have an impact on the ongoing process of modification that resource users use to create TEK rather than specialists

(Rao et al., 2003). In a nutshell, it is a comprehensive corpus of knowledge, belief, and practise, growing from the TEK worldwide among indigenous and local people, and verbally transmitted from one generation to the next cultural values, beliefs, proverbs, folklore, and traditions, as well as regional laws, dialects, and agricultural practices (Tynsong et al., 2020) such as breeding changes in plants and animals, which are considered the community's intellectual property and intangible heritage (Nautiyal & Goswami, 2022).

2.2 *Development of TEK*

Traditional ecological knowledge (TEK), sometimes known as "traditional knowledge," is the specialised knowledge that societies that have traditionally lived near natural environments have amassed about those ecosystems and environmental resources (Kala, 2011). TEK serves as an example of the knowledge accumulated over centuries through direct human interaction with the environment. Although TEK has been used since the dawn of hunter-gatherer societies, tribal elders first used the phrase in the 1980s with a conceptual model to advance a deep understanding and raise awareness of TEK's significance (Kala, 2011). It was at this time that TEK began to get international attention for its potential use in sustainable development and resource management strategies. The World Commission on Environment and Development (WCED), established in 1983, released a report titled "Our Common Future" in 1987. The report was given the name "Brundtland Report" in honour of Commission Chairwoman Gro Harlem Brundtland (Commission on Environment, n.d.). It created the fundamental ideas of sustainable development as we know them today. The document noted how current trends increased ecological degradation "amidst diminishing resources and an ever-cleaner world" were brought on by the twentieth century's accomplishments (Commission on Environment, n.d.). But there was still hope for conventional ways of living. The study's findings indicated that indigenous peoples and cultures have ways of life that may teach modern nations how to manage resources in intricate forest, mountain, and dryland environments (Finn et al., 2017).

Since its origin, TEK as a natural substitute for knowledge systems in the environmental and biological health sciences has drawn increased attention from a variety of municipalities, governmental agencies, and academics (Kodirekkala, 2017). Scholarly experts and government organisations are beginning to see the importance (Kodirekkala, 2017) that such regional historical information can have for preserving biological processes, conservation areas, biodiversity, as well as other elements on indigenous territory (Bureau of Indian Affairs (BIA), 2016). The organisations that deal with indigenous people throughout the globe used components of TEK to valorise a body of knowledge made up of rich, historical data accumulated by decades of observers whose lives and cultures relied on this knowledge and its application (Finn et al., 2017).

Several disciplines, such as agriculture, pharmacy, and ethnobotany, respect it since it currently indicates a seamless connection between ecosystems and people (Kala, 2011). Additionally, taking into account the current environmental problem, the destruction of organic habitats, and climatic alterations, TEK is regarded as a crucial instrument to mitigate the impact of shifting ecological and climatic conditions globally since it promotes the ideas of coexistence and sustainability (Kala, 2011). TEK assists in the creation of processes for local decision-making in several activities, including agriculture, pastoralism, food preparation, healthcare, and the management of natural resources (Lemi, 2019). It is a collection of particular local knowledge that has been refined over time. The concept of TEK was developed in an attempt to reassert the authority of regional groups whose voices and interests had been drowned out by the prevalent rhetoric of science-based modernization and development. Western scientists increasingly consider TEK in tribal research (Lemi, 2019). When Agenda 21 was established at the UN Conference on Environment and Development (UNCED), which was held in Rio de Janeiro in 1992, Traditional Ecological Knowledge Systems (TEKS) gained significance (Traditional Knowledge System in Himalayan Region: Key to Sustainable Development—Kalinga Institute of Indo-Pacific Studies, 2023). This was in response to new research and political acknowledgement of indigenous rights (Lemi, 2019). The Convention on Biological Diversity (CBD), which specifically addressed concerns regarding traditional knowledge, created international agreements that provide the sharing and protection of national biodiversity (Pandey, 2002). The UN Convention on Biological Diversity's Article 8(j) makes it very apparent that indigenous and aboriginal groups' innovations and practises related to the sustainable use of biological diversity must be respected, preserved, and supported. The Nagoya Protocols (2010) provide such a legal structure for effectively achieving the relevant CBD objectives (Traditional Knowledge System in Himalayan Region: Key to Sustainable Development—Kalinga Institute of Indo-Pacific Studies, 2023). The benefits of TEK for sustainable forest management were accepted by the World Bank and the Millennium Ecosystem Assessment Report, 2005 (Lemi, 2019). Support for indigenous wisdom, traditions, and customs is acknowledged in Article 31 of the United Nations Declaration on the Rights of Indigenous Peoples, 2007 (United Nations Declaration on the Rights of Indigenous Peoples United Nations, n.d.). As ecologists, anthropologists, as well as arborists (a tree surgeon) share a passion for TEK in academic, social, or commercial objectives, this highlights the significance of TEK in difficulties relating to biodiversity protection (Lemi, 2019).

2.3 *Benefits of TEK*

TEK has been used since the beginning of time. TEK contributes significantly to conservation efforts and, by saving time and money, helps pave the way for modern research and development (Benefits of TEK—Traditional Ecological Knowledge (U.S. National Park Service) 2023). A variety of TEK-related characteristics are

widely acknowledged by scientists in the fields of ethnobiology, conservation of soil, forestry, medicine, agriculture, irrigation, architecture, catastrophe risk reduction, climate change adaptation, water conservation, and forecasting (Gómez-Baggethun et al., 2013b). Application of TEK fosters cooperation with Indigenous peoples on environmental issues of shared interest offers transversal information for action planning connected to climate change and improves decision-making concerning species and ecosystems. The range of alternatives for sustainable development and knowledge base co-production would be increased if TEK were to be the focal point of environmental governance (Benefits of TEK: Traditional Ecological Knowledge (U.S. National Park Service), 2023). It promotes the ideas of cohabitation and sustainability. In light of the current environmental situation, the destruction of climatic change, and natural ecosystems, TEK is viewed as a crucial instrument to lessen the effects of altering global climatic and biological circumstances. The design of methods for decision-making at the local level in a range of disciplines, including livestock husbandry, food preparation, medical care, and resource development, is aided by TEK (Kala, 2011), which is a collection of specific local knowledge that has been refined over time (Garkoti & Semwal, 2015).

2.4 Aspects of TEK

Many writers have made an effort to compare the indigenous tribes' environmental information and that of the colonisers to better understand the two knowledge systems (Houde, 2007). A group's traditional ecological knowledge is made up of a variety of knowledge elements that have been categorised by some individuals (Usher, 2000). This research aims to comprehend how traditional ecological knowledge (TEK) may enhance environmental management or advance scientific knowledge. Houde lists the following six features or elements of conventional ecological knowledge (Rai and Mishra, n.d.). The elements of conventional ecological knowledge can be used and understood in a variety of ways. When attempting to combine two different methods of knowing and thinking. These are instructional illustrations of how it is applied from different angles and how they intersect, emphasising it even more. To more precisely pinpoint areas of convergence and divergence, collaborative management is used (Houde, 2007) (Fig. 1).

I. Factual Observation

The list of precise observations which TEK bearers can produce is the first and most well-known component of TEK (Houde, 2007). Non-aboriginal researchers studied folk taxonomy, requiring TEK components to name, identify, and classify environmental components (Gagnon & Berteaux, 2009). It includes knowledge of facts about animals, information about the habitat and behaviour of animals, information about the anatomy of different species, and information that has been synthesised from various scientific discoveries. Monitoring ecosystem health indicators requires understanding species relationships, biophysical connections, spatial

Fig. 1 Aspects of traditional ecological knowledge.
Source The Authors

distributions, and historical trends in population and spatial patterns (Houde, 2007). Understanding ecosystem dynamics is crucial for environmental science advancement, database addition, and detecting changes in ecosystems. The management of endangered species and environmental impact assessments are seen as the contexts in which this is most helpful. Detecting unintended development implications helps First Nations (indigenous peoples) engage in decision-making processes (Houde, 2007). Factual TEK can be misinterpreted if it doesn't serve state or private interests, as First Nations lack control and participation in resource management decisions. Many Aboriginals have expressed grave concern about this lack of responsibility for TEK and its application (Kala, 2011).

II. Management System

In terms of management systems, the sustainable and ethical use of resources is the second component of TEK (Houde, 2007). Therefore, the TEK study's main emphasis is on the management of resource methods and how they have been modified for regional settings. The second TEK component involves measuring resource status and strategies for sustainable use, including pest control, conservation, and cropping patterns (Herrmann & Torri, 2009). This face acknowledges that TEK, which adapts to change by developing effective technology, is a "complex web of behaviours" (Houde, 2007) connected to an understanding of animals and their interactions.

III. Current and Past Uses

The temporal dimension of TEK, which is the third component, is concerned with environmental uses that have been verbally transmitted in the past and present, such as land usage, habitation, harvest, and settlement rates (Gagnon & Berteaux, 2009). Particularly important issues include historical sites and medicinal plants. This TEK component includes life tales that are handed through stories that foster a sense of family and community, tales are passed down through generations (Houde, 2007). In the course of land claim talks, Canadian First Nations frequently disclose this aspect of TEK. The Supreme Court of Canada, in Delgamuukw v. British Columbia [(1997) 3 SCR 1010], ("Delgamuukw v. British Columbia, SCC Cases," 2023) observed that oral history now has more legitimacy. First Nations identify toponyms, historical locations, and occupancy patterns using charts to demonstrate their native connection and regain lost terrain. First Nations compromised on TEK to increase integrity in the context of Western science, waiting for authority's recognition of their knowledge systems (Herrmann & Torri, 2009).

IV. Ethics and Values

The fourth aspect discusses the relationship between belief systems and facts, focusing on environmental ethics and values concerning human relationships and species' habitats (Janaki et al., 2021). Resource management struggles to effectively transfer TEK cultural rights as policy documents may not fully accommodate land ethics. First Nations assert their principles through position papers with minimal consequences. Examples of state and indigenous ethics that conflict but are rarely properly addressed include trophy hunting and catch-and-release fishing (Houde, 2007).

V. Culture and Identity

This fifth facet emphasises the significance of language and historical imagery in preserving culture. The culture that defines Aboriginals (original inhabitants) depends on the relationship between them and their surroundings (Finn et al., 2017). The notion is that indigenous civilizations are centred on the land and that if the land disappears, those cultures would perish or undergo far too much alteration, and civilizations also individuals would follow, it is essential to preserve these locations if aboriginal culture is to endure over the long term (Gagnon and Berteaux, 2009). Local histories, cultural practises, and social structures are all taken into account in this TEK component as they relate to the persistence, of indigenous cultures' and identities' expansion and regeneration. It highlights how cultural landscapes have healing qualities and may serve as sites for spiritual rebirth (Houde, 2007).

VI. Cosmology

The final recognisable facet of TEK is a cosmology with cultural roots that serves as the foundation for and is inextricably linked to the earlier faces. Cosmology is an idea that many cultures have about how the world functions. The laws that govern how people and animals interact with one another and how humans fit into the

greater scheme of things are laid forth in this worldview, which also outlines how everything is interrelated (Houde, 2007). Many anthropologists and cultural ecologists have studied this aspect of TEK to comprehend, for example, how "Cree" or "Inuit" peoples understand human-nonhuman animal relationships and how they affect managerial practices, social responsibility to others in the community, and social interactions. This dimension's resemblance to religion has been suggested. Others have refuted this assertion, claiming that TEK is more of a philosophy than an ideology and that the state's resource management was, in any case, founded on a particular philosophy that had a significant influence on the Christian worldview (Characteristics of the Six Faces of Traditional Ecological Knowledge (TEK) | Download Table, 2023).

3 Western Science and TEK: A Comparison

> Traditional Ecological Knowledge is complementary to Western science, not a replacement for it—David Suzuki

Many academics have recently been interested in the vast group of knowledge named "traditional knowledge" (TK), "indigenous knowledge" (IK), or "traditional ecological knowledge" (TEK), with other titles (Finn et al., 2017). These systems of multigenerational knowledge are founded on individual and group worldviews and experiences that have been approved by seniors. They also draw on oral traditions, various kinds of record-keeping, and directed and transmitted experiential learning. The TEK's more encompassing components include a wide and deeper knowledge of how people interact with various aspects of the physical, social, and spiritual environment, beyond conventional conceptions like actual assertion and co-management standards (Houde, 2007). On the other hand, when it is found that TEK conflicts with scientific results, its usefulness is called into doubt or it is written off as a myth. In popular culture, science is depicted as being impartial, quantitative, and the basis for advancement and assessment of "real" information, whereas TEK might be seen as hearsay, incorrect, or written unusually (Finn et al., 2017). Fulvio Mazzocchi of the Institute of Atmospheric Pollution of the Italian National Research Council contrasts TEK and Western scientific knowledge as follows: The interconnection of humans and nature has become a central theme in traditional ecological knowledge's development of an understanding of the environment. It provides a strategy for regional growth that takes account of ecosystem density and co-evolution with the surroundings (Mazzocchi, 2006). It may be useful for environmental evaluation, development planning, and natural resource management. It may also aid in conservation education (Arruda & Krutkowski, 2017). In addition to the usual advantages for individuals who rely on this information, it may provide mankind with a whole set of new ecological and biological insights. In comparison to Western science, which is scientific and materialistic, traditional knowledge is eternal and does not differentiate between the sacred and the secular. Traditional knowledge is mostly qualitative

and intuitive, as opposed to Western science, which is scientific and quantifiable (Mazzocchi, 2006). The elders often verbally pass on traditional knowledge from one generation to the next. whereas Western science was founded on the exchange of intellectual and literary information (Finn et al., 2017). While Western science uses reductionist techniques and a linear cause-and-effect mechanism, TEK considers the issues affecting the overall biological community. The human brain is used in TEK to gather, filter, and evaluate observational data (Kodirekkala, 2017). In terms of its demands for consistency and proof, traditional ecological knowledge (TEK) differs from Western science. It is dispersed and produced differently from Western science and is frequently viewed as folklore. Modern tradition holds that Western science alone possesses the truth, frequently as a result of the tension between science and conventional wisdom. In other cases, Western scientific knowledge and TEK are not fundamentally different; both ultimately come from scientific findings regarding the surroundings and the methodical process of establishing order and stability out of a survival necessity (Arruda & Krutkowski, 2017). TEK's cultural and religious environmental ideas are essential to understanding and safeguarding the environment, even though some of them may be illogical in terms of modern science. As a result, it is hard to discern between scientific and conventional knowledge with precision based on method, epistemology, context, or content (Stephens, 2000). Consequently, to disprove the notion that such a Westernised knowledge structure is the sole workable solution to the global environmental crisis, globalisation should be utilised effectively to have or ingrain indigenous expertise into the globalised world (Gagnon & Berteaux, 2009). Although epistemology is the study of universal knowledge, different types of information might be acquired based on the sociocultural circumstances in which knowledge claims are established and made explicit. There is a need to close the epistemic gap that emerges from not understanding how local or indigenous knowledge is acquired when people with different worldviews work together on the same subject (Stephens, 2000).

3.1 Integration of TEK & Western Science

The ability of traditional ecological knowledge, which represents centuries of experience, to manage complex systems is widely accepted. A TEK approach for understanding the complex relationships between ecosystems, together with correctly collected longitudinal data and insightful information, can substantially help scientific research (Lemi, 2019). TEK may also be included in Western scientific studies as a component or as an additional tool for quantitative Western methodologies. Unlike scientific knowledge, which relies on separating traditional knowledge, which is founded on connection, knowing from the known (Lemi, 2019) Academic scholars have recently started to investigate, assess, and, in some instances, seek to integrate indigenous knowledge systems into modern scientific theories and institutional frameworks. These academics are conversant with the ideas and practices of TEK (Finn et al., 2017).

According to research conducted in the Arctic, there are five areas where TEK and Western science can integrate. The area of focus includes local scale expertise; sources of historical climate data; hypotheses and research questions; effects and community adaptation; and neighbourhood-based surveillance (Lemi, 2019).

