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An Insight into the History of Travels in Ancient India

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Travel has always had a fascination for mankind from the earliest times. It may rightly be called as an ancient phenomenon. The man wandered from one place to another place in search of food and shelter in ancient period of history. All travels are not tourism but all tours are travels. Historical records have amply reflected that people travelled for motives other than trade, commerce and religious rites in the ancient world.[1] The man had the desire to explore the unknown land and seek new experiences. Further knowledge, health, curiosity and health were other motivators for undertaking travels. In the case of India, travels were undertaken for religious and business purpose during the earliest periods of her History.

Travel was considered as a tool of cultural enrichment. Scholars in search of knowledge, missionaries in their zeal for propagation of their philosophy and pilgrims in the cause of their faith continued to travel from and to India facing all the dangers and difficulties in a spirit of adventure and joy.[2] The Atharva Veda sings praises of the mother country as the land of brave and the pious, of commerce and trade, of science and art, of sacrificial rites and sacred pleasures, and of virtue and greatness.[3] India has always carried a distinguishing feature of pilgrimage to sacred places scattered in different region of the country. This is known as the institution of 'Tirthatan'. Rivers, mountains, cities and places associated with saints, sages, founders of religions and cults assumed sanctity. Further these places had the features of scenic beauty and known for its art and architecture. Varanasi and the snow-clad Himalayas in the north and Kanchipuram in the distant south, Jagannath Puri on the east coast and Dwarika in the west, with innumerable places interspersed throughout the country, came to be loved and visited because of their scenic charms, temple cities rich in art, architecture and association of pious men and scholars.

The Vanparva of Mahabharat gives the exhaustive list of places which continue to attract people from all parts of the land throughout the course of many centuries. The number of such places of Hindu pilgrimage, according to tantra Chudamani is fifty two while another work Devi Bhagavata enumerates one hundred and eight.[4] Further India has been a cradle of heterodox sects as well. This has led to the centers of pilgrimage associated with Buddhism, Jainism and other sects developed all over the country. Hence in India Tirthatan visit to a holy place for religious purpose constitutes the major segment of domestic tourism in India even today. We know that Adiguru Shankaracharya had set up four Mathas in four directions of the country in 7th century. Since then it has become an established practice to visit these Mathas in a life span of a man following Hindu faith.

The visits to these centers of pilgrimages as a part of religious duty made wide travelling a national habit and promoted inter-communication between different parts of the country.[5] The common ways of thought and life, resulting in common ideals and institutions produced that cultural unity which knit the whole country into a single organism and deep knowledge of the land.[6] Apart from the travelling to such pilgrimage centers, Indians have a deep faith to visit the congregational fairs. One such fair is that of Kumbha Mela. This is easily the largest religious congregation in the world which attracted thousands of persons in the period from all walks of life. Rooted in the hoary past, the Kumbha Mela was conceived and

organized as a socio-spiritual parliament and it was held along the holy waters of Triveni i.e. confluence of Ganga, Yamuna and Saraswati at Prayag, of the river ganga in hardwar, the Kshipra in Ujjain and Godavari in Nasik.[7] The famous Chinese traveler Huien Tsang, who visited India between 624-645 A.D., has given one of the earliest accounts of the Kumbha at Prayag.

This is to be noted that travel in India in ancient times was not only carried within the frontiers of the land but it expanded beyond the seas to the countries in the west and to Greater India in the Far East.[8] Discoveries at Mohenjodaro and other Indus valley sites have shown that Harappan people had far flung commercial contacts by land and sea. Their seals, articles and art motifs havebben found in many ancient sites in West asia and egyptviz., in Ur o the Sumerians, in a pre- sargonid inscriptions at Kish, Tell amarna and other places in Mesopotamia, in susa of the Elamites and in Dilmun, the island of Bahrein in the Persian Gulf.[9] Although the voyage is indicated in Rigveda, but positive descriptions are found in Jataks. In the early centuries of Christian era maritime trade became most vigorous, especially with the West, where the Roman Empire demanded the luxuries of the East in great quantities.[10] The largest Indian ship known to Pliny, who obtained some accurate information about the maritime trade of Indian Ocean, measured 3000 amphorae or only seventy five tons. In the 5th century Fa-hsien who travelled from Ceylone to Java in a ship carrying 200 people, which is the largest complement of passengers and crew attested in a reliable source relating to early India.[11]

The main requirements of west were spices, perfumes, jewels and fine textiles but lesser luxuries such as sugar, rice and ghee were also exported as well as ivory, both raw and worked. In return for her export India wanted little but gold. There is good evidence that subjects of the Roman Empire, if not actual Romans settled in India.[12] There are records of several embassies from Indian kings to the Caesars. With the fall of the Roman Empire, Indian trade developed with the Arabs and with China, by sea, from South India. The first contacts with Burma, Malya and the islands of Indonesia appear to have been made by the time of the Buddha.[13]

India had developed strong linkages with the countries of Central Asia, china and Tibet and the impression of Indian culture was easily represented in their arts, philosophy and literature. The great Mauryan Emperor Ashoka had sent emissaries to Sri Lanka, Burma and South-East Asia for the spread of Buddhism. Number of Indian scholars visited Tibet and China and of the many Chinese travelers who visited India and hve left valuable records of their travels, the names of fahien, Huien Tsang and Itsing are well known.[14]

The Indian Universities and seats of learning attracted large number of students from the countries of Asia and Africa. With the growth of Buddhism the monasteries emerged as Educational and learning centres.[15] Takshsila (4thC. A.D.-10thC. A.D.) was the greatest educational centers of Asia and drew large number of students from all parts of the country and outside. The educational establishment at Varanasi had as many as 500 students and a number of teachers. According to Huien Tsang, the institution at Nalanda provided free training for no less than 10,000 students drawn from all over the country and abroad.[16] The vast extent of cultural influences which radiated from India, extending from Central Asia in the north to Indonesia in the south, from the border lines of Persia in the west to china, Japan and whole of South-East Asia could have been possible only because of the tradition of, and eagerness to travel and the consequent facilities, howsoever, modest available for it.[17]

It is quite clear that Indians have the tradition of travelling since ancient period of thei history. Starting their journey as a trader and for this purpose they were required to

travel by land or sea to the far-flung areas of west Asia and Mediterranean. This found a force for travelling when the Indian religious sects ordained for undertaking of pilgrimages. All the religious sects advocated this way of travelling. Further travel towards Orient was considered a source of fortune and to these end travelers visited to India in search of fortune. Another branch of knowledge seekers and scholars rushed into and from India to gain knowledge of rich Indian religions, scriptures and culture.

References :-

1. Tewari, S.P., Tourism Dimensions, Delhi, 1994, p. 2
2. Singh, Ratandeep, Dynamics of Historical Cultural and Heritage Tourism, New Delhi, 2000, p. 14
3. Tewari, S.P., op. cit., p. 4
4. Ibid
5. Singh, Ratandeep, op. cit., p. 15
6. Ibid
7. Tewari, S.P., op. cit., p. 5, Quoted in Munshi, K.M., The Kumbha, Bhartiya Vidya Bhawan, Bombay, 1961
8. Ibid
9. Mahajan, V.D., Ancient India, New Delhi, 1994, p. 74
10. Basham, A.L., The wonder that was India, Calcutta, 1995, p. 228
11. Basham, A.L., op.cit. , pp. 228-29
12. Ibid, p.232
13. Tewari, S.P., op. cit., p. 6
14. Ibid
15. Shrivastava, K.C., Pracheen bharat ka Itihaas tatha sanskriti, Allahabad, 2000, p. 773
16. Tewari, S.P., op. cit., p. 7. Quoted in Basham, A.L., The Wonder that was India, Fontana books, Delhi, 1967, pp. 166-67
17. Ibid, p. 7, quoted in Upadhyaya, B.S., Brihattar Bharata, Delhi, 1981

A Study on Coaching Facilities Provided To Players of Madhya Pradesh by Directorate of Sports and Youth Welfare Department

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A study was conducted by the researcher regarding the coaching facilities provided to the players of Madhya Pradesh by the Directorate of Sports and Youth Welfare department. A total of seventy-five sports administrators were selected for the study from different part of the state. The questionnaire used for the study was developed by Prasad (1994) and only a part of the questionnaire was utilized for this study. The findings of the study show that 4% administrators thought that the coaching facilities were excellent, 29.3% of the total administrators thought that coaching facilities were good, while 54.7 % administrators thought that the coaching facilities were fair enough. The rest 12% administrators felt that the coaching facilities provided to the players were poor.

Introduction

Development of sports takes place only when the training provided to the players are of a standard quality. Even if you develop in every aspect of sports such as funds, infrastructure, diet etc. and you lack the proper coaching facilities, then development of sports seems to be far from the sight. To develop a sports in a particular region, the first and foremost thing is to strengthen the coaching facilities in the area. Without proper coaching facilities prosperity of sports or the players who plays the sports is impossible.

It is the duty of the department of sports of any government to ensure that the coaching facilities be of good qualities in their region if they want to prosper in sports. In Madhya Pradesh, the duty is assigned to Department of Sports and Youth Welfare to look after the sports in the state. The office of the department is situated in Bhopal.

Method

A total of seventy-five sports administrators were randomly selected for the study. The questionnaire used for the study was developed by Prasad (1994). The researcher herself travelled to different parts of the state to collect the data with the help of the questionnaire.