TEK can be highly helpful in deciding on adaptation measures for climate change as well as in analysing its effects (Lemi, 2019). Traditional knowledge may support scientific knowledge by allowing people to gain practical experience navigating ecosystems and adjusting to change. For example, India's advancement in science has benefited from the ancient wisdom and knowledge that have been developed in several fields, including management of natural resources, mathematics, metallurgy, surgery, and medicine (Pandey, 2002). Traditional knowledge, local skills, and rural craftsmanship all have a wide range of applications in India. We must take into account both science and verified local knowledge in developing a strong sustainability science because "knowledge cannot be split." (Pandey, 2002). Local knowledge systems can assist with problems like forest management, sustainable water management, biodiversity preservation, and climate change mitigation because they are still commonly employed in India. We must make use of all available knowledge in order to create effective mitigation strategies for the ecological repercussions of climate change (Pandey, 2002). The potential advantages of TEK for resource management are growing in popularity. Governmental and non-governmental organisations are beginning to include TEK in planning, policies, teaching, and research pertaining to climate change throughout the world. The TEK project has been funded by the National Science Foundation so that it may be used in the study of climate change (Traditional Knowledge Holders Formalize a Network for Community to Community Exchange—Institute for the Advanced Study of Sustainability, n.d.). By establishing the Traditional Knowledge Initiative, the Convention on Biodiversity Conservation, the United Nations University (an academic division of the UN), and other affiliated organisations have also recognised the significance of TEK (Traditional Knowledge Holders Formalize a Network for Community to Community Exchange—Institute for the Advanced Study of Sustainability, n.d.). TEK is essential for understanding and promoting its ethical use in international initiatives (Lemi, 2019).

In this context, the merging of formal and traditional sciences is urgently needed. The following factors could be helpful in this respect (Pandey, 2002):

1. The development of numerous approaches allowing locals and formal scientists to study together.
2. In order to apply indigenous practices in forest development and management initiatives, institutional structure in the community and ethical forestry must receive full attention in forest development regulations and forest management procedures.
3. The application of traditional knowledge and practises might be advantageous for developing village micro plans for sustainable, cooperative forest protection, and rural development. Both governmental and conventional community borders should be considered in the planning.

4. Restoration of water management practice techniques which have long supported civilisation but are now in danger.
5. In order to implement adaptive techniques for natural resource management, it is obvious that traditional and formal sciences must be integrated.

TEK has become more widely used in conservation planning and resource evaluation because of its effectiveness, additionality, and community engagement. Information gathering with TEK might be more successful when there is a strong correlation between TEK and scientific data (Finn et al., 2017). Although such systems of knowledge take a long time to establish and require a significant investment from experts in social science, rigorous experimentation and observation approaches may frequently be able to obtain some of this knowledge more quickly and inexpensively than via conventional ecological study (Pandey, 2002).

4 TEK and Resource Management

In recent years, study into traditional ecological knowledge and wisdom has given birth to a new language and point of reference in the management of natural resources (Chettri & Sharma, 2022). The role that TEK plays in decision-making in social-ecological systems that support resilience and sustainability is being highlighted by an increasing number of studies. Academics are becoming increasingly interested in TEK, and development organisations concur that the concept and its use in managing natural resources are essential (Chettri & Sharma, 2022). Due to the widespread decrease in quality and ecological services that affect human well-being, more attention is being paid to indigenous communities' TEK rules and processes for ensuring sustainable natural resource management and use. In recent years, TEK has come to be recognised as an essential beginning point for the development of effective environmental management and preservation programmes (Rai and Mishra, n.d.). TEK was originally mocked as being unscientific, but today it is viewed as being more productive and environmentally responsible, and it is frequently necessary for the development of successful sustainable development initiatives (Rai and Mishra, n.d.). The practise of TEK predates the hunter-gatherer cultures themselves, even if the name didn't start to be used often until the 1980s. In various disciplines, including environmental sciences, studying traditional knowledge is crucial. In Our Common Future (Commission on Environment, n.d.), it is stated:

> The way of life of tribal and indigenous peoples can teach modern cultures a lot about how to manage resources in the complicated forest, mountain, and dry land ecosystems.

Indigenous and tribal populations will need particular consideration whenever the strains of economic growth disrupt their traditional ways of existence. These people have a lot to teach contemporary cultures about resource management in difficult forest, mountain, and dryland settings (Negi et al., 2018). Some people are practically in danger of extinction due to irresponsible development that they

have no control over. They should have a major say in establishing how resource development in their areas will be controlled, and their customary rights should be upheld. These organisations act as repositories for a vast collection of conventional knowledge and wisdom that trace humanity back to its origins in prehistory. Their passing is a loss for contemporary society, which would greatly benefit from their traditional understanding of how to sustainably manage enormously complex natural systems (Negi et al., 2018). The IUCN Programme on Traditional Knowledge for Conservation claims that much of the traditional ecological knowledge is still relevant for managing natural resources today, particularly in places like wetlands. Traditional ecological knowledge (TEK), despite having helped to preserve nature and natural resources for millennia, is disappearing as a consequence of cultural homogeneity and globalization (Kala, 2011). Applying scientific research with local knowledge enhances environmental sustainability as well as equity, prosperity, stability, and the empowerment of locals. Local knowledge is helpful for the gathering of information, strategic planning, creation of flexible learning and acceptance procedures, scenario evaluation, and support mechanisms for implementing policies (Negi et al., 2018).

5 The Indian Himalayan Region's Traditional Ecological Knowledge for Climate Change Adaptation

5.1 Indian Himalayan Region

The Indian Himalayan (IHR) area is home to over 51 million people, many of whom practise hill farming in delicate and diverse settings, including species-dense forests (NMSHE: National Mission For Sustaining The Himalayan Ecosystem, 2023). Numerous perennial rivers in the region that rely on the survival of glaciers for water supply and power generation have tremendous hydropower potential in the region (Dimri et al., 2019). The IHR is home to about 40% of India's indigenous communities and tribes, giving the entire nation a notable socio-cultural and ethnic diversity (Government of India, 2013). The biodiversity of the Himalayas is primarily caused by several biophysical elements, notably IHR.

The extensive biodiversity in the area is a result of the people's conservation and management practices (Negi et al., 2018). Due to the IHR's great ecological and socio-cultural diversity, it has been named one of 34 "biological hotspots." (i.e., an area of the natural world with such biodiversity that is home to a significant number of endangered indigenous species) (Sharma et al., 2022) Traditional knowledge-based businesses have helped local communities in the area generate money (Dimri et al., 2019). Indigenous peoples of IHR are expected to play a significant role in the fight against climate change since they possess crucial knowledge about its consequences. In the IHR, indigenous traditional knowledge and resource-use techniques have been passed down through the years. Local communities preserve biodiversity by adoring nature and caring for sacred landscapes (Negi, 2021). Indigenous peoples of the IHR

have an intimate grasp of and connection to their natural environments. Due to their culture's symbiotic interaction with the environment and their awareness of the clear connection between biodiversity and changing climatic circumstances, a wealth of traditional ecological knowledge has emerged (General/Latest News: Envis Centre, Ministry of Environment & Forest, Govt. of India, 2023).

Natural catastrophes, biodiversity loss, climate change, and food security issues threaten Indian Himalayan ecosystems (General/Latest News: Envis Centre, Ministry of Environment & Forest, Govt. of India, 2023). The Indian Himalaya area is divided into 12 states (IHR). According to a risk analysis conducted by the Department of Science and Technology (DST), Mizoram and Assam are the two states most sensitive to climate change's consequences. Of the eight missions, included in the National Action Plan on Climate Change, the Indian Government formed the NMSHE (National Mission on Sustaining Himalayan Ecosystem).after realising that IHR is an extremely susceptible and fragile ecosystem (General/Latest News: Envis Centre, Ministry of Environment & Forest, Govt. of India, 2023). To create adaptation plans and manage the area's ecosystems, it is crucial to understand how vulnerable the Himalayan region is to climate change, The Indian Institutes for Technology in Guwahati, Mandi, and Bengaluru conducted a collaborative study entitled "Climate Vulnerability Assessment for the Indian Himalayan Region Using a Common Framework". This study outlined the four primary factors that define vulnerability: the socio-economic, demographic, and health conditions of the populace; the susceptibility of agricultural output; living standards dependent on the forest; and data access and infrastructure services (Climate Vulnerability Assessment for the Indian Himalayan Region Using a Common Framework, n.d.). This project also offered a wonderful opportunity to collect and share locally relevant knowledge, for developing innovative responses to climate change's consequences on mountain communities, and for raising awareness of the issues worldwide (The Himalayas and Climate Change WCS-India, 2023).

5.2 *The Impact of TEK in Adapting to Climate Change*

Indigenous peoples are the first to detect environmental changes since they depend on natural resources and biodiversity. Indigenous peoples have been dealing with regional changes in the climate for millennia (Lemi, 2019). The implication is that conventional ecological knowledge may be used to build protracted datasets obtained via years of trial and error. Indigenous peoples are employing a range of strategies to cope with the loss of biodiversity and adapt to climate change, such as land reclamation, migration, irrigation, water-saving methods, and modifying plant cultivation's schedule, location, and altitude, to mention a few. Thus, using their customs and traditional ecological knowledge, indigenous people have created a variety of techniques to create societal structures that are tailored to deal with the damaging effects of natural disasters (Ingty & Bawa, n.d.). Indigenous peoples' views as well as experiences are essential for scientists to test hypotheses on preventing climate change

and gearing up for it. Additionally, they are crucial for adaptation because they are the ones who experience most of climate change's consequences (Ingty, 2017).

The evident connections between indigenous knowledge as well as climate change adaptation need public attention (Gómez-Baggethun et al., 2013b). Indigenous societies could adapt or assist themselves, as seen in previous parts of this chapter for tribes that have recently adapted both to the effects of climate change and to a variety of pressures that have existed for generations (Gómez-Baggethun et al., 2013a). It has been demonstrated via research on indigenous people's perceptions of changing climatic conditions throughout the world that the primary sources of information for climate sciences are traditional knowledge, local observations, and personal experience (Gómez-Baggethun et al., 2013a). Indigenous people might be a significant asset because of their wealth of ecological knowledge in completing scientific investigations in a location like the IHR where there is a dearth of research on climate change's consequences (Gupta & Gupta, 2008). Women are heavily involved in IHR's management of interrelated subsystems, such as agriculture and management of natural forests, farming, and other aspects of the local subsistence sector (Traditional Knowledge System in Himalayan Region: Key to Sustainable Development—Kalinga Institute of Indo-Pacific Studies, 2023). Recent policy, institutional, and technological developments bring to light the IHR's biophysical and social weaknesses, including the fusion of the local subsistence economy, acculturation, dialect disappearance, lifestyle changes, and youth migration (Gupta & Gupta, 2008). Even though there are currently few studies on how indigenous people's TEK contributes to research on climate change, it is acknowledged for its applicability in environmental and social evaluations as well as its contributions to interpreting ecosystem processes. The TEK should therefore be studied before they are lost to the forces of modernity (Traditional Knowledge System in Himalayan Region: Key to Sustainable Development—Kalinga Institute of Indo-Pacific Studies, 2023).

6 Issues and Challenges of Change in Traditional Ecological Knowledge

In light of current world concerns, TEK has become a valuable tool. Particularly about biodiversity loss and accomplishing sustainable development goals (Traditional Ecological Knowledge, 2023). As part of their tens of thousands-year-old way of life, the people of the Indian Himalayan Region had long lived in peace with nature and created a variety of traditional systems. However, due to causes including the expanding human population, and the fragile alpine environment's low productivity, these old knowledge systems are presently vanishing more quickly due to the rising usage of contemporary and/or irresponsible practices (Traditional Ecological Knowledge, 2023).

The IHR is being developed in a way that will preserve ecosystems at the level of biodiversity, organisms, and genetic variation. The IHR is a rich reservoir of

biodiversity and culture (NMSHE: National Mission For Sustaining The Himalayan Ecosystem, 2023). According to an analysis of TEK in India, it covers a variety of subjects, including sustainable forest management, preservation of biodiversity by use of precious groves, sacred settings, sacred plant species, agricultural, farm, and animal management, as well as the healing effects of Ayurveda (Traditional Knowledge, 2023). However, the growth of economic interests in forests and biodiversity resulted in a lack of respect for indigenous philosophy and practises, particularly the religious strategy employed by the local inhabitants to maintain biodiversity (Sharma et al., 2009). This caused several inconsistencies and issues with the management and conservation of natural resources (Traditional Ecological Knowledge, 2023). The practicality of TEK faces major challenges despite the promise of increased knowledge:

- When TEK and Western Science are compared, one of the main issues is that TEK loses its significance when applied in a Western scientific atmosphere and taken out of its original context.
- The TEK's close linkages to indigenous languages and culture present another challenge. Oral traditions provide a lot of knowledge that is pertinent to Western scientific investigation, but since it is not comprehended, this information is typically ignored or misunderstood.
- The question of whether or not indigenous peoples still own ownership rights on traditional knowledge systems and need to get authorization before using them is up for dispute. This scenario is particularly complicated by the fact that TEK is often transmitted verbally and could not have any objectively validated evidence.
- The TEK which was able to preserve long-term sustainability has been marginalised by the commodification of environmental assets. These organisations frequently play no active role in the current legal and legislative frameworks for TEK conservation.
- The importance of TEK in climate change adaptation is beyond dispute, although some locals and those outside the scientific community are still unaware of its importance.

In India, particularly in the IHR, no particular legislative framework recognises TEK's importance.

7 Conclusion/Strategies and Suggestions for an Effective Repository of TEK

Many indigenous peoples around the world view TEK as a positive and powerful component of their indigenous identity that is distinctive to their culture and location. For them, the application of TEK in environmental assessment as well as maintenance is a rejection of such a long tradition of undervaluing this kind of knowledge, experience, and talent as well as a validation of the accuracy and applicability of their

own. To safeguard the Himalayan ecosystems and the well-being of humanity, these extensive TEK systems must be fully comprehended and adequately documented. For the Indian Himalayan region's sustainable development, formal decision-support systems can benefit from a platform for indigenous knowledge systems. It is important to recognise, accept, and mainstream some of these advantages of TEK practises to protect the sustainability of ecological services and biodiversity in the IHR's fragile mountains. Despite certain obvious limitations, TEK substantially aids in adapting to climate change. However, many people, including indigenous people and researchers, have expressed scepticism about the application of TEK in this circumstance. Major concerns have been made about the identification, preservation, and documenting of TEK in the literature and the now available data, and these worries are valid. Following are a few suggestions to strengthen the TEK:

- To integrate TEK systems and referencing technologies into the social settings of the nation, strategic knowledge systems should solicit input from a variety of stakeholders, including representatives of indigenous tribes.
- Respect for indigenous knowledge, voices, and experiences can be seen through digital storytelling. It can convey important messages and aid in the preservation of traditional languages.
- Understanding TEK could serve as a basis for effective co-management methods between Tribes and the government.
- It is essential to scale up TEK to manage resources and decrease climate change's impacts. Empowering neighbourhood groups to use TEK to prepare for climate change.
- To recognise the intellectual property of tribes, policy frameworks are necessary. The TEK and IK should be used to guide and illuminate strategic decisions to fight against natural disasters.
- Tribal-based programmes that are rooted in culture and geography must include TEK.

References

Arruda, G. M., & Krutkowski, S. (2017). Social impacts of climate change and resource development in the Arctic: Implications for Arctic governance. *Journal of Enterprising Communities: People and Places in the Global Economy, 11*(2), 277–288.

Benefits of TEK - Traditional Ecological Knowledge (U.S. National Park Service). 2023. https://www.nps.gov/subjects/tek/benefits.htm. Accessed April 2.

Chettri, N., & Sharma, E. (2022). Contribution of Traditional Ecological Knowledge on Biodiversity Conservation—A Retrospective from the Hindu Kush Himalaya, Accessed March 22, https://link.springer.com/chapter/10.1007/978-3-031-16840-6

Climate Vulnerability Assessment for the Indian Himalayan Region Using a Common Framework, 2018

Commission on Environment, World, Report of the World Commission on Environment and Development: Our Common Future Towards Sustainable Development 2. Part II. Common Challenges

Population and Human Resources, Accessed June 23. http://www.un-documents.net/our-common-future.pdf

Dimri, A. P., Bookhagen, B., Stoffel, M., & Yasunari, T. (2019). *Himalayan Weather and Climate and Their Impact on the Environment*. https://doi.org/10.1007/978-3-030-29684-1

Finn, S., Herne, M., & Castille, D. (2017). The value of traditional ecological knowledge for the environmental health sciences and biomedical research. *Environmental Health Perspectives, 125*(8). https://doi.org/10.1289/EHP858

Gagnon, C. A., & Berteaux, D. (2009). *Integrating traditional ecological knowledge and ecological science: A question of scale, 14*(2). https://www.jstor.org/stable/26268305?seq=1&cid=pdf

Garkoti, S. C., & Semwal, R. (2015). Network programme on convergence of traditional knowledge systems for sustainable development in the Indian Himalayan region. *Current Science, 109*(11), 1919–1920.

General/Latest News: Envis Centre, Ministry of Environment & Forest, Govt. of India. (2023). https://mizenvis.nic.in/ViewGeneralLatestNews.aspx?Id=6731&Year=2018. Accessed June 23.

Gómez-Baggethun, E., Corbera, E., & Reyes-García, V. (2013a) Traditional ecological knowledge and global environmental change: Research findings and policy implications. *Ecology and Society, 18*(4). https://doi.org/10.5751/ES-06288-180472

Gómez-Baggethun, E., Corbera, E., & Reyes-García, V. (2013b). Traditional ecological knowledge and global environmental change: Research findings and policy implications. *Ecology and Society: A Journal of Integrative Science for Resilience and Sustainability, 18*(4). Europe PMC Funders. https://doi.org/10.5751/ES-06288-180472

Government of India. (2013). *Statistical profile of scheduled tribes in India.* Ministry of Tribal Affairs, Statistics Division. Government of India, pp. 1–448. www.tribal.nic.in

Gupta, H.K., & Gupta, A. (2008). Traditional forest knowledge (TFK), commons and forest landscape management: An Indian perspective. In *12th Biennial conference of the international association for the study of commons: Governing shared resources: Connecting local experiences to global challenges*, pp. 1–24. http://iasc2008.glos.ac.uk/conferencepapers/papers/G/Gupta_210101.pdf

Harisha, R. P., Padmavathy, S., & Nagaraja, B. C. (2016). Traditional ecological knowledge (TEK) and its importance in south India: perspecive from local communities. *Journal of Ecology and Environmental Research, 14*(1), 311–326.

Herrmann, T. M., & Torri, M. C. (2009). Changing forest conservation and management paradigms: Traditional ecological knowledge systems and sustainable forestry: Perspectives from Chile and India. *International Journal of Sustainable Development and World Ecology, 16*(6), 392–403. https://doi.org/10.1080/13504500903346404

Houde, N. (2007). The six faces of traditional ecological knowledge: Challenges and opportunities for Canadian co-management arrangements. *Ecology and Society, 12*(2). https://www.jstor.org/stable/26267900

Ingty, T. (2017). High mountain communities and climate change: Adaptation, traditional ecological knowledge, and institutions. *Climatic Change, 145*(1–2), 41–55. https://doi.org/10.1007/S10584-017-2080-3/METRICS

Ingty, T., & Bawa, K. S. (2007). *Climate change and indigenous people*, pp. 275–290.

Janaki, M., Pandit, R., & Sharma, R. K. (2021). The role of traditional belief systems in conserving biological diversity in the Eastern Himalaya Eco-region of India. *Human Dimensions of Wildlife, 26*(1), 13–30.

Jenkins, D. (2022). Traditional Ecological Knowledge. *Journal of Nature and Bureaucracy.*

Kala, C. P. (2011). Traditional ecological knowledge, sacred groves and conservation of biodiversity in the Pachmarhi biosphere reserve of India. *Journal of Environmental Protection, 02*(07), 967–973. https://doi.org/10.4236/JEP.2011.27111

Kenney, C., & Phibbs, S. (2021). Indigenous peoples and climate change: situating culture, identity, and place in climate change risk mitigation and resilience. In *Handbook of climate change management*, pp. 2201–2227. Springer. https://doi.org/10.1007/978-3-030-57281-5_113

Kodirekkala, K. R. (2017). Internal and external factors affecting loss of traditional knowledge: Evidence from a horticultural society in South India. *Journal of Anthropological Research, 73*(1), 22–42. https://doi.org/10.1086/690524

Lemi, T. (2019). The role of traditional ecological knowledge (TEK) for climate change adaptation. *International Journal of Environmental Sciences & Natural Resources, 18*(1), 1–4. https://doi.org/10.19080/IJESNR.2019.18.555980

Mazzocchi, F. (2006). Western science and traditional knowledge: Despite their variations, different forms of knowledge can learn from each other. *EMBO Reports, 7*(5), 463–466. https://doi.org/10.1038/sj.embor.7400693

Nautiyal, S., & Goswami, M. (2022). Role of traditional ecological knowledge on field margin vegetation in sustainable development: A study in a rural-urban interface of Bengaluru. *Trees, Forests and People, 8*. https://doi.org/10.1016/J.TFP.2022.100207

Negi, V. S. (2021). *Climate change observations of indigenous communities in the Indian Himalaya*, pp. 245–257. https://doi.org/10.1175/WCAS-D-20-0077.1

Negi, V. S., Pathak, R., Chandra Sekar, K., Rawal, R. S., Bhatt, I. D., Nandi, S. K., & Dhyani, P. P. (2018). Traditional knowledge and biodiversity conservation: A case study from Byans Valley in Kailash sacred landscape, India. *Journal of Environmental Planning and Management, 61*(10), 1722–1743. https://doi.org/10.1080/09640568.2017.1371006

NMSHE: National Mission For Sustaining The Himalayan Ecosystem. (2023). http://www.knowledgeportal-nmshe.in/programme_details.aspx?C=333514F0-F676-41C3-B0B4-17F1DC5047D3. Accessed June 23.

Pandey, D. N. (2002). *Traditional knowledge systems for biodiversity conservation.* Organization of the United Nations (FAO) Forestry Paper. FAO, Rome, Italy.

Rao, K. S., Semwal, R. L., Maikhuri, R. K., Nautiyal, S., Sen, K. K., Singh, K., Chandrasekhar, K. and Saxena, K. G. (2003). Indigenous ecological knowledge, biodiversity and sustainable development in the central Himalayas. *Journal of Tropical Ecology.*

Sharma, E., Chettri, N., Eriksson, M., Jing, F., Mool, P. K., Sharma, E., Shrestha, A. B., & Tse-Ring, K. (2009). Climate change impacts and vulnerability in the Eastern Himalayas. *Book*, 32. https://doi.org/10.1007/978-3-540-88246-6

Sharma, U. C., Datta, M., & Sharma, V. (2022). Introduction. Springer, Cham, pp. 1–25. https://doi.org/10.1007/978-3-031-11458-8_1

Stephens, S. (2001). Handbook for Culturally Responsive Science Curriculum, Accessed June 23, www.ankn.uaf.edu

The Himalayas and Climate Change WCS-India. (2023). https://programs.wcs.org/india/Newsroom/Blog/ID/16161/The-Himalayas-and-Climate-Change. Accessed June 23.

Traditional Ecological Knowledge of Resource Management in Asia, Accessed March 22, https://link.springer.com/book/10.1007/978- 3-031-16840-6

Traditional Ecological Knowledge. (2023). http://www.cpreecenvis.nic.in/Database/TraditionalEcologicalKnowledge_3658.aspx. Accessed April 2.

Traditional Ecological Knowledge, Accessed June 23, https://www.bia.gov/service/fuels-management/traditionalknowledge

Traditional Knowledge. (2023). https://www.wipo.int/tk/en/. Accessed June 23.

Traditional Knowledge Holders Formalize a Network for Community to Community Exchange - Institute for the Advanced Study of Sustainability, 2017

Traditional Knowledge System in Himalayan Region: Key to Sustainable Development – Kalinga Institute of Indo-Pacific Studies. (2023). http://www.kiips.in/research/traditional-knowledge-system-in-himalayan-region-key-to-sustainable-development/. Accessed June 23.

Tynsong, H. Dkhar, M. and Tiwari, B. K. (2020) Review: Traditional ecological knowledge of tribal communities of North East India. *Journal of Biodiversitas, 21*, 3209–3224.

United Nations Declaration on the Rights of Indigenous Peoples, 2007

Usher, P. J. (2000). Traditional ecological knowledge in environmental assessment and management. *ARCTIC, 53*(2), 183–193.

Vijaya College
Bengaluru

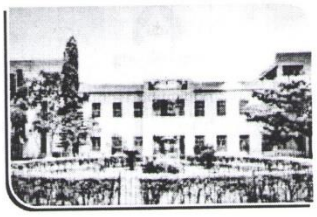
BHS Higher Education Society
Bengaluru

Bangalore Institute
of Legal studies
Bengaluru

Proceedings of

ONE DAY NATIONAL CONFERENCE ON INTELLECTUAL PROPERTY RIGHTS [NCIPR-2023]

21 JULY, 2023



Organized by

VIJAYA COLLEGE

R V Road, Basavanagudi, Bengaluru 560 004.
Affiliated to Bengaluru City University, Accredited by NAAC with 'B++' Grade
Accorded by UGC as "College with Potential for Excellence"

AND

In Association with

BANGALORE INSTITUTE OF LEGAL STUDIES

Affiliated to Karnataka State Law University and Approved by Bar Council of India
R V Road, Basavanagudi, Bengaluru 560 004.

Editor
Dr. NETHRAVATHI B P
Assistant Professor, PG Department of Chemistry
Vijaya College, R V Road, Basavanagudi
Bengaluru-560004.

Published by
Prof. K S Shailaja
Principal
Vijaya College, R V Road, Basavanagudi
Bengaluru-560004.

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi
Bengaluru - 560 019.

Proceedings of One Day National Conference on
Intellectual Property Rights

Published By:
K S Shailaja, Principal
Vijaya College
R V Road, Basavanagudi,
Bengaluru-560 004, INDIA.

Editor
Nethravathi B P
Assistant Professor,
PG Department of Chemistry
Vijaya College
R V Road, Basavanagudi, Bengaluru-560 004.

Contact Details:
vijayancipr@gmail.com
principal@vijayacollege.ac.in

Website:
www.vijayacollege.ac.in

ISBN: 978-93-5916-939-2
Edition: 1 (First Edition)

Published & Printed by:
K S Shailaja
Vijaya College, R V Road
Basavanagudi, Bengaluru-560004, INDIA.

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

INDEX	
Title	**Page No.**

Full Length Papers			
Sl. No.	**Title of the Paper**	**Authors**	**Page No.**

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

Impact of Product Patent on Pharmaceutical Industry

Dr. Shwetha P
Associate Professor, B.M.S College of Law, Bengaluru.
shwetha@bmscl.ac.in

INTRODUCTION

On May 8, 1981, Prime Minister, Late Mrs. Indira Gandhi, addressing the World Health Assembly in Geneva, said: "Affluent societies are spending vast sums of money understandably on the search for new products and processes to alleviate suffering and to prolong life. In the process, drug manufactures have become a powerful industry. My idea of a better- ordered world is one in which medical discoveries would be free of patents and there would be no profiteering from life or death.".[1]

Article 21 of the Indian Constitution guarantees every person and citizen of India the right to life and the right to personal liberty. Further, Article 47 of the Indian Constitution declares that it is the duty and obligation of the Indian state to improve public health. In addition, Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) adopted by India asserts that nations have an obligation to facilitate the right to health. Thus, the Indian government operates under the premise that medicines critical to the important healthcare needs of India's population must be both available and affordable. Indeed, this paradigm is the foundational basis for India's vision for the right to health under the Article 21 of the Indian Constitution[2]

The emergence of intellectual property rights is a result of innovation, creativity, and commercial values. Patents are a type of intellectual property that refers to the rights given to an individual for the invention of a good or a process that has some value in the course of trade. A patent is not a novel idea. In fact, inventions are one of the most valuable intellectual property assets for the owner because they grant them the sole right to use, sell, and distribute those inventions once they receive patent protection over them, which lasts for at least 20 years from the date the patent application was filed. There have been countless inventions throughout history.

India has stood out among the developing nations because of its robust generic pharmaceutical sector, which has allowed it to offer medications at some of the lowest costs in the world. There is a lot of credit for advancement goes to India's 1970 Patents Act. This process was made easier by two crucial provisions. The first was the establishment of a

[1] Quoted in B.K.Keayla, Conquest by Patents, 1998
[2] Uday S. Racherla "Historical Evolution of India's Patent Regime and Its Impact on Innovation In The Indian Pharmaceutical Industry

process patent regime for chemicals, and the second was the reduction in the length of time that pharmaceutical patents could be granted.

The obligations to implement the Agreement on TRIPS changed the conditions that had seen the Indian pharmaceutical industry take roots. The critical issue was the reintroduction of the product patent regime[3]

The establishment of the World Trade Organization (WTO) has incited a gigantic change in viewpoint in world trade. The admission to Trade-Related (Aspects of) Intellectual Property Rights (TRIPS) was wrangled during the Uruguay round trade courses of action of the General Agreement on Tariffs and Trade (GATT) and "one of the fundamental clarifications behind joining authorized development issues into the GATT framework was the medication for business"[4]

EVOLUTION OF PHARMACEUTICAL PATENTS

The Indian pharmaceutical industry, is currently the largest global supplier of cost-effective generic drugs. Thus, the drugs made in India are exported to more than 200 countries around the world, with the United States of America (USA) being India's biggest market.[5]

India's experience in three distinct eras—colonization, post-independence, and globalization—are reflected in the Indian patent system. The Indian Patents and Designs Act of 1911, which was written by the British, passed India's first patent laws during the "colonisation" phase. In 1947, India became independent. The British-imposed, foreigner-favoring patent restrictions, however, hampered the growth of the Indian pharmaceutical industry during the "post-independence" phase and required independent India to purchase even basic medications at exorbitant prices. In order to conduct a thorough examination of the current patent laws, the Indian government established a high-powered committee in 1949, which was led by Bakshi Tek Chand, a distinguished judge of the Lahore High Court. The Chand Committee's most important discovery was that the current Indian patent rules provided asymmetrically high protections to protections to foreign multinational corporations (MNCs) while severely inhibiting the development of the domestic manufacturing sector.

In 1957, the Government of India appointed another committee led by the distinguished retired Justice of the Supreme Court of India, N. Justice Rajagopala Ayyangar, to examine the question of revising the Patents Act and advising government. This committee's recommendations acted as a catalyst for changing the Indian patent law, which eventually led to India Patents Act of 1970. The India Patents Act of 1970 incorporated major provisions to reduce the social costs of the foreigner-owned patents. Thus, the Patents Act of 1970 (a)

[3] The 1970 Patents Act had amended the Patents and Designs Act of 1911, which provided a product patent regime.
[4] "TRIPs and Pharmaceuticals: Implications for India", http://www.cuts-india.org/1997- 8.htm#Pharmaceutical (Visited on April 18, 2023)
[5] Available at: https://link.springer.com/chapter/10.1007/978-981-13-8102-7_12 (last visited on November 06,2023)

prohibited patents on products useful as medicines and food, (b) shortened the term of chemical process patents, and (c) significantly expanded the availability of compulsory licensing. This led to the birth and growth of the powerful Indian pharmaceutical generic drugs industry. Indeed, the India Patents Act, 1970, was momentous in the history of the Indian pharmaceutical industry as it enabled domestic firms to replicate the drugs patented by MNCs, creating a booming generic pharmaceutical industry. As MNCs began to exit the Indian market due to significantly diminished IP protection, the Indian pharmaceutical companies began to fill the void and dominate the global business of reverse-engineered highly cost-efficient generics that sold at exceptionally cheaper prices compared to the counterparts marketed by MNCs. This is how the generic pharmaceutical industry of India was able to become one of the most prolific drug manufacturing industries in the world, ranking third globally in annual volume[6].