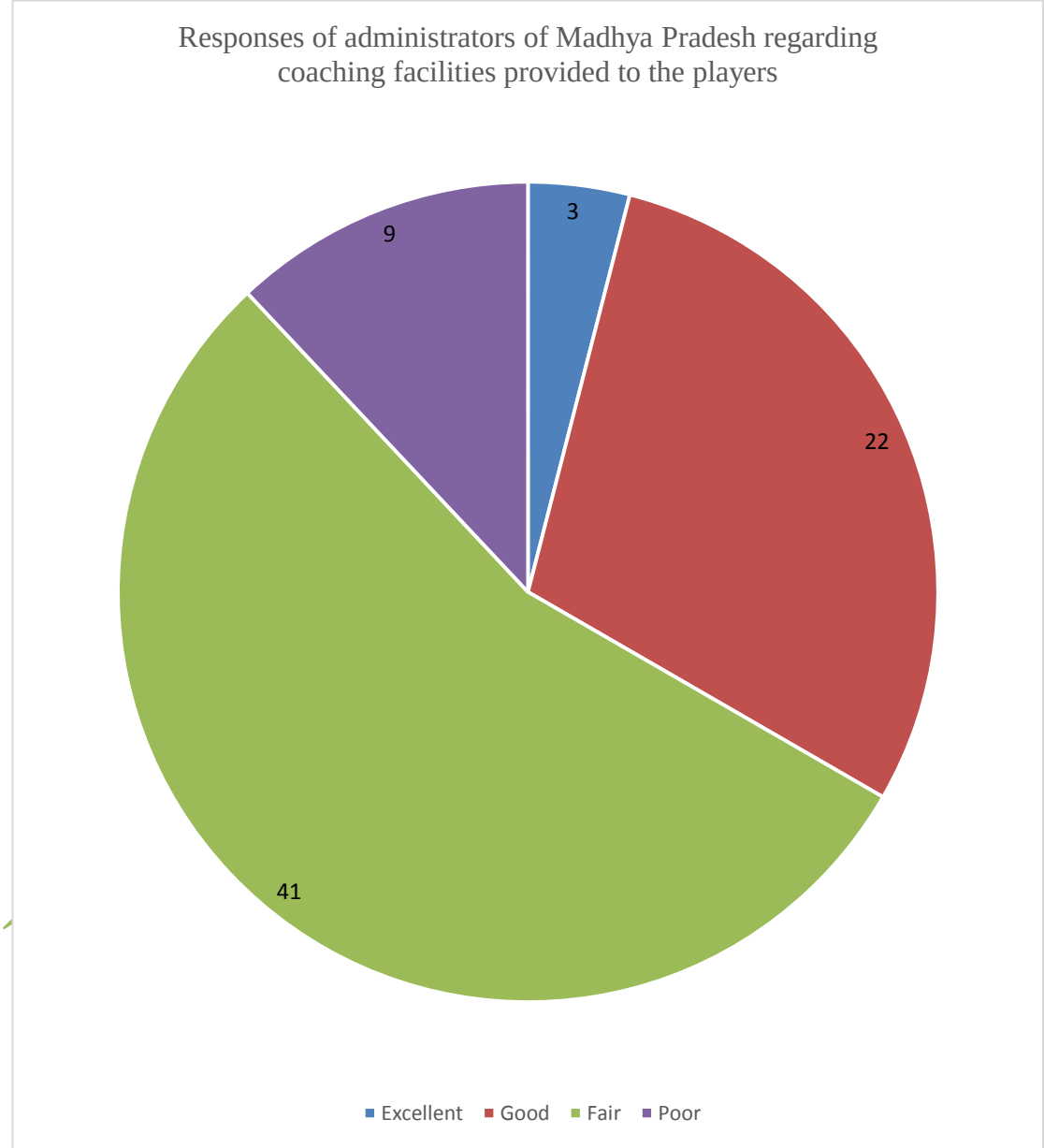
Results and findings of the study

Table

Responses of administrators of Madhya Pradesh regarding coaching facilities provided to the players

		Position of coaching facilities provided by state to the players			
		Excellent	Good	Fair	Poor
Total	Count	3	22	41	9
	Expected Count	3.0	22.0	41.0	9.0
	%	4.0%	29.3%	54.7%	12.0%

Overall, 4% administrators of Madhya Pradesh had views that the coaching facilities provided to the players was excellent, 29.3% administrators of Madhya Pradesh had views that coaching facilities was good, 54.7% administrators of Madhya Pradesh had views that coaching facilities was fair and another 12% administrators felt that the coaching facilities provided to the players was poor.



Discussion of findings and conclusions : From the result it can be seen that only 33% administrators admits that the coaching facilities provided to the players are good or excellent while rest of administrators are of the view that the coaching facilities provided to the players are just fair or poor. The coaching facilities should be excellent to get the expected results from the players. If the coaching facilities are not good, then the results should not be expected from the players too. To get a better result from players, the coaching facilities should be improved. The number of qualified coaches should be increased. More and more

sports loving should be encouraged to take up sports coaching as a job.

References :

Joseph, Augustion "A Study of Physical Education on Programme and Facilities of Kattapana Educational" Unpublished Master's Dissertation, submitted to Amravati University. 1987.

Nordly, L. Cal. "A study of Physical Education Facilities and Equipment of all Related Public Secondary School of MD\TNESOT A." Research Quarterly: 10; 1939, P. 122

Deb, Sujit. "Survey of the Major Sports Facilities Busting in Higher Secondary Schools of Tripura" Unpublished Master‟s Dissertation, Submitted to Amravati University, 1987.

Debes Chandra Sarkar, "The Survey of Facilities and Equipment‟s of Sports in Engineering College in West Bengal," Unpublished Master's Thesis, Jiwaji University, 1982, P.47.

Ghuman, Singh Kanwarji, "A Comparative Study of the Programme and Facilities of Physical Education ill Model High Schools and Government High Schools of Patiala District in Punjab", Unpublished Master's Dissertation Submitted to Amravati University, 1990.

Guy Willian Neson, "An Evaluation of Physical Education in Public High School of Louisiana" Completed Research ill Health, Physical Education and Recreation: 4, 1962, P.37.

Harlacher, E. "Physical Education Facilities for a Junior college" Journal health, Physical Education and Recreation: 39, February 1963, Pp. 22-23.

James P. Brosman, "A Survey of Physical Education in Secondary for Boys in United States". Completed Research in Health, Physical Education and Recreation: 4.1962, p.64.

Jose M. Dertela Saurez, "To Assess the Physical Education Programme in Selected Higher Secondary Schools in Puerto Rieo" Dissertation Abstracts International: 35, March 1975, pp - 5908A- 5909A.

Joshi, T. M. "Study of the Physical Education Facilities Available in the Junior College of Rural and Urban Areas of Buldhana District" Unpublished Master's Dissertation, Submitted to Amaravati University, 1987.

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Representations of Rāṣṭrakūṭa kings as Great Warriors: An Inscriptional Study (c. 8th to 10th Century A.D.)

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The aim of the present paper is to locate the nature of Political power and authority of Rāṣṭrakūāṭa kings, and the extent of sovereignty exercised by them on the basis of their epigraphical records. In this paper I will try to explore idea of the king's authority by studying various depictions used for him in the records, the depiction of king as great warrior and the other political figures etc. The representations of the king as a great warrior and threat for the enemies were usual in early medieval Indian epigraphs. In this paper, I will try to explore the nature of such depictions in inscriptions.

Before embarking on the analysis of the various depictions by the Rāṣṭrakūṭa dynasty, it is essential for us to first know the background against which this dynasty seen to have emerged.

Political Background of Rāṣṭrakūṭas

The period from 8th century to 10th century A.D. represents a glorious and significant era in the history of Deccan. Rāṣṭrakūṭas played a dominant role during this period. They not only influenced the politics to a great extent but also cultural life of the region. In the 8th century, they did not enter suddenly into the political sphere but were already noticeable during the earlier time period. There were several minor Rāṣṭrakūṭas (Rāṣṭrakūṭas of Mānapūra, Rāṣṭrakūṭas of Berar and Rāṣṭrakūṭas of Mālkhēḍ)[1] families with minor significance ruling in various parts of the Deccan during the Vātāpi Cālukyan period, broadly from 6th to 8th century A.D.[2] During the period from 6th to 7th century A.D, three ruling families belonging to Rāṣṭrakūṭas are known from various records. The first were the Rāṣṭrakūṭas of Mānapūra, the second were the Rāṣṭrakūṭas of Berar, and the third were the Rāṣṭrakūṭas from Malkhed. There are quite a few controversies about the original home of the Rāṣṭrakūṭas. A.S. Altekar was of the opinion that Dantidurga belonged to Kannada speaking areas, with the centre at Laṭṭalūra, the modern Laṭūr, because they used canarese script and encouraged its development and also in most of inscriptions (belongs to minor branches) they are described as lords of Laṭṭalūra, the place identified with Laṭūr in Bedar in the Canarese region.[3] Bhandarkar, Mirashi and others hold the view that the dynasty originally came from Maharashtra, contended that the Rāṣṭikas (term mentioned in the inscriptions of minor branches of the dynasty) were very likely a tribe of Maharashtra and possible identical with Raṭṭas who from the remotest time held political supremacy in the Deccan. He further argues that the Rāṣṭrikas called themselves Mahāraṭṭhis like the Bhojas who called themselves Mahābhojas.[4] Mirashi's identification of Mānapura with Mān, the chief town of the Mān taluka of the Satāra district in southern Maharashtra, seems to have received general acceptance. But, the question of their original home is still unclear. As our main focus is on state formation during the Rāṣṭrakūṭa dynasty, we focus on the time of Dantidurga and his successors. This is referred to as the main branch of the dynasty, with its centre at Malkhed, ruling from 8th century onwards. It's quite clear that even Dantidurga himself ruled as a feudatory of the Cālukyas, and it was only gradually that the Malkhed branch of the lineage group gained full sovereignty.