PATENT LAW AFTER TRADE-RELATED INTELLECTUAL PROPERTY RIGHTS (TRIPS) AGREEMENT

In 1994 India consented to the TRIPS arrangement and thus Patent Laws of India were additionally revised by the TRIPS understanding. Prior patent was allowed uniquely for technique or interaction in India which was changed in consistence with the TRIPS arrangement in the year 2005. After that licenses are allowed for technique or interaction as well as for items. Benefit of this alteration is taken by different organizations and people. The quantity of Indian patent applications has expanded after this alteration. As of late, different public and worldwide organizations began their innovative work interaction and putting resources into India as the execution of licensed innovation or IP laws in India are better, when contrasted with prior patent framework in India and different arrangements identifying with encroachment of patent law is characterized in Patent Act, 1970.

On January 1, 1995, the TRIPS Agreement went into force, which meant that India as a member of the WTO was required to abandon some of its long held position in the intellectual property field to comply with the provisions of the TRIPS Agreement. As a developing country, India obtained a 5-year transition period[5] and an additional 5 years to amend patent laws on patent protection of pharmaceuticals[7].The following analysis is based on the amendments to the Indian Patent Law of 1999, 2002, and 2005 and delineates the impact of the TRIPS Agreement on India's pharmaceutical patent system.

According to Article 70.8 of the TRIPS Agreement, members that have not offered patent protection for pharmaceuticals and agricultural chemical products as of the date of entry into force of the WTO Agreement are required to provide a way for applications for patents for such inventions to be filed as of that date. The purpose of the TRIPS Agreement provision is to maintain the novelty and priority of such applications. This is also called the "mailbox" application system and is used by developing countries during the transition period.

[6] *Id* at 4
[7] Article 65.4 of the TRIPS Agreement

At the same time, in accordance with the requirements of Article 70.9 of the TRIPS Agreement, although it is not necessary to directly provide patent protection during the transition period, exclusive marketing rights are to be granted to pharmaceuticals and agricultural chemical products provided that, subsequent to the entry into force of the WTO Agreement, a patent application has been filed and a patent granted for that product in another member and marketing approval obtained in such other member. The Patents (Amendment) Act, 1999, was issued on March 26, 1999, but effective since January 1, 1995, which is the effective date of the TRIPS Agreement. The Amendment of 1999 added Chapter IVA after Chapter IV of the Patents Act, 1970, to specifically regulate exclusive marketing rights.

According to the Amendment[8] product patent applications can be submitted in the food and pharmaceutical fields, which however will not be subject to patent examination until December 31, 2004. At the same time, the Amendment provides another way to obtain protection, namely, exclusive marketing rights to sell or distribute the article or substance in India. For the application for exclusive right to sell or distribute an article or a substance, the Controller[9] shall first examine whether the invention is not an invention within the meaning of the Patents Act[10].

The applicant shall have the exclusive marketing right to himself/herself, his/her agents or licensees to sell or distribute in India the article, or the substance from the date of approval granted by the Controller for a period of 5 years or till the date of grant of patent or the date of rejection of the application for grant of patent, whichever is earlier.

The Patents (Amendment) Act, 2002, was promulgated on June 25, 2002, and came into force on such dates as the Central Government appointed, by notification in the Official Gazette, and different dates were designated for different provisions of this Act[11]. In order to meet the TRIPS standards, many provisions of the Patents Act, 1970, were amended, including the definition of invention, the object of patent protection, the patent term, the requirements of patent application, compulsory licenses, and the Bolar exception, which have a significant impact on India's pharmaceutical patent system.

The Patents (Amendment) Act, 2005, was promulgated on April 4, 2005. While some specific provisions came into force on dates set by the Central Government, the remaining provisions came into force on January 1, 2005, when India's transition period expired. The Amendment of 2005 is crucial for India to fully implement the TRIPS obligations. The most important change introduced by the Amendment is the omission of Section 5 of the Patents Act, 1970[12]. The Amendment also omitted Chapter IVA "Exclusive Marketing Rights,"

[8] Chapter IVA Exclusive Marketing Rights of The Patents (Amendment) Act, 1999.
[9] In Indian Patents Act, Controller means the Controller General of Patents, Designs and Trademarks.
[10] Section 3 of the Patents Act, 1970.
[11] Section 1 of the Patents (Amendment) Act, 2002.
[12] Section 5 of the Patents Act, 1970.

which was inserted into the Act by the Amendment of 1999[13]. This means that, after the expiration of the transition period, in accordance with the TRIPS requirement[14]. patents shall be available for any inventions, whether products or processes, in all fields of technology.

Granting product patents to pharmaceutical innovation has affected developing countries like India by directly restricting the availability of affordable drugs and by indirectly eliminating the generic competition that had survived so long by providing patented medicines at an affordable price. While ensuring that the inventors are given their patent rights and their accompanying benefits, it is also vital to keep in mind the rights of the people.

Article 21 of the Constitution guarantees protection of life and personal liberty to every citizen. Since the right to health is integral to the right to life, the government has a constitutional obligation to provide health facilities. Therefore, the government must ensure that the patent holders do not exercise their exclusive right over their patented products for a long time, giving them unfair exploitation of the patent. People must be able to access and afford life-saving drugs.

Section 3(d) of the Patents Act, 1970 was amended to ensure that patented products do not stay patented for a long time by making minor or insignificant modifications. This Amendment had aimed to prevent 'patent evergreening'.

Evergreening refers to the practice whereby pharmaceutical firms extend the patent life of a drug by obtaining additional 20-year patents for minor reformulations or other iterations of the drug without necessarily increasing the therapeutic efficacy[15]. And the Novartis case very well highlights the importance of this provision.

Table showing the number of patents granted/ rejection and abandoned under Section 3(d).

Jurisdiction of Patent Office **(Total Applications 500)**	**Granted** **(207)**	**Rejected** **(72)**	**Abandoned** **(221)**
Chennai: 94 (18.80%)	**27**	**27**	**40**
Kolkata: 83 (16.60%)	**40**	**09**	**34**
Mumbai: 157 (31.40%)	**69**	**16**	**72**
New Delhi: 166 (33.20%)	**71**	**20**	**75**

Source: Data from Intellectual Property India, http://ipindiaservices.gov.in

[13] Section 21 of the Patents (Amendment) Act, 2005.
[14] Article 27.1 of the TRIPS Agreement.
[15] R, Sushmita. "Ever Greening: An Abuse of the Patent System" academic, 16 Jan. 2015, https://www.lawctopus.com/academike/evergreening-an-abuse-of-the-patent-system/.(last visited on July 7, 2023).

In 1998, Novartis AG, an international pharmaceutical company, filed an application as per the TRIPS agreement before the Madras Patent Office for granting a patent for an anticancer drug named 'Glivec'.

The fact was that another drug under the name Zimmerman patent existed used for the same purpose as 'Glivec'. The Madras Patent Office rejected the application on the grounds that the innovation lacked novelty and failed to satisfy the test of non-obviousness. It was held that the drug is not patentable under Section 3(d) of the Patents Act as it did not have any significant therapeutic efficacy over its already existing form.

In its two writ petitions filed before the Madras High Court under Article 226 in 2006, Novartis stated that Section 3(d) of the Patents Act was unconstitutional. It reasoned the same by arguing that the Section violated Article 14 of the Constitution and was also non-compliant with the TRIPS agreement.

In 2007, the case got transferred to the Intellectual Property Appellate Tribunal (IPAB). In its decision, the tribunal stated that the drug had passed the test of novelty and non-obviousness, but it could not be patented as it was held as a non-patentable drug by way of Section 3(d).

In 2009, Novartis filed a Special Leave Petition (SLP) before the Supreme Court. The issue was to ascertain the meaning of a known substance and efficacy under Section 3(d). The Supreme Court in 2013 held that the beta crystalline form of Imatinib Mesylate is a new form of the known substance, that is, Imatinib Mesylate and that the word efficacy referred to therapeutic efficacy. As a result, the Novartis drug showed no increase in therapeutic efficacy and hence cannot be patented. Thus, the Supreme Court's judgment attempted to avoid the evergreening of patents.

Large pharmaceutical companies tend to make small and inconsequential changes to the already patented drugs, claiming patent rights over 20 years. This is an unsustainable practice, especially in a developing country like India, where the population is high, and there is a need for life-saving drugs every day. Moreover, the availability of medicines at a cheaper rate is critical, which would not be possible if the companies continued to hold patent rights.

When a patent holder hasn't made the necessary steps to provide the drugs at a reasonable price, the controller or any other person interested in the product can step in and offer or apply for a compulsory license. This ensures that the patent-holding company doesn't have unmitigated power to manufacture and distribute the drug. The Drug Prices Control Order (DPCO) is an order issued under section 3 of the Essential Commodities Act (ECA), 1955. It seeks to regulate the prices of pharmaceutical drugs. It also comes up with the list of drugs to which the price ceiling shall apply and the formula or method for calculating the ceiling price. Until 2013, the ceiling price was fixed based on the cost-based pricing method. The ceiling price was calculated as a multiple of the cost that it took producers to promote and distribute a pharmaceutical drug.

 ISBN : 978-93-5916-939-2

In 2013, India adopted market-based pricing, whereby the government determined the ceiling prices, that is, the maximum mark-up that a retailer can charge over the reference price. The same is the simple average of the prices of all the brands with a market share of greater than or equal to 1 per cent based on market data provided by a market research firm, IMS Health[16]

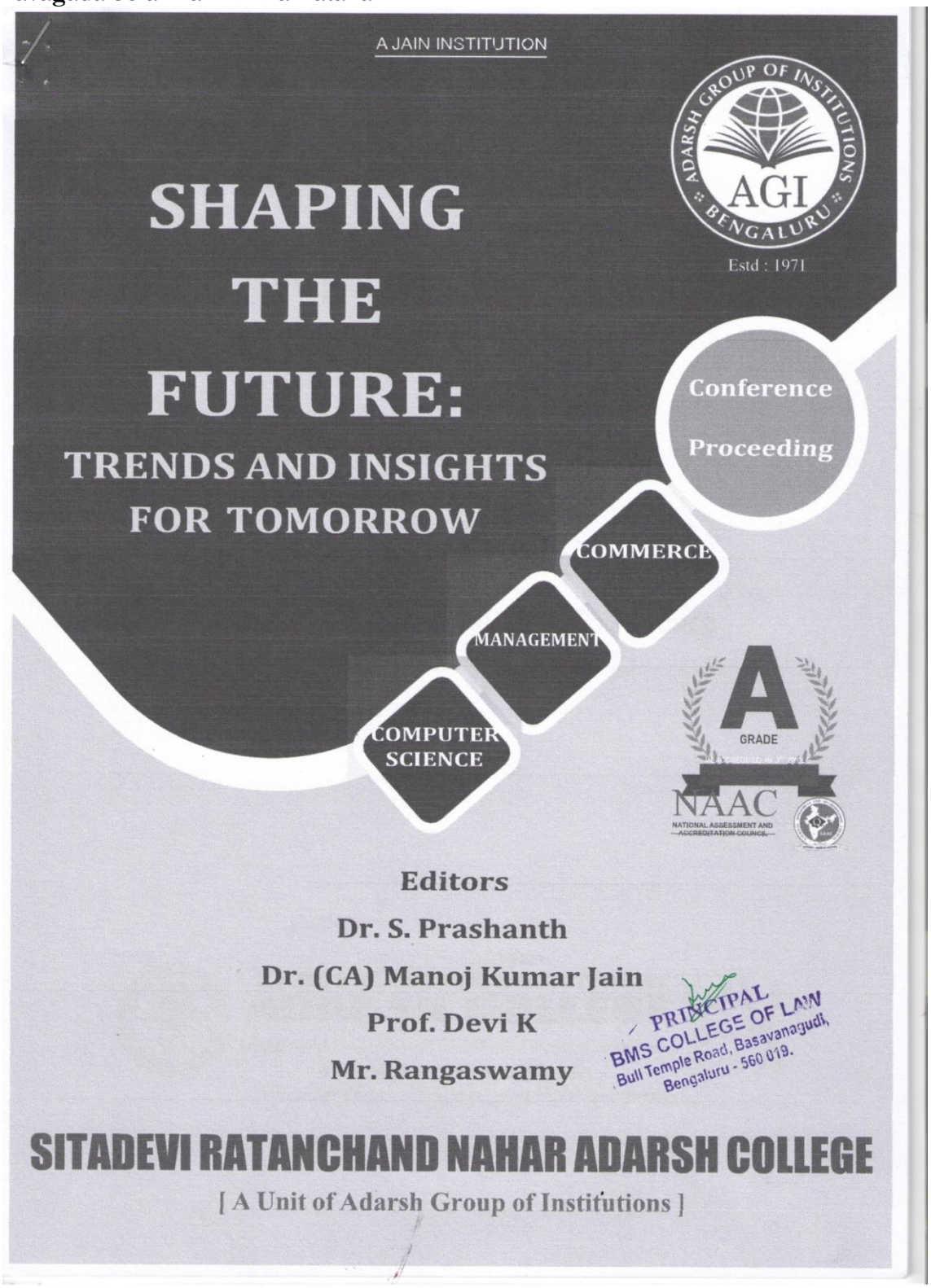
With respect to medicines and pharmaceutical products, there must be a more sensitive and lax approach. Article 7 of the TRIPS Agreement states that the protection and enforcement of IPRs should contribute to the promotion of technological innovation and in a manner conducive to economic and social welfare[17]

CONCLUSION

A proper application of Section 3(d) is necessary to ensure that no essential drugs remain patented for an unreasonable amount of time. Governments must make domestic patent laws more flexible. And they must promulgate provisions that ensure that the disadvantaged populations of the country also have access to essential drugs priced expensive. In addition, the government must exercise flexibility in granting compulsory licenses to protect the patent holders' rights so as to make sure that the patent owners get a reasonable amount of royalty for their inventions. Also, they must track the distribution of drugs manufactured by the generic manufacturers after granting compulsory licenses to avoid creating grey markets. Patent holders can be encouraged to license out their drugs at a lower price. They could also be given tax benefits as further encouragement. Government can further acquire the patent rights of certain life-saving drugs and enable the manufacture of these drugs by generic companies. By taking similar steps, the governments, especially in underdeveloped and developing countries, can ensure that the patent holders' rights are protected. And thus, also ensuring that the public's health is protected by providing the public access to patented drugs

[16] "Economic survey 2020-2021" Indian budget, https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf.
[17] Ayyangar, Shri Justice N. Rajagopala. "Report on the revision of the Patents Law" https://spicyip.com/wp-content/uploads/2013/10/ayyangar_committee_report.pdf.

National Conference on Emerging of Solar Parks in Bharath with Particular Reference to Pavagada Solar Park in Karnataka



B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

Shaping the Future: Trends and Insights for Tomorrow

Editors

Dr. S. Prashanth
Dr. (CA) Manoj Kumar Jain
Prof. Devi K
Mr. Rangaswamy

Proceedings of the National Conference
held on 21st December 2023

A JAIN INSTITUTION
Sitadevi Ratanchand Nahar
ADARSH COLLEGE
A Unit of Adarsh Group of Institutions | Affiliated to Bengaluru City University
75, 5th Main Road, Chamarajpet, Bengaluru 560018
+91-80 2667 7100 degree_office@agieducation.org www.agieducation.org

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Bas... Bengaluru

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

Shaping the Future: Trends and Insights for Tomorrow

Collection of papers submitted to the National Conference on Shaping the Future: Trends and Insights for Tomorrow, held on 21st December 2023.

Organized by:
Sitadevi Ratanchand Nahar Adarsh College
Chamarajpet, Bengaluru-560018

Editors:
Dr. S. Prashanth
Dr. (CA) Manoj Kumar Jain
Prof. Devi K
Mr. Rangaswamy

ISBN: 978-81-970299-0-5

Cover page designed by: **Prof. Poornaprazna,** Assistant Professor & Head of the Department of BCA and BSc.

DISCLAIMER

The authors of the papers in this proceeding are solely responsible for the content and the content represents the opinion of the concerned authors. The publishers or editors do not take any responsibility for the same in any manner. Errors, if any are purely unintentional and readers are requested to communicate such errors to the editors to avoid discrepancies in future.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

PREFACE

Sitadevi Ratanchand Nahar Adarsh College, a unit of Adarsh Group of Institutions (AGI) is a prestigious and well-known higher educational institution, imparting UG/PG Program in the field of Commerce, Management and Computer Science. Our Institute, which is located at the heart of city of Bengaluru, Chamarajpet had begun its journey in 1995. Since its inception, the college has been providing high quality education amalgamated with world class infrastructure. Adarsh, prepares graduates who have a strong desire to learn and grow continually, welcomes new ideas, value diversity with desire to succeed and give one's best towards excellence in all spheres of life. The College has got re-accredited with NAAC 'A' grade in 2023.

There has been a rapid and revolutionary change in the fields of management, commerce, and science in the recent past as new technologies are evolving fast and bringing substantial change in the current industry scenario. Businesses are continuously seeking for new ways to innovate and remain ahead of cutthroat competition. The conference on the title of **SHAPING THE FUTURE: TRENDS AND INSIGHTS FOR TOMORROW** in the field of Commerce, Management and Computer Science is a great opportunity to learn about the latest trends and insights in the aforesaid fields. It is also giving a great opportunity to all the participants to network with other professionals in these fields and learn from their rich experiences.

The conference received more than 50 papers from across the country. The papers were accepted after plagiarism check with due consideration to the acceptable levels and norms. The editorial committee reviewed the papers thoroughly and made suitable revisions keeping in view the theme of the conference. Finally 26 papers have been selected for the stage presentation and included in the conference proceeding.

The editorial committee thank **Sri. Padam Raj Mehta**, President, Adarsh Group of Institutions, **Sri. Jitendra Mardia**, Secretary, Adarsh Group of Institutions, **Dr. S. Prashanth**, Principal SRN Adarsh College for accepting our invitation to patronage this conference.

We also thank **Dr. (CA) Manoj Kumar Jain, Prof. and Academic Dean** (Conference Convener) and **Prof. Devi K, Dept. of Commerce-M.COM** (Conference Co-Convener). We sincerely thank **Prof. Kiran G, Head of the Department-M.COM, Prof. Veena V Savekar, Head of the Department-B.COM, Prof. Ravi Kiran R K, Dept. of BCA, Prof. Rathan J, Dept. of BCA** and **Prof. Sangeetha G, Head of the Department-BBA** for their active involvement to successful completion of the conference. We also thank **Mr. Rangaswamy, Librarian** and **Prof. Devi K, Dept. of Commerce-M.COM** for doing honours of editing the papers in details. We also thank all the authors, who have taken time to submit and present their papers.

Place: Bengaluru

Date: 21-12-2023

Editors

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

National Conference on Shaping the Future: Trends and Insights for Tomorrow

EMERGING OF SOLAR PARKS IN BHARATH WITH PARTICULAR REFERENCE TO PAVAGADA SOLAR PARK IN KARNATAKA

Dr. S. SATISH
Asst. Professor
BMS College of Law, Bengaluru
Email: saraswathi.sathis81@gmail.com

M. SATISH
B.Sc. (hons) Student, Department of Biotechnology
M. S. Ramaiah University of applied Sciences, Bengaluru
Email: mahikasatish1316@gmail.com

ABSTRACT

India stands for 3rd highest energy consumer, due to the expansion of Industries, agriculture, and Urbanization. Nearly 80% of India's energy requirements are covered by three important fuels Coal, Oil, and Solid biomass. Coal is the largest single fuel to generate electricity. The import of oil has rapidly increased due to an increase in transportation. India stands in the third position in the globe in emitting (Carbon Dioxide) CO2. The demand for energy increase for the next 20 years due to the increase in population. The Indian climate day to day is getting worse and leading to a change in the monsoon patterns and it is high time India has to adopt renewable, clean, and green energy. India is endowed with a lot of solar energy potential. About 5,000 trillion kWh per year of energy is entering Indian land. Solar energy is one of the most abundant renewable energies in India. It is said that the rate of interception of this energy is 10,000 times what humans consume. This energy can be utilized and conserved for future uses and create new industries. One such major use is solar conversion to electrical energy using photovoltaic cells or panels. This is used to generate electricity or can be stored in batteries. The main objective of this study is to identify the role and development of creating a new energy industry in Bharat to analyze the development of Solar power parks in Bharath with special reference to the development of the Pavagada Solar Power Plant located in Karnataka. The study is based on secondary data. The data is collected from the World Bank report, the report of the Government of Karnataka, journals, research articles, and newspaper articles. The findings of the study are Bharath has installed five major solar parks in India, these parks are playing an important role in creating employment and income opportunities for many people. An increase in the production of solar energy has reduced the imports of oil and saved foreign exchange, these solar parks are protecting nature from the emission of Carbon, and the implementation of a solar power plant in Pavagoda (Taluk in Karnataka) has brought over all development in Pavagoda.

KEYWORDS: Solar Power, Job Opportunity, Income & Economic Development

INTRODUCTION

India stands among the top three nations to use the highest energy, India's continuous development in Industries and expansion of Urban is creating a huge energy demand. India's energy requirements are covered by three important fuels Coal, Oil, and Solid biomass. Coal is the largest single fuel to generate electricity. India stands in the third position in the globe in emitting (Carbon Dioxide) CO2. As per the analysis of the experts the demand for energy increases for the next 20 years due to the increase in population. The Indian Climate day to day is getting worse and leading to changes in the monsoon patterns and it is high time India has to adopt renewable, clean, and green energy.

India is endowed with a lot of solar energy potential. About 5,000 trillion kWh per year of energy is entering Indian land. Solar energy is one of the most abundant renewable energies in India. It is said that the rate of interception of this energy is 10,000 times what humans consume. This energy can be utilized and conserved for future use.

One such major use is solar conversion to electrical energy using photovoltaic cells or panels. This is used to generate electricity or can be stored in batteries. Solar technologies for the generation of electricity involve solar photovoltaics and solar thermal energy. Basically, Photovoltaic cells or panels convert sunlight into electrical energy, these are made up of semiconductor materials like silicon, mainly used to produce solid-state solar cells. A cell can produce about 1-2 watts of energy. Cells are attached together to form large units called panels and these are covered by a combination of glass and plastic that act as a protective material. Several such panels are connected to form a unit called an array, which forms an electric grid to complete a PV system. PV devices take the incident light to give or produce electrons which are used by external systems to supply energy. The photons from the sun strike the surface of the solar panel, this enables the knockout of electrons from their atomic orbitals, and is released into the electric field generated by solar cells, and these cells pull the free electrons into a directional current creating a photovoltaic effect. The solar sends DC through the charge controller and to the battery bank, this power is collected by inverter. The energy absorbed and converted acts as Direct current (DC) this can be converted to Alternative current (AC) using inverters as not all appliances can transmit DC. Systems such as the BIPV (Building-Integrated PV) system are dedicated to transmitting the DC. LEDs or light-emitting diodes are efficient in converting electrical current into light. Batteries enable the storage of photovoltaic energy, which can be used at night or during the absence of maximum sunlight reaching the panels. There must be a stable structure that supports the array to withstand disturbances (Rain, hail, wind, etc.,) these structures tilt the PV array at a fixed angle depending on the orientation of the structure. Also, if the solar panel is placed flat, the angle of incidence of sunlight is close to 90 degrees both in morning and evening, in this angle, the gathering ability of the cell is zero and results in no output. It is efficient to maintain an angle by tilting the solar panel in order to receive maximum output. The temperature has a major effect at 25 degrees there is an increase in the mobility of electrons leading to an increase in in current, at 43 degrees there is surge in current and beyond this, the current shows decrement. Humidity and solar flux show negligible effect on Solar panels.

Photovoltaic was started as a source of electricity for small and medium-sized applications like calculators in 1980; slowly the usage has increased for many purposes because the cost of solar energy is completely a gift from Nature. This created a number of grid-connected solar PV systems and has grown into millions with Photovoltaic power stations and produced hundreds of megawatts.

India occupied fourth position globally in installing renewable power capacity with solar and wind power. The goal is set to meet 450 gigawatts of renewable energy by 2030 which is five times more than current capacity and this would generate 60% of its electricity from non-fossil fuel. The installation of solar parks is the salvation of India.

India has five major solar parks: Bhadia Solar Park, Rajasthan, Pavagada Solar Park, Karnataka, Kurnool Ultra Megha Solar Park in Andra Pradesh, NP Kunta Ultra Megha Solar Park in Andra Pradesh and Rewa Ultra Megha Solar Park in Madhya Pradesh. The study analyses the five major solar parks situated in India and special studies on Pavagoda Solar Park

and its transformation in economic development after the implementation of Solar panels in 2015 and found that no research has been done on the role and importance of solar energy for the economic development of India.

BRIEF REVIEW OF THE LITERATURE

The country needs to switch to solar energy because the geographic location of India is supportive of solar power plants. (Muneer, Asif, Munawwar, 2004)

The Rewa Solar power project was the first to provide energy to interstate. The project was developed by a payment protection fund based on IREDA, without receiving any financial help from the Government. (Patel and Dave, 2020)

The Landowner receives an annual payment of ₹21,000 per acre for 25-35 years with an increment of 5% every 2 years. Many local people got job opportunities and many farmers got annual income permanently. The solar project helps to reduce carbon dioxide emissions by 20 million tonnes and save 3.6 million tons of natural gas annually in Pavagada taluk Karnataka. (World Bank Blog, December 22, 2015,)

The Karnataka Solar Power Development LTD is the public company joint venture with an equity stake of 50 percent each between Solar Energy Corporation of India(SECI), Government of India, and KREDL(Karnataka Solar Power Development Corporation Ltd), Government of Karnataka has proposed to establish a "Solar Park" with 2000 MW Solar power Generation with a total investment of around Rs.14,800,00 crores and job opportunity for about 8,000 persons in around 11,000 acres of land and identified 5 villages namely Balasamudra, Tirumani, Kyataganachalu, Vallur and Rayacharlu of Pavagada taluk, Tumkur District. (Government of Karnataka order dated 13th June 2016)

The project has brought light to many issues because the villages were under drought and no rainfall over many years and had a great loss in agriculture. The region is less populated with barren land which helps to supply power to the grid from where the plant is located. By 2018 September 2000 MW of solar power was generated by TATA Power Renewable Energy Ltd KSPDCL and SECI (The New Indian Express 12th October 2016)

Kurnool Ultra Mega solar park in Andhra Pradesh is considered as world's largest solar park with a total capacity of 1000 MW and 900 MW has been executed, the Greenko (500 MW), Soft Bank Energy (350MW), Azure Power(100MW) and Prayatna Developers (Adani Group,50MW) and the park will produce 2,600 million units of power per annum. (Financial Express, 15th May, 2017)

Patel and Deve (2020) the study focused on the Rewa Ultra Megha Solar Power Project the study, the power supply was started in 2018 with a very low rate of Rs. 2.97 and now due to an increase in the tariff the price has increased to Rs. 4.2. The power project with the support of government has let for the economic development, and by 2040 India could reach the 2nd highest producer of the solar power in the world.

Under Pavagoda Solar Park the benefits of the projects have been limited in job creation and social infrastructure development and there is an impact on water and soil quality (World Resources Institute, April 1, 2021)

The 2030 milestone is an important target for many investors to improve the lives of millions by lifting them out of poverty and providing a better quality of life by bringing transformation to clean energy India can be identified as a model nation for its sustainable growth and environmental justice with clean energy for future generation. (World Economic Forum July 19, 2021)

The Bhadla Solar power plant is considered as largest solar farm, with a capacity of 2,245 MW and it supplies energy to 1.3 million homes in Rajasthan and created 25,000 employment

opportunities directly as well as indirectly. (BLACKRIDGE Research and Consulting, 18th July, 2022)

MNRE Sanctioned the Kurnool Ultra Mega Solar Project under state state-specific bundling scheme and NTPC was chosen as the implementing agency for issuing tenders and solar developers through bidding. SunEdison Energy India Pvt. Ltd- 500MW, SBG Cleantech Project Co Pvt Ltd for 350 MW, Azure Power India Ltd-100MW and Prayatna Developers Pvt, Ltd-50 MW were allotted (Andra Pradesh Solar Power Corporation Private Limited, 5th June, 2023)

G20 delegates visited the Pavagoda Solar Park and appreciated Karnataka's progress in Solar energy, the joint secretary of the Ministry of New Renewable Energy gave them information about the daily operations of the solar park with the installed capacity of 2,050MW, the first working group meeting on environment climate and sustainability under G20 in Karnataka (The Times of India, 9th February 2023)

SCOPE OF THE STUDY

The scope of the study is to identify the growth of Sustainable development through the implementation of Solar Power parks in India and to understand the economic development of Pavagoda Taluk situated in Karnataka after the implementation of the solar park.

RESEARCH OBJECTIVES

- To identify the role and importance of Solar power parks in Indian
- To understand the economic development of Pavagada due to the installation of a Solar Power Plant.

RESEARCH METHODOLOGY

The study is based on Secondary data. The data is collected from the World Bank report, the reports from the Government of Karnataka, and reports from the Government, journals, and articles. The data is analyzed with the help of diagrams and pictures.

DATA ANALYSIS

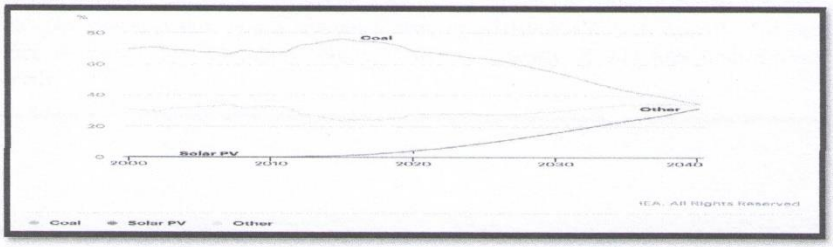


Fig: 1 Changes in the share of power generation in India, 2010-2040
Source: World Economic Forum, 2021

The figure portrays the increase in the usage of solar power from 2010 to 2040 and the reduction in the usage of coal. The Prime Minister of India Sri Narendra Modi has set the goal to increase the energy five times more by 2030 by installing 5 major solar parks in India. If India reaches the target and follow the sustainable path will lead to a reduction in emission and an increase in the non-fossil fuel for electricity generation, importing of energy can be reduced. India has given the opportunity for private investment of over $700 billion in clean energy and

B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

the private sector plays an important role in achieving sustainable goals. It proves that India is the best example to lift millions of people out of poverty increase job opportunities and increase income.

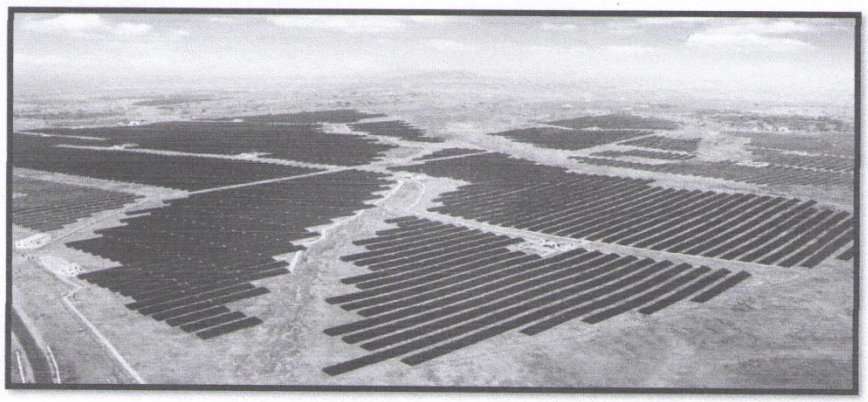


Fig: 2 Bhadla Solar Park in Rajasthan, India
Source: NS Energy, Business Wire, 2023

The figure portrays Bhadla Solar Park in Rajasthan has a capacity of 2.25GW solar complex. This park is a live example of reducing the carbon footprint, and it is one of the largest solar energy producers (Solar Market Report). The plant is situated in a desert area and receives temperatures around 46 and 48° C with regular hot winds and sand storms. The plant was constructed at the cost of INR. 14,000 crores and took 18 months to complete the project. It was constructed in 2015 under The Ministry of New and Renewable Energy (MNRE). Rajasthan has the highest solar irradiation of 5.72kWh per day and it is perfect for solar park development. The park has four phases, the first phase has seven solar plants with a combined capacity of 75MW, the second has ten solar power plants with a combined capacity of 680MW, phases three and four hasten solar power plants with a combined capacity of 1,000MW and 500MW. The pant can produce electricity for 1.3 million homes and create nearly 25,000 jobs both directly and indirectly.