After his rise as an independent sovereign power, Dantidurga (c. A.D. 753-756) involved himself in expansion activities. The Ellora inscription states that Śrisailadesa (Kurnool District) was conquered by him.[5] But his claim of conquering this region relates to his

participation in an earlier expedition against Kāñci led by his master Kīrtivarman during 743 A.D. From this time period, the territory south of the Bhima River was still under Cālukya dominance, but the modern Madhya Pradesh and central and southern Gujarat came under his rule. Before the elimination of Cālukyan authority, Dantidurga died in A.D. 756. After the death of Dantidurga in A.D. 756, Kṛṣṇa I become the successor of the throne. He bore the titles *Sūbhatuṅgā* (Conspicuous in good fortune) and *Akālavarsha* (Rainer of desires and favours even when unexpected). In 757 A.D., Krishna I inflicted a crushing defeat eliminating Vātāpi Cālukya power.[6] He extended his territory to the Koṅkaṇa and appointed Sanāpulla as his feudatory, and Sanāpulla became the founder of the Silahāra dynasty and they remained loyal to the Rāṣṭrakūṭas till their decline in the late 10th century A.D. We can say that with these victories, the Rāṣṭrakūṭas became a very strong power in the Deccan. Kṛṣṇa I, also occupied Gaṅgavādi but allowed the Gaṅga chief to rule as his feudatory.

Govinda, the eldest son of Kṛṣṇa I, was appointed as Yuvarāja in 774 A.D[7]. A civil war ensued between the two brothers and Dhruva achieved success and occupied the throne in 780 A.D. and bore the titles *Dharavarsha* (from whom profuse blessings and favours rain down) and *Nirūpama* (incomparable). After occupying the throne, Dhruva marched against all those territories whose rulers supported his brother in civil war, such as the Gaṅgas, Pallavas, Gūrjaras, Pratiharas and Gauḍas. After his expedition to the south he defeated the Gaṅga power and occupied Gaṅgawāḍi and gave his son to govern. Than Rāṣṭrakūṭa armies moved towards river Narmada and occupied Malwa. After that, they proceeded towards Kanauj. Dhruva defeated Vatsaraja and Gauda king Dharampala in the Ganaga Doab during 787 A.D.

Dhurva was succeeded by his son Govinda III, who held the epithets *Prabhutavarsha* (whom blessings and favours rain down), *Jagattunga* (pre-eminent in the world), *Kirtimarayana* (famous as a god Narayana) etc. Govinda III invaded Gurjara, Malwa, Vengi, Kalinga, Kanauj, Kosala, Chola, Pandya, Pallava and even Srilanka. During his rule Rāṣṭrakūṭa Empire extended in all the four directions. The Kaveri and the Narmada delimit its southern and northern boundaries. It stretched in the west into Gujarat as far as the Arabian Sea, and to the tracts of Warangal and Kadapa in Andhradesa on the east.

After the death of Gōvinda III, Amōghavarsha I succeeded the throne in 814 A.D. During the early years of his rule, the elder brother of Gōvinda played the role of a regent. Sivamara, the Ganga ruler, in 816 A.D. rebelled but was soon suppressed by Rāṣṭrakūṭa armies. The complex relation between the Rāṣṭrakūṭa and Gaṅgas ended when they entered into a matrimonial relationship. Chandrabbalabba, the daughter of Amōghavarsha I, was given to the grandson of Rajamalla I, Butunga in 860 A.D. Akalavarsha, the successor of Dhruva I faced difficult time and his son Dhurva II had to face several attacks from Gurjara forces. Bhoja, King of Kanauj, attacked northern Gujarat and Kathiawar but did not invade Rāṣṭrakūṭa territory, though Dhurva II claims to have driven away the forces of Bhoja in 867 A.D.

After the long reign of 64 years Amōghavarśha died in 878 A.D., and his son Krishna II became the ruler of Rāṣṭrakūṭa dynasty. According to inscriptions of Cālukyas, Cālukya Bhima I re-conquered the Koravi region from Krishna II along with the Kanthika, the royal symbol of the Cālukya subordinate Kusūmayūdha of the Mudugoṅda line of Cālukyas. Cālukyan records such as the Mangallu grant of Danarnava (c. 956 AD)[8] and the Bayyaram Tank Inscription of Kākatiya Mailamba refers that Early Kakatiyas, namely Eriya Rāṣṭrakūṭas and his son Pindi Gunda were appointed by the Rāṣṭrakūṭas kings to defend their kingdom against the aggression from the east.[9] Vijayaditiya successful attacked the Gaṅgawaḍi and Nōlambavaḍi along with his forces overrunning the north eastern part of the Rāṣṭrakūṭa kingdom and capturing the forts of Chakrakuta, Kiranapura and Achalapura during 888 c. A.D.

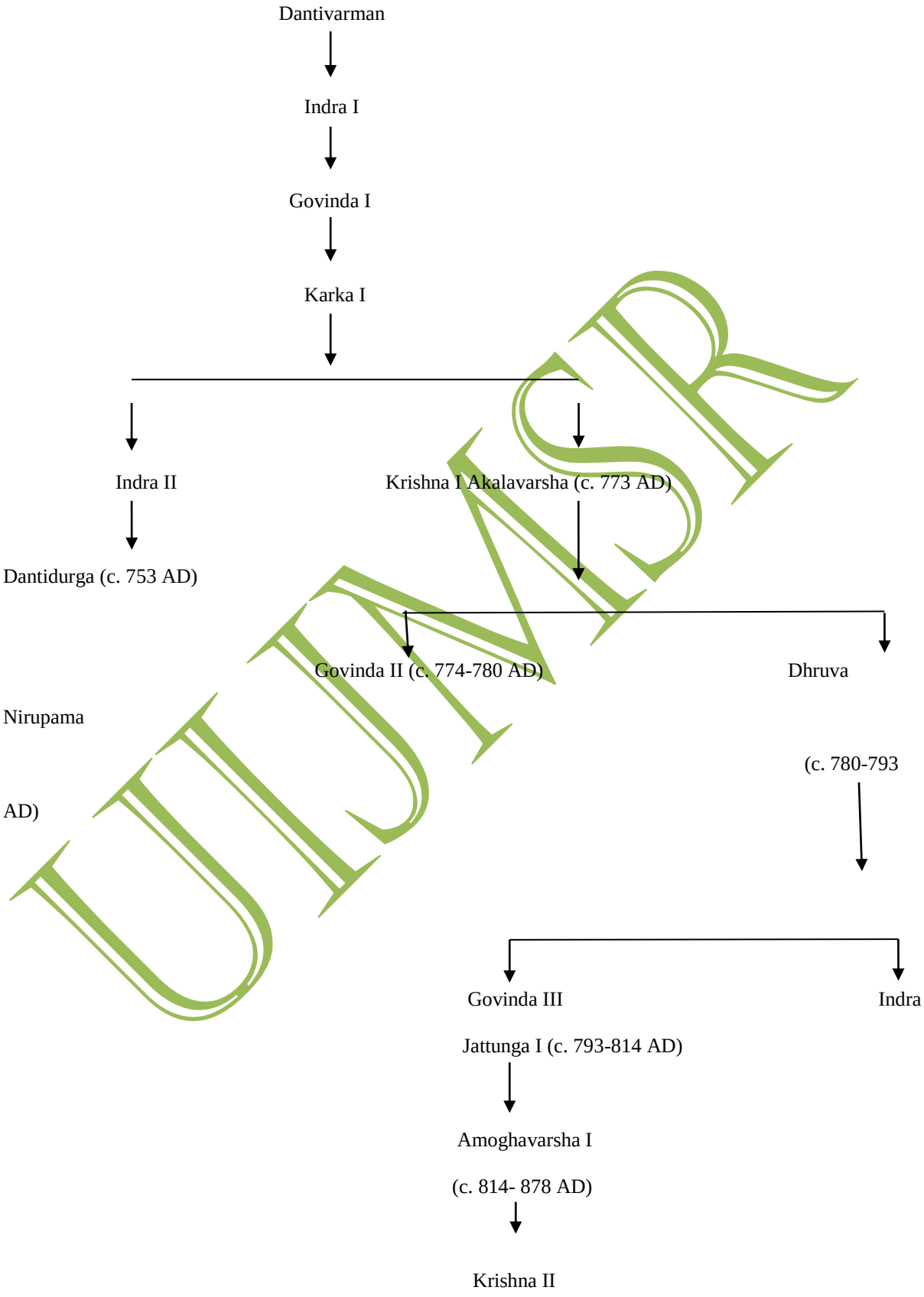
After Kṛṣṇa II, his grandson Indra III, succeeded him in 915 A.D. Reign of Indra III began with battle against the Paramāra chief Upēndrarāja, a

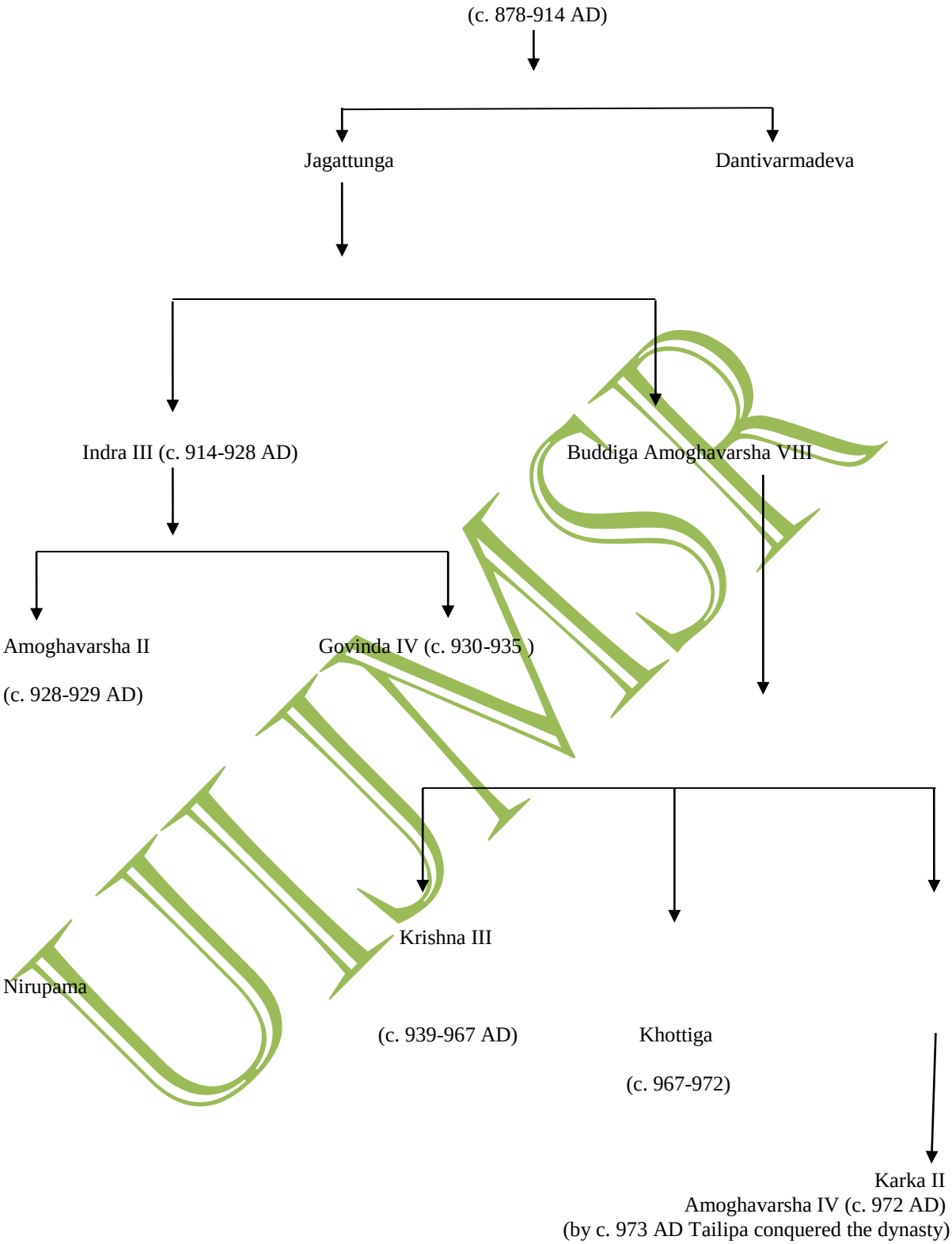
feudatory of the Pratīhāras who had made inroads into the Nasik region. Indra III marched towards Ujjain and there established a powerful army base. In 916 A.D., Indra III captured Kanauj and directed Narasiṁha, the Vemulavada Cālukya feudatory, to chase Mahipāla the king of Kanauj through the plains of Allahabad. Indra III gained great success in his northern wars. Soon after the return of the Rāṣṭrakūṭa forces, Mahipāla regained Kanauj. So just before the end of the 8th century AD, three great powers viz., the Pālas, the Gurjara-Pratihāras and the Rāṣṭrakūṭas were ruling different parts of India. The Pratihāra king Vatsarāja, one of whose known date is 783 AD., seems to ruled over considerable authority in Rājputāna and central India. While Vasarāja was laying the foundation of the future greatness of his family in west, the Pālas had established as a strong monarchy in Bengal in east.[10] While the Pratihāras and Pālas were fighting for an empire in northern India, a new power appeared on the picture. These were the Rāṣṭrakūṭas, who had already established their authority in Deccan, and were now trying to establish their supremacy in the north. As mentioned in Sanjan Copper Plate that king Dhruva crossed the vindhyas and inflicted a crushing defeat upon Vasarāja who fled across the dessert of Rajputāna.[11] Thus, the tripartite struggle began for empire between the Pālas, the Gurjaras and the Rāṣṭrakūṭas, which was the most important event in the political history of India during this time period. The main motive of the conflict seems to have been the possession of the imperial city of Kanauj. The first encounter took place between the Rāṣṭrakūta king Dhruva, the Pratihāra Vatsarāja and the Pāla king Dharmapāla.[12]Rāṣṭrakūtas achieved a complete triumph, but death of Dhruva (793 AD), ushered in a period of confusion in their kingdom.[13] Because of political confusion Rāṣṭrakūṭas lost their control over north and Dharamapāla defeated Indrāyudha and made his authority by almost all the important states of Northern India.[14]During the reign of Gurjara ruler Nāgabhaṭṭa, Rāṣṭrakūṭa king Gōvinda III attacked over north. Nāgabhaṭṭa fled away in fear and Gōvinda III over run his territory and proceeded upto Himālaya Mountains. But Rāṣṭrakūṭas disturbed by internal dimensions such as family disputes and revolution by governors and they took exit from tripartite struggle and the struggle for empire between three great powers of c. 9th AD had thus end in the reign of Indra III. Rāṣṭrakūṭas did not stay long in north India. Indra III returned to Deccan in 9th c. AD and the internal circumstances of the Rāṣṭrakūṭas proved extremely unfavourable for maintenance their rule in the north.[15]

After Indra III, Kṛṣṇa III reign (939-967 A.D.) played important role in Rāṣṭrakūṭa history. The most important political achievement of Kṛṣṇa III therefore, came not from his taking a hand in Vengi Cālukya affairs, but from his victory against the Cōḷa monarch and the Pandya and Kerala rulers. As referred in Atakur Inscription of Kṛṣṇa III that the fateful war against the Cōḷas took place at Takkolam[16] (north Arcot district) in which Cōḷa crown prince Rajaditiya lost his life.[17] Jura eulogy mentions that the western part of the Gurjara-Pratihāra kingdom and the Malwa region were subjugated by Kṛṣṇa III.[18]

Krishna III was succeeded by his brother Khottiga (967-972/73 AD.), but this period marked the beginning of the decline of the Rāṣṭrakūṭa dynasty. Paramāra attacked over the capital Manykheta of the Rāṣṭrakūṭas and king Khottiga died in this war. His son Kannaradeva succeeded him but we do not have any records about his reign. Finally, Talipa II, the descendant of Cālukyas of Vātāpi, successfully captured the capital (991-92 AD.) of Rāṣṭrakūṭas. Thereafter, the Cālukyas emerged as the dominant power controlling the region.

Genealogical Table of the Rāṣṭrakūṭas




(c. 878-914 AD)
Jagattunga
Dantivarmadeva
Indra III (c. 914-928 AD)
Buddiga Amoghavarsha VIII
Amoghavarsha II
(c. 928-929 AD)
Govinda IV (c. 930-935)
Krishna III
Nirupama
(c. 939-967 AD)
Khottiga
(c. 967-972)
Karka II
Amoghavarsha IV (c. 972 AD)
(by c. 973 AD Tailipa conquered the dynasty)

King as a Great Warrior: Depiction of Various Victories

The representations of the king as a great warrior and threat for the enemies were usual in early medieval Indian epigraphs. With this theme I will try to explore the nature of such depictions in inscriptions. The authority of the king was supreme. Besides the administrative head of the state, the king was the military leader of the kingdom and led continuous dynastic struggles for supremacy, and sometimes even for existence; thus the leadership of the king was of great importance. It is true that the king was helped by his various ministers and military officials in carrying out operations on the war field, but final and supreme decision as to strategy and diplomacy depended primarily on the king. Depiction of various successful wars in the epigraphical records, demonstrates a very clever method used by the *praśastikāras* to represent the king as a great warrior. To understand this representation, we need to analyse some important conquests of the Rāṣṭrakūṭas.