Fig: 3 Kurnool Ultra Mega Solar Park in Andhra Pradesh
Source: Andhra Pradesh Solar Power Corporation Private Limited, Finance Express, 2017

The above figure explains the Kurnool Ultra Mega Solar Park in Andhra Pradesh with the capacity of 1000MW, the cost of construction $1 billion with 5,811 acres of land. The park can able to produce 2,600 million units of power per annum. The union government has granted 200 crores by the guidance of the Ministry of New and Renewable Energy.

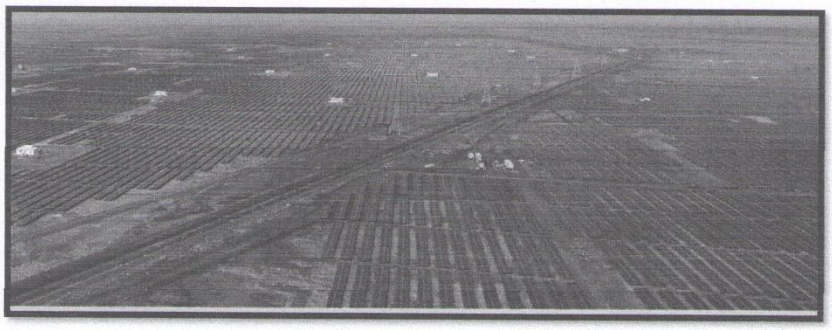


Fig: 4 NP Kunta Ultra Mega Solar Park in Anantapur, Andhra Pradesh
Source: Solar Insider, Land Conflict Watch, 2016

The figure portrays the NP Kunta Ultra Mega Solar Park in Ananatpuram, Andhra Pradesh as the largest single-location solar unit across 11,000 acres with a capacity of 1 GW. The National Thermal Power Limited collaborated with the Government of Andhra Pradesh to develop the 1000 MW solar park. Phase 1 is constructed with land of 7925 acres with the target of developing 250 MW of power in 2016. Companies like Tata Solar, BHEL, Lanco, Sterling, and Wilson executed the project. The Phase 2 project came to a standstill in 2019 due to land disputes, the farmers whose lands were acquired for park construction protested for giving lesser compensation than promised.

Fig: 5 Rewa Solar Park in Madhya Pradesh
Source: NS Energy. World Bank Group, 2023

The figure portrays the Rewa Solar project situated in Rewa District, Madhya Pradesh with a capacity of 750 MW with a total area of 1500 acres. The project was developed by Public public-private partnership between Madhya Pradesh Urja Vikash Nigam Limited (MPUVNL) and the Solar Energy Corporation of India (SECI). The total cost of this project is £420m and the World Bank provided $100 to this project and it was utilized for infrastructure like roads, water supply, and telecommunication. The project also got the assistance from Sustainable Development Investment partnership of the Department for Foreign Affairs and Trade of the Government of Australia. The project was inaugurated by Sri Narendra Modi in 2020. The project aimed to provide electricity at one of the lowest tariff rates in the country and control approximately 1.5 million tons of Carbon emissions annually.

THE SOLAR PARK IN PAVAGADA-KARNATAKA

Karnataka has the largest solar park in Pavagada taluk, Tumkur district. This place receives the highest solar radiation and the area is declared a drought-prone area because for the past 6 decades, the area has suffered from deficiency in rainfall and it is completely surrounded by rocky hills. Most of the residents were agriculturists and depended directly as well as indirectly on the agriculture of peanuts, but due to no proper rainfall, they were unemployed and financially poor and had migrated to nearby cities like Tumkur, and Bangalore. The Karnataka Renewable Energy Development Ltd and Solar Energy Corporation of India jointly launched the Karnataka Solar Power Development Corporation Ltd (KSPDCL) on 29th October 2015. It covers a total area of 13,000 acres (53km) which includes the 5 villages Balasamudra, Tirumani, Kyataganacharlu, Vallur, and Rayacharlu. Now the Pavagoda power station is the largest photovoltaic power station in the world with a generation capacity of 2050MW.

On April 20, nearly 1,200 farmers from Thirumani, Vallur, Balasamudra, Rayacherlu, and Kyatagancherlu signed an agreement with the state Government to lease out 11,000 acres to lease the land for 25-35 years with an annual income of 21,000 with 5 percent increment every two years once, to use the barren land for the installation of solar panels. This project created lifetime income many local people got job opportunities and infrastructural development took place This credit goes to G.V. Balram, managing director of Karnataka Renewable Energy Development Limited, who was a local of Pavagada Taluk.

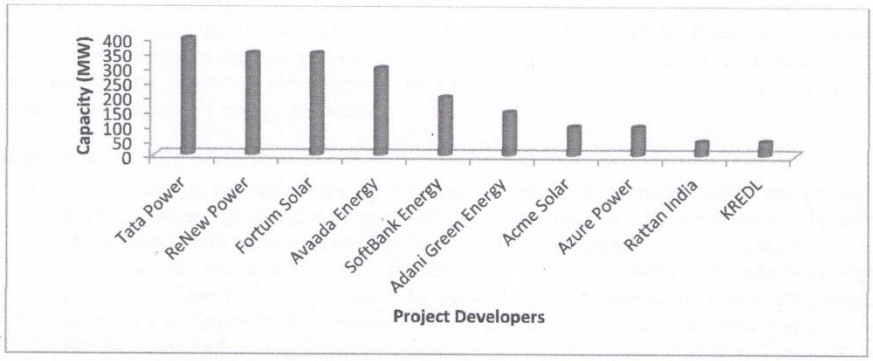


Fig.6 List of Projects Developed at Pavagada Solar Park.
Source: Mercom India Research, 29th December 2019.

B.M.S. EDUCATIONAL TRUST
B.M.S. COLLEGE OF LAW
(Estd.: 1963)
Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

The figure discloses the list of projects developed at Pavagada Solar Park. Tata Power produces 400 MW, Renew Power generates 350 MW, Fortum Solar creates 350 MW, Avaada Energy 300MW is built, Soft Bank Energy produces 200 MW, Adani Green Energy generates 150 MW, ACME solar Energy Creates 100MW, Azure Energy produces 100 MW, Rattan India, and KRDEL generates 50 MW, totally 2,050 MW are generated. According to Mercom India's solar project tracker, Karnataka is the top solar state in India, with approximately 7.1GW of large solar projects.

Fig.7 Pavagada Solar Complex with 2GW solar power
Source: National Information Centre, Ministry of Electronics and Information Technology, Government of India, 2023.

The figure reveals that Pavagada Solar Park which is also known as Shakti Sthala generates 2GW solar power approximately 180km from Bengaluru, Karnataka, and the world's largest solar park became fully operational. The entire solar park is divided into 40 blocks, each of 50 MW. Each developer like NTPC, SECI, and KREDL were allotted 12 blocks (total 600MW), 4 block (total 200 MW), and 24 blocks (total 1200 MW) respectively based on tariff-based competitive bidding by the solar Project developers. The solar power is evacuating from the eight internal pooling stations which is developed by POWERGRID. Generates 4.5 billion units of solar per annum and also controls the 3.6 million tonnes emission of CO_2 annually.
The Shakti Sthala projects have achieved the aim of non-dependency on convectional power resources to eco-friendly energy resources.

FINDINGS OF THE STUDY

1. Solar power is renewable energy that helps to substitute non-renewable energy. Solar power is the energy that can be generated by converting sunlight into electricity by using photovoltaics and helps to control pollution in nature compared to other energy.
2. India has five major solar parks: Bhadia Solar Park, Rajasthan, Pavagada Solar Park, Karnataka, Kurnool Ultra Megha Solar Park in Andra Pradesh, NP Kunta Ultra Megha Solar Park in Andra Pradesh and Rewa Ultra Megha Solar Park in Madhya Pradesh
3. Bhadla Solar Park in Rajasthan has a capacity of 2.25GW solar complex. This park is a live example of reducing the carbon footprint, and it is one of the largest solar energy producers (Solar Market Report) in India.

4. The Kurnool Ultra Mega Solar Park is in Andhra Pradesh with a capacity of 1000MW, the cost of construction is $1 billion with 5,811 acres of land. The park can able to produce 2,600 million units of power per annum.
5. The NP Kunta Ultra Mega Solar Park in Ananatpuram district Andhra Pradesh is the largest single-location solar unit across 11,000 acres with a capacity of 1 GW.
6. The Rewa Solar project is situated in Rewa District, Madhya Pradesh with a capacity of 750 MW with a total area of 1500 acres. The project is developed by Public-private partnership between Madhya Pradesh Urja Vikash Nigam Limited (MPUVNL) and the Solar Energy Corporation of India (SECI)
7. The second largest photovoltaic power station in the world is in Pavagada Solar Park, Karnataka with a generation capacity of 2050MW.
8. Most of the residents in Pavagada were agriculturists and were growing peanuts but due to less rainfall they were unemployed and financially poor so many had migrated to nearby cities like Tumkur, Bangalore, and so on. The Economic position of villagers was very bad.
9. The Karnataka Solar Power Development LTD is a public company joint venture company with an equity stake of 50 percent each between Solar Energy Corporation of India (SECI), the Government of India, and KREDL (Karnataka Solar Power Development Corporation Ltd), Government of Karnataka has established a "Solar Park" with 2000 MW Solar power Generation with a total investment of around Rs.14, 800,00 crore.
10. Around 11,000 acres of land was selected for this project and identified 5 villages namely Balasamudra, Tirumani, Kyataganachalu, Vallur, and Rayacharlu of Pavagada taluk, Tumkur
11. G.V. Balram, the managing director of KREDL (Karnataka Renewable Energy Development Ltd) who was born and brought up in the same village understood the economic position of the people and allowed leasing the land required for the project and then purchase it outright under the leadership of energy minister D.K.Shivakumar and Chief Minister of Karnataka Sri. Sidhharamyya and Prime Minister Sri Narendra Modi.
12. This project assured the landowners to receive an annual payment of ₹21,000 per acre for 25-35 years with an increment of 5 percent every 2 years which gave them permanent income and many local people got job opportunities nearly 8000 persons and a lot of infrastructural development took place.
13. This project helps to increase the Karnataka power capacity from 23,379MW and it helps to bridge the gap between demand and supply of power.
14. At present in Pavagada Solar Park, the water supply for the solar park to wash the panel regularly to remove dust has become quite challenging, as per the reports 7 to 20 liters of water are required to wash per MW is required and for the complete project it requires 14,000 to 40,000 kiloliters of water per wash.
15. Solar parks play an important role in controlling the pollution and emission of Carbon in the nature, the study also identified that the installation of solar parks has created the job opportunities to many people and uplifted from poverty and generation of Income.
16. An increase in the production of solar energy has reduced the imports of oil and saved foreign exchange, the implementation of solar power plants has created overall economic development

17. The Pavagoda solar park installation has brought infrastructural development in surrounding areas, and increase in employment and income for many people, it is providing nearly 8,000 jobs.

SCOPE FOR FUTURE STUDY

This study may lead to study other renewable energies, supporting for economic development and sustainable development.

CONCLUSION

India receives 300 days rich in solar energy and dependency on coal and increase in emission of CO2 and import of oil is increasing day by day to meet the demand for energy in India, so it was necessary for the country to adopt renewable energy and establish the five major solar parks in India. Bhadia Solar Park in Rajasthan is the largest solar park in India, and Pavagada Solar Park in Karnataka is considered 2ng largest solar park, Kurnool Ultra Megha Solar Park in Andra Pradesh, NP Kunta Ultra Megha Solar Park in Andra Pradesh and Rewa Ultra Megha Solar Park in Madhya Pradesh. The solar park in Pavagoda has increased economic development, by providing employment, increase in Income and wonderful infrastructural development like good roads, power, and internet and so on. Overall the installation of solar parks in India helped to control the pollution and emission of Carbon in the nature, created the job opportunities to the many people, and uplifted from poverty and generation of Income. An increase in the production of solar energy has reduced the imports of oil and saved foreign exchange, the implementation of solar power plants has created overall economic development

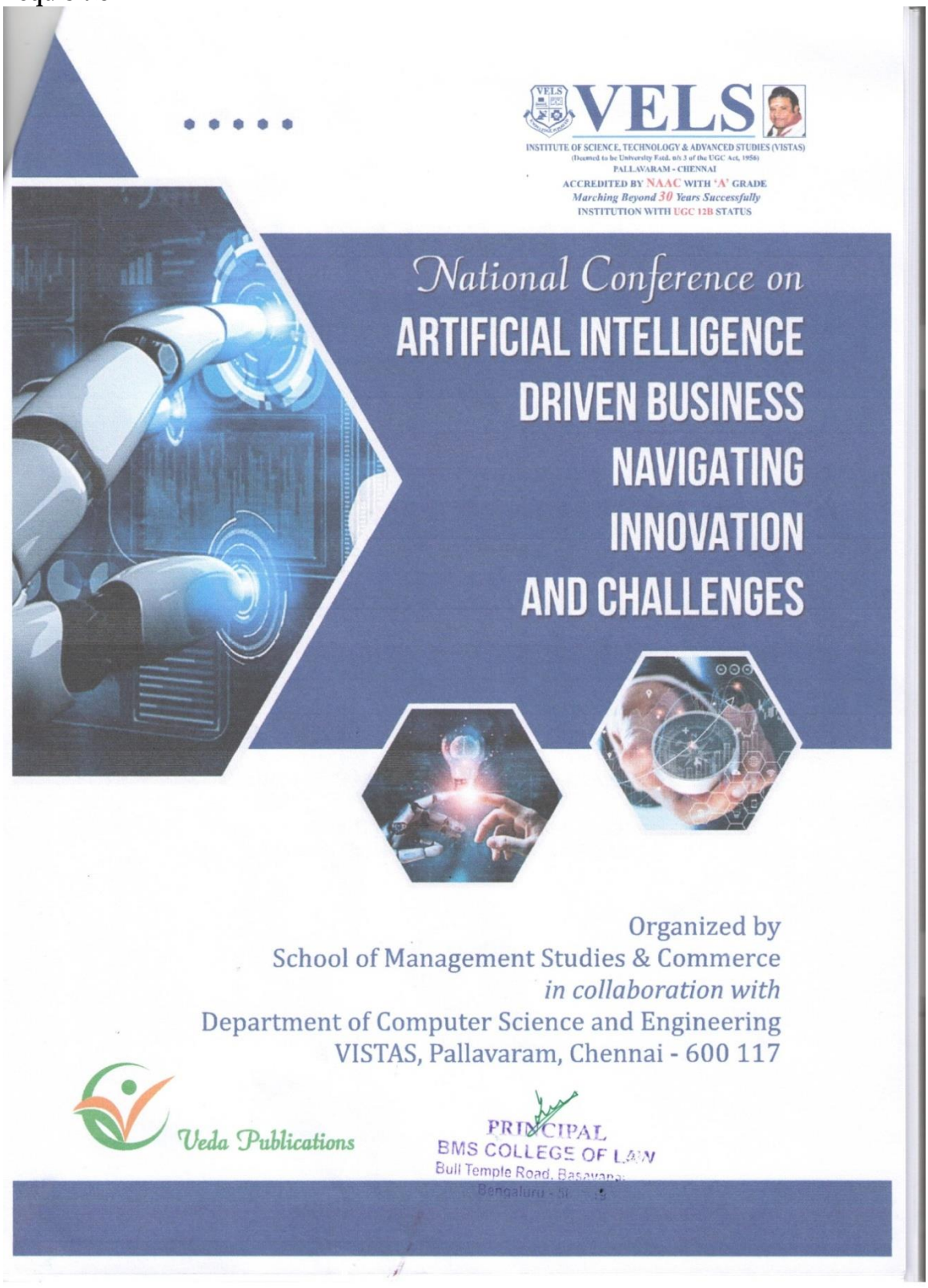
BIBLIOGRAPHY AND WEBLIOGRAPHY

1. Jain, A. (2015). Solar energy to bring jobs and prosperity back to parched villages. *World Bank*. http://blogs.worldbank.org/energy/solar-energy-bring-jobs-and-prosperity-back-parched-villages-india
2. Poovanna, S. (2017). How the world's largest solar park is shaping up in Karnataka. *Mint*. http://www.livemint.com/Industry/UEJYwZQT5m3wNvGupBShZJ/How-the-worlds-largest-solar-park-is-shaping-up-in-Karnatak.html
3. Poovanna, S. (2018). *The world's largest solar park Shakti Sthala designed by Ravindra Bhan in Karnataka*. http://www.livemint.com/Industry/uJx6eSuVGTwZa6Y2aE5W7I/Worlds-largest-solar-park-Shakti-Sthala-inaugurated-in-Karn.html
4. Stock, R. (2021). Deus ex mitigata: Denaturalizing the discursive power of Solar India. *Environment and Planning E: Nature and Space*, *4*(2), 354–382. https://doi.org/10.1177/2514848620908166
5. *Rewa Solar Park, Rewa District, Madhya Pradesh, India*. (n.d.). Retrieved May 26, 2023, from https://www.nsenergybusiness.com/projects/rewa-solar-project/
6. *India builds its largest single-location solar unit at Anantapuram*. (n.d.). Retrieved May 26, 2023, from https://minusco2.in/solarinsider/a-tale-of-two-phases-of-anantapur-solar-park/
7. *India's largest solar park to be built in Rann of Kutch: All you need to know!* (n.d.). Retrieved May 24, 2023, from https://www.jagranjosh.com/current-affairs/indias-largest-solar-park-to-be-built-in-rann-of-kutch-all-you-need-to-know-1626332324-1
8. *PM Modi Lays Foundation Stone for World's Largest Renewable Energy Park, Know Why Kutch Was Chosen for This Project*. (n.d.). Retrieved May 24, 2023, from