Talegaon Cooper Plates Inscriptions of Kṛṣṇarāja I (690 S.S.)[xix] refers,

"The Rājan, the glorious Dantidurga……in the battle against whom his enemies became terrified of him……he who forcibly with a few soldiers, conquered the endless forces of Karnāṭaka, which were invincible to others, and which were skilled in effecting defeats on the lord of Kāñchi, the king of Kērala, the Cōḷa, the Pāṇḍya, Śriharsha and Vajraṭa…….he without using any sharp weapons…….suddenly conquered Vallabha."[xx]

Another inscription called Bhandak Plates of Kṛṣṇarāja I (694 S.S.)[xxi] mentions that,

"There was a king called Gōvindarāja ……a royal king among the kings…….whose fame reached to the end of the regions and who pure of conduct, lifting his scimitar and facing them,…….destroyed his enemies in battles, just as the lustrous moon……in the battles with this lion (Dantidurga) of the martial field the affrighted elephants which were his enemies having pulled up by the roots the posts ……shame……..have absconded, no one knows where. ……before the bursting forth of the sprouts of his prowess and his fierce anger the turreted fortresses of his enemies fall down along with their hearts."[xxii]

Samangad Copper Plate Grant[xxiii] (675 S.S.) refers, "There was a pure king Gōvindarājā, ……when his enemies heard his name uttered in the great battle, straight way three things belonging to them unseasonably faded away……the sword from their hands, the lustre from their countenances, and at the same time pride from their minds. ……Indrarāja, the protector of the earth……whose shoulders were stretched by the blows of the tusks of elephants and shone with juice of rut that flowed from their split open temples……who destroyed his enemies on the earth ."

Sanjan Plates of Amoghavarsha I (793 S.S.) refers, " the son of Nirupama, devoted to *tri varga* and diligent in duties……quickly fighting in battle and capturing all his wicked vassals like great bulls…… making his enemies submissive, he returned to the remaining part of the Rēvā. ……Amoghavarsha…….he stood up to destroy the haughtiness of the Dravila kings with his own arms, who were sleepless, anxious, and with minds distracted through deliberations…….he terrified the Kērala, Pāṇḍya and Cāḷūkyas kings……the Gaṅgas, who became disaffected through baseness, were bound down with fetters and met with death."[xxiv]

A Rāṣṭrakūṭa Grant of Kṛṣṇarāja II (832 S.S.) mentions, "Gōvindarāja, who was able to bear the burden of the earth, who resembled Pārtha[xxv], who like Pṛithu, knew how to distinguish between good and bad qualities, who was the cause of unequalled sorrow to the wives of irresistible enemies, and whose prowess was very widely known."[xxvi] Atakur Inscription of the Kṛṣṇa III (872 S.S.) refers, " Hail, Kṛṣṇarājā……a hero against wild

elephants…….a real fighter …….come upon the Cōḷa Rājāditiya……..and having fought and killed him at Takkōla." [xxvii]

So we have seen a number of instances of warfare were mentioned in the Rāṣṭrakūṭas inscriptions projecting the great warrior lineage of the rulers.

Conclusion : So, largely we have seen the king's role as a great warrior reflected in the epigraphs of the Rāṣṭrakūṭas dynasty. All dynastic records seem very eager to show their rulers as the greatest of warriors. In all the records of dynasty, other stories of expeditions against enemies are narrated by the court and king and his ancestors, but the motive was common to present the current king as the superior warrior and as a threat for the enemies. But one thing that comes to mind constantly is that why only cherished and positive moments are depicted in the inscriptions, why we do not have stories of their own failure or sufferings? The inscriptions seem very decorative and it appears that, the main motive for keeping records of successes in battles was to present the king as the military hero and supreme political power. Thus, I believe that rulers asserted their military conquests, thereby physically and ideologically establishing their claim to power, other means were also used to stake political power. Talking about the superiority and heroism of ancestors was a unique element of this period, and the purpose behind this kind of depiction may have been to get the aim to get respect and regard in future and also claim to be part of a superior family.

REFERENCES :

[1] Uṇḍikavāṭika grant of Abhimanyu, Hiṅgni Berdi plates gives reference about these early Rāṣṭrakūṭas families.
[1] IA, Vol. XXX, p. 509.
[1] A.S. Altekar, *The Rashtrakutas and Their Times*, Oriental Book Agency, Poona, 1934, pp. 5-10.
[1] Yazdani, 1960, p. 250.
[1] EI, Vol. XVI, pp. 29.
[1] IA, Vol. VIII, p. 26.
[1] EI, Vol XIII, p. 275 ff.
[1] EA, Vol. I, p. 57.
[1] Ibid.
[1] R.C. Majumdar, Ancient India, Motilal Banarsidass, Delhi, 1977, p. 282.
[1] EI, Vol.XVIII, p.243. v. 32.
[1] Majumdar, 1977, p. 283.
[1] Ibid.
[1] Ibid, p. 254.
[1] Ibid. p. 289.
[1] EI, Vol. II, p. 172. V. 2.
[1] K.A.N. Sastri, *The Cōḷas*, University of Madras, Madras, 1955
[1] EI, Vol. XIX, p. 287.
[1] EI, Vol. XIII, pp. 279-81, v. 5.
[1] Ibid, v. 6.
[1] EI, Vol. XIV, pp. 123-26, v. 2-3.
[1] Ibid, v. 3-4.
[1] IA, Vol. XI, pp. 111-13, v. 2-3.
[1] EI, Vol. XVIII, pp. 245-51, vv. 15-30.
[1] Partha (Arjuna) always considered as the great warrior and here king compared with the epic hero.
[1] EI, Vol. I, pp. 170-72, vv. 2-5.
[1] EI, Vol. II, pp. 171-173, vv. 1-5

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Managing Forest for Sustaining Development

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Abstract :- All over the world, countries are seeking to accomplish a finest balance between environmental management, economic development and social values to meet the needs of society on a sustainable base, and this seems true for forests. Forests are dynamic ecosystems vital to sustaining humans, biodiversity, and environmental services including carbon sink worldwide. They are important sources of livelihood for millions of people and contribute to the national economic development of many countries. Despite their crucial importance in livelihood and climate regulation, forest resources all over the globe are subjected to enormous pressure resulting in deforestation and degradation due to the increase in human and livestock inhabitants and widespread rural poverty. According to the World Resources Institute (WRI), 2017 only 15% of forests persist intact and around 30% of global forest cover has been vacated and an additional 20% has been degraded (World Resources Institute, 2017) , The situation in India is no different. India has been trying to achieve its national target of keeping 33 percent of its geographical area under forest cover for decades, but the 2017 State of Forest report displays that it is still struggling to get beyond 22%. India has realized swift deforestation in recent years, primarily due to its focus on economic development. Rendering to government data, 14,000sq km of forests were vacated to accommodate 23,716 industrial projects across India over the last 30 years. Time is running out for the world's forests, whose total area is dwindling by the day. By halting deforestation, managing forests sustainably, restoring degraded forests and increasing the global forest area, potentially damaging consequences for the planet and its people can be avoided. Governments need to foster an inclusive approach that promotes the benefits of forests and trees, engaging all stakeholders. Plans such as the Convention on Biological Diversity (CDB), Aichi Targets, the Bonn Challenge, and the addition of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) program in the Paris Agreement, are pouring a new focus on sustainable forest management (Chazdon et al., 2016). Forests are directly addressed through SDG 15. The paper thus focuses on the critical situation of forest across the world in general and India in particular and also tries to find out the solution to attain the targets of the Sustainable Development Goal 15.

Key Words :- Forest Management, Sustainable Development, Forest Degradation, SDG 15

JEL Code :- Q01, Q23, Q56, Q51

Introduction :- THE intense global debate on sustainable development and sustainable management of natural resources can be traced back to the 1970s, when there was a growing concern regarding their depletion and degradation. Sustainable-development is commonly well-explained as development that meets the needs of the present-day without compromising the ability of future generations to meet their own needs. Sustainable forest management has been reflected as an fundamental constituent of sustainable development since the UNCED Conference at Rio de Janeiro in 1992, also called the Earth Summit. Later the summit, where international forest ideologies were formulated for the first time by world leaders and the first global strategy on sustainable forest management was embraced, the notion of sustainable forest management rapidly gained interest. Accordingly, the forest resources and lands should be managed sustainably to meet the social, economic, ecological, cultural and spiritual functions, and for the maintenance and enhancement of biological diversity. The notion got support and acknowledgement in various international form for the management, conservation and

sustainable development of all kinds of forests. There have been plentiful inventiveness and processes in the world to rationalize the efforts towards sustainable forest management.

Why forests? :- Consensus on the need for international co-operation to combat climate change has resulted in increased attention to the role of forests in storing carbon and the large quantity of C02 emissions that could be evaded if deforestation was paused. Deforestation and forest degradation are the next leading human cause of CO2 emissions causative to global warming according to the Intergovernmental Panel on Climate Change. It is projected that deforestation and forest degradation account for nearly 17% of global greenhouse gas (GHG) emissions. Moreover, tropical forests capture and hoard carbon – since the turn of the century tropical forests are valued to have removed 22-26% of all human caused carbon emissions. Forests are also imperative stockrooms of biodiversity and provide livings for over a billion people worldwide including many living in extreme poverty.