https://www.news18.com/news/india/pm-modi-lays-foundation-stone-for-worlds-largest-renewable-energy-park-know-why-kutch-was-chosen-for-this-project-3180689.html
9. *Rewa Ultra Mega Solar Ltd. - RUMSL*. (n.d.). Retrieved May 26, 2023, from https://rumsl.mp.gov.in/
10. *List of Largest Solar Power Plants in India (2023) - Renewable Energy Source*. (n.d.). Retrieved May 22, 2023, from https://byjus.com/free-ias-prep/list-of-solar-power-parks-in-india/
11. *1APSPCL::* (n.d.). Retrieved June 1, 2023, from https://apspcl.ap.gov.in/content/kurnoolultramegasolarparks
12. *Ananthapuramu Solar Power Park oustees demand higher compensation for their land*. (n.d.). Retrieved June 1, 2023, from https://www.landconflictwatch.org/conflicts/ananthapuramu-solar-power-park-oustees-demand-higher-compensation-for-their-land
13. *Karnataka: G20 delegates visit Pavagada Solar Park, laud Karnataka's progress | Bengaluru News - Times of India*. (n.d.). Retrieved June 6, 2023, from https://timesofindia.indiatimes.com/city/bengaluru/g20-delegates-visit-pavagada-solar-park-laud-karnatakas-progress/articleshow/97751855.cms
14. *An Overview of Rewa Solar Plant: Its Objectives, Benefits, and More*. (n.d.). Retrieved May 26, 2023, from https://www.solarsquare.in/blog/rewa-solar-plant/
15. *Solar Energy: Potential of India - ClearIAS*. (n.d.). Retrieved May 22, 2023, from https://www.clearias.com/solar-energy/
16. *1Bhadla Solar Park, Jodhpur District, Rajasthan, India*. (n.d.). Retrieved May 24, 2023, from https://www.nsenergybusiness.com/projects/bhadla-solar-park-rajasthan/
17. *All You Need to Know About Bhadla Solar Park, Rajasthan, India*. (n.d.). Retrieved May 26, 2023, from https://www.blackridgeresearch.com/project-profiles/bhadla-solar-park-the-largest-solar-pv-power-plant-project-in-the-world
18. *The World's Largest Solar Park - Kurnool, India*. (n.d.). Retrieved May 26, 2023, from https://www.nrdc.org/bio/anjali-jaiswal/worlds-largest-solar-park-kurnool-india
19. *2Ultra Mega Solar in India*. (n.d.). Retrieved May 22, 2023, from https://storymaps.arcgis.com/stories/35183b3b1179468c8bec04b2915fa20b
20. *APSPCL – Galiveedu Solar Power Plant 500 MW – Andhra Pradesh*. (n.d.). Retrieved May 24, 2023, from https://www.globaldata.com/store/report/apspcl-galiveedu-solar-power-plant-500-mw-andhra-pradesh/

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

National Conference on Smart Hiring: Harnessing AI for a Competitive Edge in Talent Acquisition



VELS

INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI
ACCREDITED BY NAAC WITH 'A' GRADE
Marching Beyond 30 Years Successfully
INSTITUTION WITH UGC 12B STATUS

National Conference on

Artificial Intelligence Driven Business: Navigating Innovation and Challenges

13th & 14th December, 2023

Organized by

School of Management Studies & Commerce
in collaboration with
Department of Computer Science and Engineering
VISTAS, Pallavaram, Chennai - 600 117

Veda Publications

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

National Conference on Artificial Intelligence Driven Business: Navigating Innovation and Challenges

ISBN: 978-93-91930-84-4

December, 2023

Published by
VEDA PUBLICATIONS
G2, Kasthuri Flats,
Dhenupuri Housing Colony,
Madambakkam, Chennai - 600 126
M.No: 70928 22277
vedapublications.in
vedapub@gmail.com

LaTeX Typeset & Printing by
Xalent Graphixs
Channai
M.No: 87544 39300
xalentgraphixs@gmail.com

Publishers Disclaimer

The Publisher of this book states that the Editor(s) of this book has taken the full responsibility for the content of this book, any dispute and copyright violation arising based on the content of this book will be addressed by the editor(s), furthermore, the authors indemnify the publisher from damages arising from such disputes and copyright violation as stated above.

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

B.M.S. EDUCATIONAL TRUST

B.M.S. COLLEGE OF LAW

(Estd.: 1963)

Affiliated to Karnataka State Law University and Approved by Bar Council of India
Bull Temple Road, Basavanagudi, Bengaluru - 560 019.
Phone : 080-26679336, 26602430
E-mail : bmscl@yahoo.in Website : www.bmscl.ac.in
NAAC Accredited B++

Contents

PRINCIPAL
BMS COLLEGE OF LAW
Bull Temple Road, Basavanagudi,
Bengaluru - 560 019.

National Conference on Artificial Intelligence Driven Business: Navigating Innovation and Challenges

Smart Hiring: Harnessing AI for a Competitive Edge in Talent Acquisition

Yashawanth Kumar[1], **Dr.M.Kotteeswaran**[2]

[1]Assistant Professor/Research Scholar Institution-BMS College of Law, Basavanagudi, Bengaluru.
Email-yashwanth.rm@gmail.com

[2]Associate Professor Institution-VELS Institute of Science, Technology and Advanced Studies (Business School of Management) Email- kotteeswaran.sms@velsuniv.ac.in

ABSTRACT *- In today's highly competitive job market, organizations constantly seek innovative ways to gain a competitive edge in talent acquisition. One of the most promising approaches is the integration of Artificial Intelligence (AI) into the recruitment process.*

This abstract overviews the key themes explored in the full paper, "Smart Hiring: Harnessing AI for a Competitive Edge in Talent Acquisition". This article brings an overview of the adoption and implementation of AI in the various methods that are a part of the hiring process, A few of the processes that are studied in the due course are highlighted below,

Resume Screening Automation*: AI-powered algorithms analyse resumes, extracting relevant information, and ranking candidates based on predefined criteria.*

Behavioural Analysis*: AI tools can assess candidates' soft skills and personality traits through video interviews and personality assessments*

Predictive Analytics*: By analysing historical data and candidate profiles, predictive analytics models can forecast a candidate's success within a specific role.*

Virtual Assistants*: AI-driven Chabot's and virtual assistants can engage with candidates, answer their queries, and schedule interviews.*

Diversity and Inclusion Enhancements*: AI can help reduce bias in the hiring process by anonymizing candidate data, providing diverse candidate sourcing suggestions, and flagging potential bias in job descriptions.*

Keywords: *Smart Hiring, AI in Talent Acquisition, Recruitment Technology, Automation, Machine Learning.*

1. Introduction

In today's dynamic and competitive business landscape, organizations are constantly seeking innovative ways to gain a competitive edge. One critical aspect that plays a pivotal role in a company's success is talent acquisition. The ability to attract, identify, and hire the right individuals is crucial for sustained growth and excellence. In this pursuit, artificial intelligence (AI) has emerged as a powerful ally, revolutionizing traditional hiring processes and providing companies with a smart solution for talent acquisition.

In the current scenario of intense competition for top talent, companies that adopt personalized recruiting are not only filling positions but also building long-lasting relationships and nurturing a community of engaged professionals who feel valued right from the first interaction. This shift in strategy is not just redefining talent acquisition, but also empowering the future of the workforce.

Source: Sushman Biswas Former Editor, HR Technologist

ISBN:978-93-91930-84-4

This article delves into the process of recruitment using AI, which is transforming the way organizations acquire talent. It offers insights into how businesses can leverage these strategies to attract, engage, and retain the best candidates in a competitive job market. The article also touches on the challenges of AI recruitment and provides an overview of the future of AI hiring.

2. The Exploration of AI in Hiring Process

As the competition for top talent intensifies, organizations must embrace innovative solutions to gain a competitive edge in talent acquisition. The integration of AI into the hiring process not only expedites and refines recruitment but also contributes to better decision-making and long-term success. By harnessing the power of smart hiring technologies, organizations can build a workforce that propels them to new heights in the dynamic and fast-paced business environment.

The traditional methods of recruitment are being revolutionized by smart hiring technologies, which not only streamline the hiring process but also enhance the quality of talent acquired. This article explores the role of AI in talent acquisition and how organizations can leverage it to stay ahead in the race for top talent.

2.1 Automating Tedious Tasks

AI technologies streamline and automate routine tasks involved in the hiring process, allowing HR professionals to focus on more strategic aspects of talent acquisition. From resume screening to initial candidate outreach, AI can efficiently handle repetitive tasks, significantly reducing the time and effort required for recruitment.

Resume Screening

Use natural language processing (NLP) algorithms to automatically parse and analyze resumes. Implement keyword matching to quickly filter out candidates who do not meet the basic criteria. Create a scoring system to prioritize resumes based on relevance.

ISBN:978-93-91930-84-4

Keyword Matching

AI algorithms can match job descriptions with resumes, helping recruiters identify candidates whose skills and experiences closely align with the requirements of a specific role. This enhances the accuracy of candidate shortlisting.

Natural Language Processing (NLP)

NLP algorithms enable machines to understand and interpret human language. AI-powered tools can analyze job descriptions and candidate resumes to understand context, making the matching process more sophisticated and context-aware.

Predictive Analytics

AI can analyze historical hiring data to identify patterns and trends. Predictive analytics can help recruiters anticipate which candidates are more likely to succeed in a particular role based on past performance data.

Social Media and Web Scraping

AI tools can scrape data from various online sources, including social media platforms, to gather information about potential candidates. This can provide additional insights into a candidate's skills, interests, and professional network.

Talent Pool Management

AI can assist in building and managing talent pools by categorizing candidates, updating contact information, and sending automated alerts when suitable candidates become available.

2.3 Predictive Analytics for Informed Decisions

AI-driven predictive analytics enables organizations to make data-driven decisions throughout the hiring process. By analyzing historical data and patterns, AI can predict candidate success, helping recruiters make more informed choices regarding which candidates to interview and ultimately hire. This minimizes the risk of making subjective or biased decisions.

To incorporate predictive analytics in AI-driven hiring, it is crucial to have a strong foundation of data infrastructure and maintain a continuous process of data analysis. It is equally important to ensure data privacy and transparency while using analytics to create trust with candidates and adhere to relevant regulations. Furthermore, involving human expertise in interpreting results and making final hiring decisions is imperative for a well-rounded and ethical hiring process.

Automated Pre-Employment Assessments

Design assessments that evaluate technical skills, problem-solving abilities, and other relevant competencies. Automatically score and rank candidates based on their performance.

ISBN:978-93-91930-84-4

Job Posting and Distribution

ATS (Automated Tracking System) **platforms** enable companies to create and post job openings on various job boards, career sites, and social media platforms. They often have features that allow for easy distribution of job listings to reach a wider audience.

Resume Parsing

ATS systems can automatically parse and extract information from resumes. This helps in creating a standardized format for candidate data and makes it easier for recruiters to review and compare resumes.

Candidate Management

ATS tools help organize and manage a database of candidates. Recruiters can easily search, filter, and categorize candidates based on various criteria. They often include features for communication, such as email templates and scheduling tools.

Chatbots for Initial Interaction

Implement chatbots to engage with candidates on your career website or job portal. Use chatbots to ask preliminary questions about qualifications and experience. Provide information about the company and the position to potential candidates.

Finding skilled talent

According to the U.S. Department of Labor, hiring the wrong person for a job can cost a company at least 30% of the employee's first-year earnings. Additionally, CareerBuilder research has found that 74% of employers have hired the wrong person for a position.

However, with the help of AI tools, tech recruiters can quickly screen thousands of resumes to identify the most qualified candidates, and conduct interviews that lead to better hires.

2.2 Enhancing Candidate Sourcing

One of the most valuable applications of AI is in the hiring process. By leveraging the power of AI algorithms, organizations can efficiently sift through vast amounts of data to identify potential candidates. Machine learning models can assess resumes, social media profiles, and other online data to evaluate a candidate's skills, experiences, and cultural fit. This not only accelerates the hiring process but also ensures a more comprehensive evaluation of candidates. By incorporating AI into candidate sourcing processes, organizations can streamline recruitment, reduce time-to-hire, and make more data-driven decisions. However, it's essential to ensure that AI tools are used ethically and that biases are continually monitored and addressed to make sure that all candidates are given a fair chance.

ISBN:978-93-91930-84-4

Performance Prediction

Analyze past performance data of employees to create models that predict the likelihood of success in a given role.

Incorporate data on performance metrics, such as productivity and project outcomes, to enhance predictive accuracy.

Time-to-Fill Prediction

Predictive models can estimate the time it will take to fill a particular position based on historical data, allowing for better workforce planning. This can help organizations allocate resources more efficiently and reduce time-to-hire.

2.4 Candidate Engagement and Experience

Predictive analytics can be applied to assess the likelihood of candidate engagement and satisfaction. Identify factors that contribute to positive candidate experiences and adjust the hiring process accordingly.

Scheduling & interviewing

Automated interviewing can accelerate the recruitment process by up to 90%, while improving the quality of candidates based on past hires.

Moreover, AI-powered talent clouds can reduce the cost-per-hire by 40% and address unconscious biases, leading to more diverse teams, improved candidate experience, and greater success in attracting top tech talent. Machine learning and AI can help companies eliminate biases and make informed hiring decisions.

Interview Effectiveness

Analyze data from past interviews to assess the effectiveness of different interview processes and questions. Use predictive analytics to identify interview practices that correlate with successful hires.

2.5 Improving Candidate Experience

AI technologies have revolutionized the candidate experience by offering efficient and personalized interactions. With the help of natural language processing (NLP), chatbots can interact with candidates, address their queries, and guide them through the application process. This not only enhances the overall candidate experience but also reflects positively on the employer's image.

User-Friendly Interfaces

Ensure that your AI-powered hiring platforms have intuitive and user-friendly interfaces. Candidates should easily navigate through the application and assessment process. Provide clear instructions and guidance on each step of the process to reduce confusion.

ISBN:978-93-91930-84-4

Feedback Mechanism

Implement a feedback mechanism to provide candidates with insights into their performance during assessments.

Diversity and Inclusion

Regularly evaluate and update AI algorithms to ensure they are free from biases. This helps in promoting diversity and inclusion in the hiring process. Monitor the impact of AI tools on different demographic groups to identify and address any disparities.