Forests at the climate change development nexus :- Developing countries have an outstanding opportunity to chase low-carbon development strategies going forward. Several low and middle income countries are trying to pursue the twin goals of development (poverty reduction and economic growth) and combatting climate change. Deforestation and degradation denote over one third of entire emissions in developing countries, where many large tropical forests are found. The important role that forest-rich developing countries can play in combatting climate change by reducing emissions from deforestation and forest degradation has become central to international dialogues on preventing global temperature increases as a global public good. There are presently numerous new ingenuity and programs working at the forefront of the development/climate change nexus. As the number of policy and Program evaluations in this area rises, there is an opportunity to learn from existing evidence and emerging findings. Given the importance of the sector, it is surprising that there have been relatively few attempts to synthesize evidence from evaluations to learn lessons about the use of development assistance to combat deforestation.

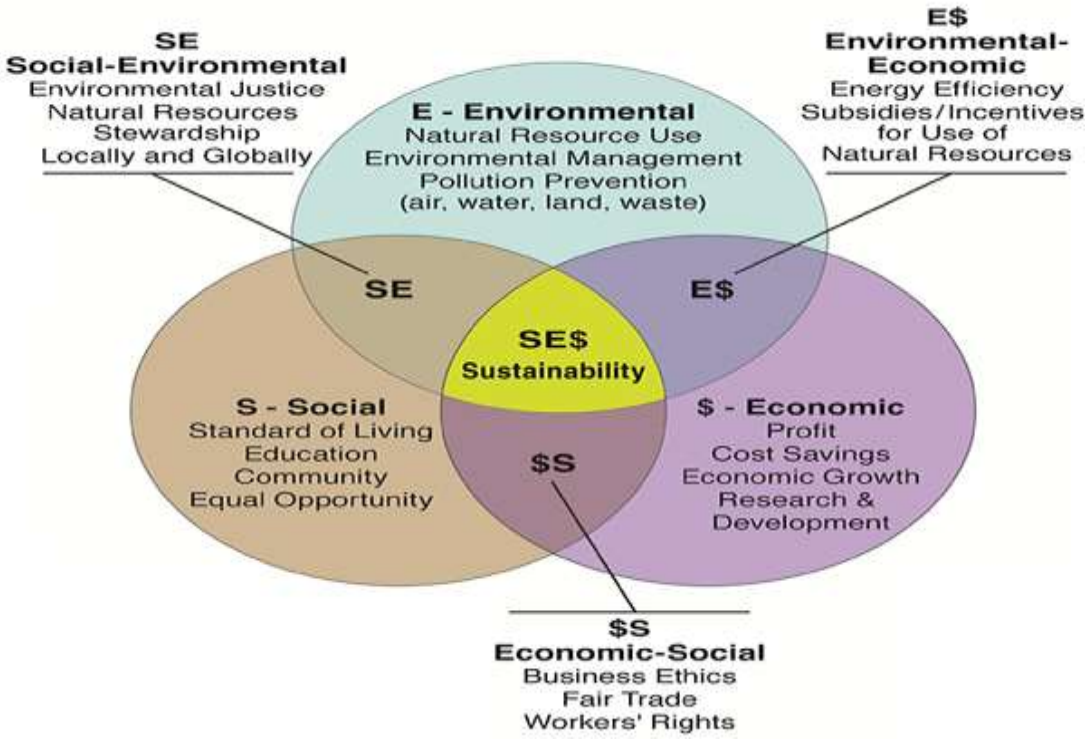
The Sustainable Development Goals :- The Sustainable Development Goals highlight the want to balance purposes and potential trade-offs between poverty reduction, growth and sustainability. Goal 15: "Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss" and Goal 13: "Take urgent action to combat climate change and its impact" place forest management plus sustainability into the international development agenda and underscore the prominence of these objectives in both developing and developed countries.

Components of sustainability

Fundamentals: intergenerational equity, wealth, and substitutability :- The fundamentals of sustainability can be broken into three relatively simple concepts. First, sustainability implies a form of equity over all future generations. One interpretation is that sustainability implies that future generations will be provided an "environment" that is no worse than the one we enjoy today. Interpreted in an ecological sense, this means that ecological conditions will not be degraded to the point that productive capacity is reduced, species are lost, or irreversible losses occur; i.e., that ecological integrity will be maintained. Social and economic sustainability have also been interpreted in a similar fashion: that is, the productive capacity of the economic system, and function of the social system in resolving conflict and developing institutions, will be no worse in the future than it is today. This notion of intergenerational equity or ensuring that generations in the future benefit from the natural endowments and human creations we enjoy today is the cornerstone of sustainability.

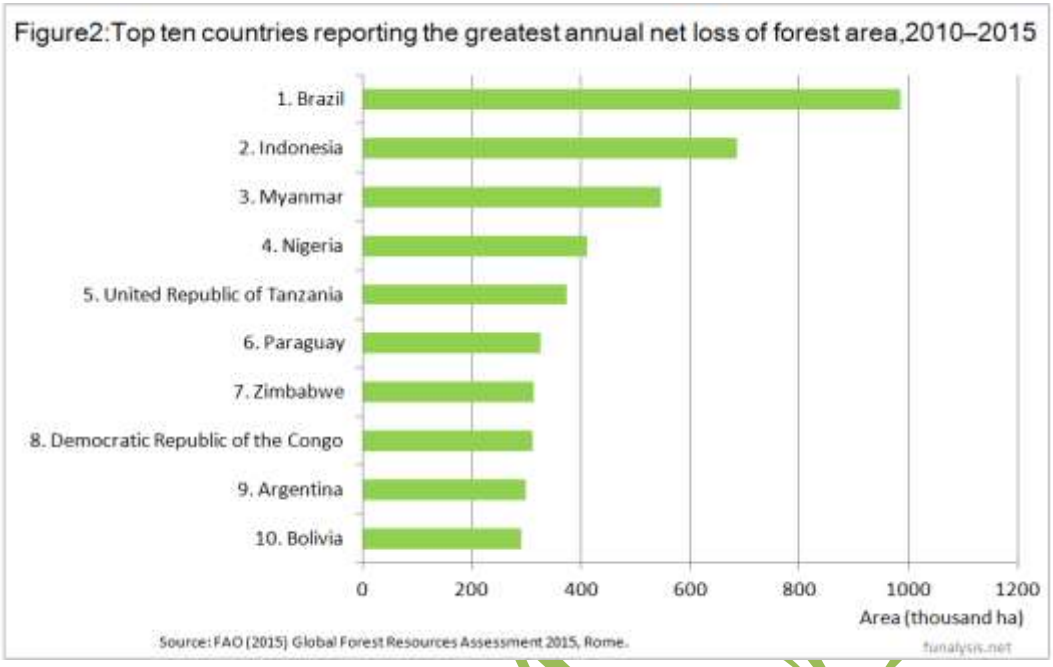
A second component of sustainability is to consider global "wealth" as derived from intertwined natural, economic, and social systems. We have traditionally considered wealth to be material wealth embodied in goods and services. Sustainability challenges us to consider wealth in terms of environmental assets and services as well as community attributes that contribute to our well-being. In an economic sense we are attempting to consider market and non-market values as we strive for sustainability. Management that provides for intergenerational equity based on a broader concept of wealth is making a step toward sustainability.

Figure 1: Dimensions of sustainability



Conversion of primary forest to managed growth may involve reductions in the natural capital stock, or (implicitly) the substitution of investments in constructed capital or human capital for natural capital. Policies promoting this substitution have largely been implemented under the notion that it enhanced overall wealth by the production of material goods and services. Today a different conclusion regarding forest management might be reached when one uses a broader definition of wealth and the concept of intergenerational equity.

Global Forest Trends :- Five central trends have molded the forest space over the past decade. First, despite the fact that afforestation and regrowth have added 8 million hectares (mostly plantations) to the global forest estate, the loss of natural forests continues at an indefensible rate. This loss, mainly due to the conversion of tropical forests to agricultural land, is intricately linked to commodity prices. Thus, both population and economic growth will carry on to drive up demand for palm oil, soybeans, beef, and timber, putting long-term pressure on forests. So, addressing the carters of deforestation – many of which take place outside of the forest sector – is preeminently important if the World Bank is going to meet its strategy aims.



Second, there have been key changes in the possession and management of forests. Protected areas have expanded dramatically and there has been a trend toward increased decentralization of management and devolution of ownership especially in the Latin America and Caribbean (LAC) region.

Third, the critical role of forests in the exertion to mitigate climate change has in recent years been broadly acknowledged and has become the central issue in the global forest-related dialogue and policy processes. The acknowledgement of the importance of underlying issues such as forest governance, indigenous peoples' rights, extra-sectoral influences and integrating carbon payments into broader multifunctional benefit streams have transformed the discourse from its primary focus on forest carbon (and its capacity) to today's mainstream debate on sustainable forest management. This has increased the emphasis on the need for holistic approaches instead of focusing solely on forest carbon.

Figure 3: As World Population has Increased, Global Forest Area has been Decreasing

Fourth, there is rising consideration to restricting the illegal logging and other forest crimes. There is a growing agreement that illegal logging and trade of illegal forest products is a indication of broader governance failures in the sector and beyond in many developing and transition countries.

Fifth, over the last two decades, international forest businesses have shifted their pulp production capacity from the Northern Hemisphere to South America where the climate is producing up to five times the timber harvests achieved elsewhere. Similarly, companies are shifting their paper and board production to Asia to be closer to rising consumer markets.