Personalization

Use AI to personalize the candidate experience. Tailor communication and assessments based on the candidate's background, skills, and preferences. Provide personalized content that highlights the company culture, values, and career growth opportunities.

Accessibility

Ensure that AI-driven platforms are accessible to candidates with disabilities. This includes features such as screen reader compatibility and other accessibility options.

2.6 Reducing Bias in Hiring

One of the most significant challenges in traditional hiring processes is the presence of biases. AI algorithms, if designed and implemented thoughtfully, have the potential to reduce unconscious biases by focusing on objective criteria. This promotes diversity and ensures that the best candidates are selected based on merit.

Transparent Communication

Communicate the use of AI in the hiring process and explain how it contributes to fair and unbiased decision-making. Provide information about the specific AI tools and algorithms used, emphasizing their role in evaluating skills and qualifications.

Explainable AI (XAI)

Implement AI models that are explainable and transparent. This helps recruiters and candidates understand the factors influencing hiring decisions. XAI enables organizations to identify and address biased patterns more effectively.

Bias Mitigation Techniques

Employ bias mitigation techniques, such as re-sampling, re-weighting, and adversarial training, during the development of AI models to reduce bias in predictions. These techniques can help balance underrepresented groups and minimize disparate impact.

ISBN:978-93-91930-84-4

Feedback Loops with Human Review

Establish feedback loops that involve human reviewers who can assess the decisions made by AI algorithms. Human intervention can help identify and correct biases that may not be apparent to the algorithm.

Diversity in Development Teams

Ensure diversity within the teams responsible for developing, testing, and deploying AI-based hiring systems. Diverse perspectives can help identify and address biases that may go unnoticed by a more homogenous team.

Regular Training for AI Users

Provide regular training for recruiters and other users on the proper use of AI tools and potential biases. This ensures that users are aware of the limitations and possibilities of the technology and can make informed decisions.

Legal and Ethical Compliance

Ensure that AI-based hiring practices comply with legal and ethical standards related to equal employment opportunity and anti-discrimination laws. Regularly review and update hiring practices to align with evolving regulations.

2.7 Continuous Learning and Improvement

AI systems are capable of continuous learning and improvement. As they process more data and encounter diverse scenarios, they become better at identifying patterns and predicting successful hires. This adaptability ensures that the hiring process evolves and stays relevant in a rapidly changing business environment.

Training and Support

Offer resources and support for candidates to familiarize themselves with the AI tools used in the hiring process. This can include tutorials, FAQs, or even virtual assistance.

Continuous Improvement

Regularly assess and update your AI algorithms to ensure they align with your organization's evolving values and goals. Collect feedback from candidates and recruiters to identify areas for improvement in the AI-based hiring process.

Track key performance metrics to measure AI-ATS effectiveness

To successfully implement AI and ATS in talent acquisition, it's important to continuously evaluate its impact. Start by defining key performance metrics such as time-to-hire, quality of hires, candidate satisfaction, and cost per hire. Regularly analyze these metrics to assess the effectiveness of your AI-ATS implementation and

ISBN:978-93-91930-84-4

identify areas for improvement. By tracking these metrics, you can measure the return on investment of your technology investment and make informed decisions to optimize your talent acquisition strategies.

Get feedback from recruiters, hiring managers, and candidates to improve your process.

One of the most important steps to ensure the success of an AI-powered Applicant Tracking System (ATS) is to gather feedback from recruiters, hiring managers, and candidates. This feedback can provide valuable insights into their experience with the system and help identify areas of improvement, pain points, and opportunities to enhance the user experience.

Maximize the potential of AI and ATS technologies by staying up-to-date. It's essential to keep up with the latest advancements in AI and ATS, as new technologies and features are introduced regularly. Attending industry conferences, staying updated on the latest trends, and engaging in continuous learning can help you maximize the potential of AI and ATS in your talent acquisition efforts. By staying ahead of the curve, you can leverage cutting-edge technologies and techniques to attract, evaluate, and hire top talent, giving you a competitive advantage in the recruiting process.

2.8 Remote Hiring and Global Talent Pool

With the rise of remote work, organizations are no longer limited to hiring talent within a specific geographic location. AI facilitates the identification of top talent from a global pool, opening up opportunities for companies to build diverse and geographically dispersed teams.

Enable real-time collaboration among hiring team members through the ATS

Collaboration is key when it comes to talent acquisition, and with the help of an AI-integrated ATS, it's easier than ever to bring everyone together. By providing a centralized platform for sharing candidate profiles, exchanging feedback, and collaborating in real-time, this innovative tool streamlines communication and ensures that everyone is on the same page throughout the hiring process. With an AI-powered ATS on your side, the possibilities for finding the perfect candidates are endless.

Facilitate efficient communication, feedback, and evaluation of candidates

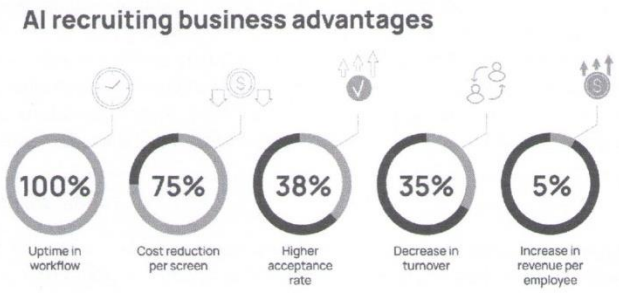
By utilizing an AI-powered Applicant Tracking System (ATS), you can create a more streamlined and constructive hiring process. With automated notifications and reminders, the system ensures that all team members stay on track and provide timely feedback, improving communication between the hiring team and candidates.

Centralize candidate information, notes, and evaluations for better decision- making

An AI-powered ATS can be a game-changer when it comes to recruitment. By centralizing all candidate-related information, such as resumes, applications, interview notes, and evaluations, it puts everyone on the same page, reducing the chances of miscommunication or duplication of effort.

ISBN:978-93-91930-84-4

3. The Business Perspective of AI Hiring



Source: Index.dev

AI in recruiting offers several business advantages that can streamline the hiring process, improve decision-making, and enhance overall efficiency. Here are some key advantages:

3.1 Efficiency and Time Savings:

- AI can automate time-consuming tasks such as resume screening, allowing recruiters to focus on more strategic aspects of the hiring process.
- Chatbots powered by AI can handle initial candidate interactions, answering common questions and providing information, saving recruiters time.

Cost Savings: Automated processes reduce the need for manual labour, leading to cost savings in terms of time and resources.

Improved efficiency in the hiring process can result in faster time-to-fill roles, minimizing revenue losses associated with unfilled positions.

Scalability: AI-powered tools can handle large volumes of data and tasks simultaneously, making them scalable for organizations with varying recruitment needs. This scalability is particularly beneficial during periods of high hiring volume or expansion.

3.2 Enhanced Job Matching and Skill Assessment

AI can assess candidates' skills more effectively by analyzing resumes, portfolios, and other relevant data, ensuring a better match between candidates and job requirements. Skill-based assessments through AI tools help in identifying candidates with the right expertise for specific roles.

3.3 Risk Mitigation

AI tools can identify potential red flags or discrepancies in candidate information, reducing the risk of hiring candidates who may not be a good fit for the organization.

ISBN:978-93-91930-84-4

4. Recruiting with AI: Potential Risks and Drawbacks

While AI offers transformative eventuality, it's not without its challenges. One of the most burning enterprises is data sequestration. As AI systems collect and process vast quantities of seeker data, there's an essential threat of breaches or abuse. also, algorithms, if not trained duly, can immortalize impulses, leading to illegal hiring practice Moreover, algorithms, if not trained properly, can perpetuate biases, leading to unfair hiring practices. Ethical dilemmas also arise, particularly when it comes to the balance between automated decision-making and human judgment. Recruiters must be aware of these pitfalls and approach AI in hiring with caution.

4.1 Ethical Considerations

Ethical enterprises arise when AI services are used in reclamation. Organizations must precisely navigate sequestration issues, ensuring that seeker data is handled securely and transparently. There's a need to gain informed concurrence from campaigners and misbehave with data protection regulations. also, the use of AI should be aligned with ethical norms, ensuring fair treatment, equal openings, and non-discrimination throughout the hiring process

4.2 Bias in AI-Powered Recruitment

One of the most significant challenges with AI in reclamation is the eventuality for bias. AI algorithms calculate on literal data to make prognostications, and if that data contains impulses, it can immortalize and amplify them in the hiring process. For illustration, if the literal data favors certain demographics or educational backgrounds, the AI system may inadvertently distinguish against underrepresented groups. It's pivotal to regularly cover and review AI systems to describe and alleviate bias, ensuring fair and inclusive hiring practices.

4.3 Reliability and Accuracy of AI in Recruitment

The reliability and accuracy of AI systems pose another challenge in recruitment. While AI can analyze large volumes of data quickly, there is a risk of false positives and false negatives.

5. AI Recruitment: Responsible and Futuristic Approach

As we embrace the future of recruitment, let us remember that the power of AI lies in complementing human decision-making, not replacing it. By prioritizing privacy and informed consent, we can ensure that candidates remain at the center of the hiring process. Let us navigate the challenges with continuous learning and emerge stronger, harnessing the true potential of AI in recruitment.

- **Transparency and Explainability:** To ensure fairness and openness in the hiring process, it is important for employers to communicate clearly with candidates about the use of AI and the factors taken into account for decision-making.
- **Diverse and Representative Data:** To promote fairness and accuracy in AI, it is crucial for organizations to use diverse and representative training data. By regularly evaluating and updating data sets, we can ensure that our AI algorithms are not reinforcing any biased patterns. Together, we can build a more equitable and inclusive future with the help of AI technology.

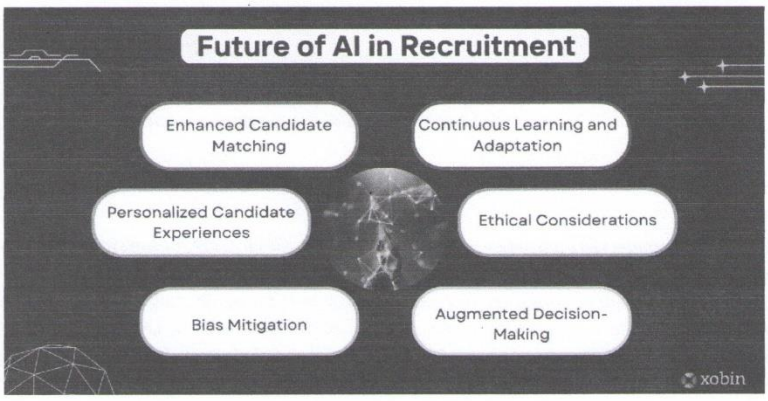
ISBN:978-93-91930-84-4

- **Regular Auditing and Monitoring:** It is important to conduct regular audits of AI systems in order to identify and address any biases or inaccuracies that may be present. Additionally, continuous monitoring of the performance and outcomes of AI algorithms can help to identify areas for improvement and ensure that the system is functioning optimally. By proactively taking these steps, we can build more effective and reliable AI systems that serve us better.
- **Human Intervention and Evaluation:** To ensure a successful recruitment process, it is imperative to find the right balance between relying on AI automation and leveraging human judgment. This approach enables recruiters to comprehensively evaluate candidates by considering both their qualifications and contextual factors that may be overlooked by AI.
- **Ongoing Training and Education** to help recruiters and HR professionals make the most of AI in recruitment, it is essential to provide them with training that focuses on ethical considerations, bias mitigation techniques, and responsible use of AI- generated insights. This will help them leverage the capabilities of AI while also staying aware of its limitations and ensuring fairness and transparency in the recruitment process.

Organizations can successfully harness the power of AI in their recruitment processes while ensuring fairness, accuracy, and ethicality by addressing the associated challenges and implementing appropriate measures. A responsible and thoughtful approach toward AI implementation will enable organizations to make informed hiring decisions that promote diversity, equity, and inclusion, thereby leveraging its benefits effectively.

6. The Road Ahead to AI Recruiting

AI is the future of recruitment and it has the potential to completely transform the hiring practices. Nevertheless, we must prioritize AI privacy and ensure ethical candidate recruitment while integrating these tools. With proactivity and a constant focus on staying informed, adopting best practices, and evolving with technology, we can navigate the challenges and unlock the full potential of AI in hiring.



Source: Xobin

ISBN:978-93-91930-84-4

6.1 Enhanced Candidate Matching

AI algorithms will analyze a broader range of data points to match candidates with job requirements, resulting in better-fit hires and reduced hiring time.

6.2 Personalized Candidate Experiences

Recruiters can use AI-powered chatbots and virtual assistants to provide personalized guidance and information to candidates, creating an engaging and positive experience throughout the recruitment journey.

6.3 Bias Mitigation

As part of their commitment to inclusivity, organizations will prioritize the development of AI systems that can effectively identify and address biases. By utilizing advanced algorithms and a diverse range of data, AI-powered recruitment tools will facilitate fair and unbiased hiring practices.

6.4 Continuous Learning and Adaptation

AI systems have the remarkable ability to learn and adapt based on feedback and changing data sets. This continuous improvement journey leads to increased accuracy and better alignment with organizational needs and preferences, powering the future of innovation and progress with every step.

6.5 Ethical Considerations

As we move forward, it's important to prioritize ethical AI in recruitment. Organizations recognize the need for transparency, accountability, and responsible use of AI. We understand concerns related to data privacy, security, and algorithmic bias, and we're committed to addressing them. By working together, we can create a safer and more equitable future.

6.6 Augmented Decision-Making

AI-powered insights are revolutionizing the recruitment process, empowering recruiters to make more informed decisions while still maintaining a human touch in evaluating candidates.

7. Conclusion

In conclusion, the integration of Artificial Intelligence (AI) in talent acquisition has emerged as a transformative force, providing organizations with a competitive edge in the dynamic landscape of hiring. Smart hiring, empowered by AI technologies, brings efficiency, objectivity, and innovation to the recruitment process. One of the key advantages of AI in talent acquisition is its ability to sift through vast amounts of data, swiftly identifying top candidates and streamlining the initial stages of the hiring process. This not only saves time but also ensures that recruiters can focus on more strategic and human-centric aspects of the hiring journey.

Despite these advantages, it is essential to acknowledge the ethical considerations and potential challenges associated with AI in hiring. Issues such as algorithmic bias and the need for transparent decision-making

ISBN:978-93-91930-84-4

processes must be addressed to ensure that the benefits of smart hiring are realized without compromising fairness.

In conclusion, the smart integration of AI technologies in talent acquisition provides a competitive edge by optimizing processes, enhancing objectivity, and leveraging predictive analytics. As organizations navigate the evolving landscape of recruitment, embracing AI for smart hiring can foster a more strategic and effective approach, ultimately shaping a workforce that propels the company toward sustained success.

References

1. Davenport, T. H., Harris, J., & Shapiro, J. (2018). Competing on talent analytics. Harvard Business Review, 96(10), 52-58.
2. Smith, J. (2020). " The Impact of Artificial Intelligence on Talent Acquisition." Journal of Human Resources Technology, 15(2), 45-60
3. Sharma, R., & Gupta, S. (2017). "Artificial Intelligence in Recruitment: A Comprehensive Review." International Journal of Human Resource Management, 22(1), 33-50.
4. Bersin, J. (2018). AI for HR: 6 trends to watch. Deloitte Insights. Retrieved from https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2018/ai-for- hr.html
5. https://xobin.com/blog/artificial-intelligence-ai-in-recruitment-how-it-helps-in- recruiting/
6. https://www.spiceworks.com/hr/hr-strategy/articles/how-to-succeed-with-ai-in- recruiting/
7. Society for Human Resource Management (SHRM). (2020). Artificial Intelligence in HR: A Primer. Retrieved from https://www.shrm.org/hr-today/trends-and- forecasting/research-and-surveys/Documents/AI-in-HR.pdf
8. Bapna, R., & Umyarov, A. (2015). Crowd sourcing contests: An overview and implications. Information Systems Frontiers, 17(1), 1-16.

ISBN:978-93-91930-84-4