Forest management in India :- The forestry sector in India is among the first in the world to be managed on the lines of modern scientific management. Establishment of forest management from the middle of the eighteenth century incidentally coincided with the industrial revolution in the West. The forests arose as significant resources during the pre-independence period, as the demand for raw materials increased, and a need was felt to expand the railway network. Forestry was thus production-oriented at that time. However, the basic change in perception was brought by the National Forest Policy of 1952, from production forestry to focus on meeting objectives of maintaining ecological balance on the one hand and meeting the needs of stakeholders in the best possible way on the other.

The 1988 National Forest Policy concentrated on the preservation of environmental stability, conservation of natural heritage by preserving the natural forests and meeting the basic needs of people, and also maintaining the relationship between the tribals and other dependent people, thus encompassing ecological, economic and social aspects of forest management. There is however an urgent need to monitor and ensure proper implementation of these policy implications. The quantifiable approach like criteria and indicators to monitor and implement these objectives of sustainability is imperative.

Table 1: Forest Cover in India

Class	Area (sq km)	percent of Geographical Area
Forest Cover		
Very Dense Forest	85,904	2.61
Moderately Dense Forest	315,374	9.59
Open Forest	300,395	9.14
Total Forest Cover*	701,673	21.34
Scrub	41,362	1.26
Non Forest	2,544,228	77.40
Total Geographic Area	3,287,263	100.00

*Includes 4,740 sq km under mangroves

Emerging Evaluation Evidence :- There is a developing body of evidence from latest valuations conducted by the World Bank Group, the United Nations and OECD DAC countries' development ministries and agencies on using ODA to incentivise reform. This study purposes to give insights into forest management and deforestation programming – it highlights findings from a number of recent evaluations and discusses some of the various approaches and programmes.

Common Evaluation Findings :- This part focuses on certain mutual findings from recent assessments of interventions in the forest sector, with respect to: 1) interactions and trade-offs between different goals; 2) co-ordination, alignment and leadership from associates and contributors; 3) comprehensive engagement of stakeholders and local ownership; and 4) specific findings on common programmatic approaches.

1. Trade-offs between climate change intentions and additional goals :- Appraisals of UN, World Bank Group and bilateral projects on deforestation and sustainable forest management frequently focus the need to clearly articulate a vision of long-term progress (or theory of change) and to better define and measure the delicate balance between environmental, poverty reduction and other social goals or objectives.

2. Need for co-ordination, alignment and leadership from partners and donors :- The difficulty of multilateral frameworks working to stop deforestation and the intricate international architecture of aid delivery in the forest sector has featured in a number of evaluations and reviews. While several question the requirement of the **complicated aid architecture** in this sector, the more general finding is that the multiplicity of institutions and financing mechanisms requires greater levels of co-ordination among donors and partners.

There have been certain experiments with multilateral programmes and pooled funding, such as those seen with the UN REDD programme, which has had a relatively slow rate of implementation. These encounters appear to stem from **unanticipated obstacles and capacity gaps** that need to be addressed prior to full programme implementation. Current calculations highlight the complexity of initiatives in the sector, the slow pace of progress and the **need for programmes to adopt a cross-sectorial approach**. A global programme review of the FCPF conducted by IEG in 2012 summarised this view, stating that "the REDD+ readiness process is a more expensive, complex, and time consuming practice than formerly envisaged" and suggested that a cross-sectorial approach would help increase effectiveness.

3. Indigenous possession and inclusive meeting of national and local stakeholders :- Recent evaluations suggest that more attention should be given to **local ownership** and **ensuring inclusive** dialogue with a wider range of stakeholders. Some estimations, such as the 2014 UN REDD Programme evaluation, have suggested "a more bottom-up approach".Within this evaluation were some concrete recommendations on how to ensure greater partner country proprietorship comprising: 1) prioritizing the use of national and regional experts 2) using existing structures and co-ordination mechanisms 3) strengthening national capacity in regards to financial management and accountability mechanisms, and 4) assigning decision making authority to the level closest to the field "while applying basic principles for robust resource governance…".

Approximations also decide that indigenous stakeholders, particularly forest-dwelling communities and those that depend on forest resources for their livelihoods could be better incorporated into **local forest governance structures.** While there has been mounting recognition of the rights of indigenous groups, recent evaluations have highlighted the need to consider the participation of non-indigenous local groups and the specific role of women as forest users and stakeholders. Programmers must seek to know the ways that forest inhabitants and local people traditionally use and manage forest resources and better understand the existing governance structures, local access issues, land tenure and tribal or local authority systems. These findings have led to a greater acknowledgment of the fact that success in halting deforestation may depend on the extent to which programmes incorporate understanding of these systems and practices into forest management programming.

4. Emerging specific findings on programme approaches :- This section looks briefly at what some recent evaluations have to tell us about the effectiveness of various approaches to programming in the forest sector, specifically looking at the available signal on: 1) expenses for environmental services; 2) protected areas; and 3) community / participatory forest

management.

Payments for Environmental Services :- A cooperative attitude in forest sector programming has been the accomplished of Payments for Environmental Services (PES) which have frequently been implemented under the REDD+ umbrella. A 2014 organized evaluation of PES schemes drew evidence from 11 quantitative evaluations of PES programmes in four countries (Costa Rica, China, Mexico and Mozambique). It established that PES schemes likely have a modest, positive result on deforestation. However, there appears to be a lack of evidence that PES has beneficial effects on poverty, with evidence suggesting that PES schemes have been "less effective in poor areas and are less likely to attract the participation of poor households than wealthier ones."

Protected Areas :- A perspective which has been widely considered successful for the conservation of forest resources is the formation of protected areas (PAs). Evaluations of protected areas agree that they are at least modestly effective in reducing deforestation and suggest that when local people and forest dwellers are part of the forest management process, protected areas are even more successful. For instance, a worldwide analysis showed in 2010 by IEG found that "… [protected areas] are on average effective in reducing deforestation. Areas that permit sustainable practice are more effective than strictly protected areas and indigenous areas are most effective of all."

Participatory Forest Management / Community Forest Management :- Participatory or Community forest management (PFM or CFM), as it is often called, has been a frequent approach in the sector. The FAO sketches sharing forestry as "the procedures and mechanisms which allow people with a direct stake in forest resources to be part of decision-making in all aspects of forest management, including policy formulation processes". While PFM/CFM is a common approach, the evidence base on its results and impacts is mixed and highly context specific.

International initiatives for sustainable forest management :- The criteria and indicators method for sustainable forest management was introduced by the ITTO. At current time, there seems to be growing global consensus on the key elements of sustainable forest management. There are nine on-going international and/or regional criteria and indicators initiatives currently, involving approximately 160 countries with some member-countries participating in more than one process.

Seven mutual thematic areas of sustainable forest management have appeared based on the criteria of the nine ongoing regional and international sustainable forest management initiatives. These were accredited by the international forest community at the fourth session of the United Nations Forum on Forests (2004) and the 16th session of the Committee on Forestry (2003). These seven thematic zones comprise: (i) Extent of forest resources; (ii) Biological diversity; (iii) Forest health and vitality; (iv) Productive functions of forest resources; (v) Protective functions of forest possessions; (vi) Socio-economic roles, and (vii) Legal, policy and institutional framework

The Indian initiative for sustainable forest management :- The criteria and indicators approach advanced with development of a precise set of criteria and indicators for specific forestry surroundings through international processes among the participating countries. It was recognized to advance sustainable forest management in India, to achieve establishment of a standard for sustainability according to the prevailing policy framework. In 1999, a works on 'Development of National Level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia' was whispered at the Indian Institute of Forest Management (IIFM), Bhopal, with backing from the Food and Agriculture Organization of the United Nations and the United Nations Environment Programme in collaboration with the ITTO, the United States Department of Agriculture Forest Service, and the IIFM.

Implications for Policy Makers

1) **Deforestation and forest management programs must work from the beginning stage with a varied range of local stakeholders to design programmes and approaches 'from the bottom up'.** Confirmation recommends that

comprehensive processes are essential to address and overcome local obstacles and barriers to behaviour change and to bridge capacity gaps while working to improve local governance. Comprehensive progressions must be warranted from the onset in order to better anticipate challenges and to build consensus at an early stage. While funding and co-ordination between donors needs to take place at a global level, there is growing evidence to suggest that inclusive, country-driven approaches are needed.

2) **Bilateral development co-operation providers should continue to invest in pooled financing mechanisms and multilateral programmes (such as the UN REDD Programme, GEF and World Bank initiatives), but should remain involved in order to warrant that these instruments are inclusive, pro-poor and efficient.** Business associates have a role to play in manipulating the future advances of these initiatives. Concentration should be given to leveraging the comparative benefits of each partner/Programme while following a synchronized policy approach in relevant sectors. Multilateral programmes working on REDD+ readiness programmes have proven to be adaptable and have led to successes in assisting countries achieve emission 9 reductions through the provision of technical services and knowledge sharing. Yet, to date these programmes have not made as much improvement as originally anticipated in piloting performance-based systems of payments.

3) **Bilateral suppliers and multilaterals have room to recover programme monitoring and results frameworks and can also work to improve communication on programme achievements.** These structures must be designed to measure both climate change (CO2, biodiversity) and socio-economic goals. Extra energies and means need to be dedicated to monitoring and communicating results, including communications targeted towards general audiences. There is also room for increased learning which could come from more systematic reviews and more evaluations looking at the coherence of bi-lateral providers' overall portfolios for achieving climate change goals. Policy makers should increase the level of focus on evidence and on the communication of evaluation findings.

4) **There is a strong opportunity for innovation and pilot programmes. Strategy creators should continue or increase financing for innovative pilot programmes and projects and should accept high risk tolerance levels, generating evidence on effective programmes.** Groundbreaking pilot programs such as those using new know-hows and real-time monitoring will likely need increased public sector funding, to develop the tools and methods needed to help developing countries implement their Nationally Determined Contributions.

Conclusion :- Deforestation and climate change are universal challenges and the global public must develop more wide-ranging partnerships, institutions and financing mechanisms to work with partner countries, local communities and local peoples to address them. There has been increasing burden for evident results and rapid successes, while progress on programmes such as REDD+ and readiness initiatives have proven to take time and persistence to build strong coalitions, change attitudes and behaviours and gain political and local buy-in. Evidence from a range of evaluations in the forest sector suggest that success can only be achieved when local ownership is at the heart of programme design and implementation, when nations and native communities are authorized and encouraged to find workable solutions and alternatives to deforestation. Hence, the global community, including bilateral contributors, multilateral funds and institutions, and partners in developing countries, must work together where there is political will to find country level solutions. There is motivation to be positive as present programmes are well placed and capable of adapting while moving forward on

climate change goals and commitments.

References :-

- Allen, T. F. H. and Hoekstra, T. W., Toward a definition of sustainability. In Sustainable Ecological Systems: Implementing an Ecological Approach to Land Management (eds Covington, W. W. and DeBano, L.), Rocky Mountain Forest and Range Experiment Station, US Department of Agriculture, 1994.
- Baelemans, A. and Muys, B., A critical evaluation of environmental assessment tools for sustainable forest management. In Proceedings of the International Conference on Life Cycle Assessment in Agriculture, Agro-industry and Forestry (ed. Ceuterick, D.), Brussels, 3–4 December 1998, pp. 65–75.
- Castaneda, F., Why national and forest management unit level criteria and indicators for sustainable management of dry forests in Asia? In Development of National-level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia: Background Papers (eds Cheng, T. L. and Durst, P. B.), Food and Agricultural Organization of the United Nations, 2000.
- FAO (2015b), Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land use and Livelihoods Project-GCP/GLO/194/MUL: Final Evaluation Report, Food and Agriculture Organization of the United Nations, Rome.
- FAO and JRC (2012), Global forest land-use change 1990–2005, by E.J. Lindquist, R. D'Annunzio, A. Gerrand, K. MacDicken, F. Achard, R. Beuchle, A. Brink, H.D. Eva, P. Mayaux, J. San-Miguel-Ayanz & H-J. Stibig, FAO Forestry Paper No. 169, Food and Agriculture Organization of the United Nations and European Commission Joint Research Centre, Rome.
- IIFM, Bhopal-India process for sustainable management of Indian forests. Indian Institute of Forest Management, Bhopal, June 2000.
- ITTO, Criteria for the measurement of sustainable forest management, ITTO Policy Development Series No. 3, International Tropical Timber Organization, Japan, 1992
- World Commission on Environment and Development, Our Common Future: The Bruntland Report, Oxford University Press from the World Commission on Environment and Development, New York, 1987.
- United Nations. Non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests. Report of the UN Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, vol. III.

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The Linkage between Per Capita Income and Environmental Degradation in India

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Over years, changes in government policies like privatization, liberalisation and globalization has given a boost and opportunity to economy to work freely. As an outcome, economy twitches growing at faster speed. But these reforms had created a tremendous pressure on environment resources like forest, land, water and air. These vicissitudes have made the arcade too competitive that nobody has time to think about the public properties such as environment. In recent decades, undesirable environment changes such as global warming, Green House Gas (GHGs) emissions have raised worldwide concerns. In order to achieve higher growth rate, environmental problems emerged from economic activities have turned into a controversial issue. The worsening of environment instigates to have direct impact on the quality of human life. The aim of this study is to investigate whether there exists the famous inverted 'U' shape relationship between Per Capita GDP and CO_2 emissions as hypothesised by Environmental Kuznets Curve (EKC). For this purpose, the Time Series data over the period (2010-2016) from the World Development Indicator has been taken. The paper clinches with some policy replications; the policy aimed at overall development should certainly include efforts to control carbon emissions and to improve environment quality. To sum up, there is a urgent need to control deleterious pollutants, conserve and protect natural resources and the environment for healthy human beings.

KEYWORDS :- Per Capita Income, EKC, Environmental Degradation, Granger Causality.

INTRODUCTION :- Over the last two decades changes in government policies like privatization, liberalization and globalization has given a new boost and opportunity to economy to work freely. But these reforms had created a tremendous pressure on environmental resources like forest, land, water, and air. These changes have made the market too competitive that nobody has time to think about public properties like environment and its resources. Being a public good, improvement inn environment is the responsibility or the business of everybody but everybody thinks why me, which results in nobody. Everybody is there to pollute environment but nobody is there to protect it or to clean it. Increasing population, industrialisation, laissez faire economics, poverty and urbanisation are also some of the other factors responsible for environmental degradation.

Sustainable Development is most common phrase used by the world economics. Sustainable Development means economic development with ecological sustainability. According to Brunt land commission 1987, " sustainable development means meeting the needs of present generation without compromising the needs of future generation". Nonetheless if we see the genuineness every economy is concern about its GDP. GDP defines sum total of economic production of goods and services on the basis of transaction in the domestic market in a year. Calculation of GDP ignores the cost of depleting the environment resources. Every economy wants to beats the other economy and wants to be at top. Not only economies but individuals are running after each other to attain higher ranking in competitive market, ignoring what damages they are causing to environment and its resources, which will indirectly affect their health. Failure of Kyoto protocol project is one example. This project fails because it imposes

limit to the economic growth in reduce carbon emission.

The past era has seen all drifts of environmental degradation accelerate such as greenhouse gas emissions, deforestation, loss of biodiversity. Such outlines of environmental annihilation have been driven by increased economic activity, of which FDI has become an increasingly significant contributor. Flows of natural resource based commodities and investment are predicted to rise faster than economic output in future. It is therefore critical to understand the environmental effects of private investment and identify appropriate responses (Nick and Richard, 1999).The Indian economy has attaining continuous growth in the past mostly due to its success in raising international trade which now accounts for approximately 200% of Gross Domestic Product (GDP). The inflow of substantial foreign direct investment (FDI) and a robust capital market are the key elements that supported India's economic growth. India emerged the most attractive investment destination in the world for the next three years, may lead to a increase FDI inflows in computer software and hardware, trading, service, automobile and telecommunication sectors. Similarly India plan to cut carbon emissions by 33 to 35 percent from 2005 base levels by 2030 through the adoption of about 40 percent electric power installed capacity from non-fossil fuel based energy resources by 2030 with help of transfer of technology and low cost international finance and also by Creating an additional carbon sink of 2.5 to 3 billion tones of CO2 equivalent through additional forest and tree by 2030. India is third emitter of CO2 in the world followed by China and USA. This paper is aimed at investigating the two most important benefits and costs of foreign direct investment in the Indian context that is GDP growth and the environmental degradation. The non-linear model examines the relationship between GDP per capita and environmental degradation during 2010 to 2016.

ENVIRONMENTAL KUZNET CURVE :- The relationship between income inequality and economic growth was originally depicted by Kuznets (1955) through kuznet curve. In the context of environment, the environment kuzets curve is an inverted U shaped curve which describes the commonly observed relationship between an environmental pollutant and per capita income. It is often used to express the relationship between economic growth and the environmental quality. The EKC hypothesis closely relates the aspect of "Limits to Growth" and the concept of Sustainable Development. The shape of the curve shows that as GDP per capita rises at initial stages of economic growth of a country, the environmental quality degrades. However beyond a certain point, increases in GDP per capita lead to reduction in environmental damage. Panayotov (1993) suggests that at later stage of development, if structural changes in economy towards information- intensive industries and services are coupled with some social, legal, fiscal and technical advancement like increased environmental awareness, enforcement of environmental regulation, higher environmental expenditures and inventions of environmental-friendly technology, then it results in gradual decline in environmental degradation.

It is generally argued by economists that economic growth is a prerequisite for necessary development of an economy and society. It has been argued and supported by empirical evidence that high economic growth has benefitted a large section of poor people by raising their standards of living and improving their quality of life across various regions globally. Along with, researchers also raised the point that the unconstrained effort to raise economic growth across global have resulted in the depletion of natural resources and the degradation of environment to a large extent. This raises doubt about sustainability of economic growth and maintaining environmental quality. According to the known history of industrial economies, higher rate of

economic growth in most of the economies has been achieved by using capital and energy intensive technology and environment unfriendly development strategies. It is no more a hidden fact that growth led paradigm based on high energy and capital intensive production activities has generated larger quantity of by-products causing pollution, depletion and degradation of environmental quality as a result of increased of increased extraction of natural resources, accumulation of waste and release of pollutants.

It is broadly agreed that the pursuit for high economic growth has caused environment degradation but there are also some evidences indicating that higher economic growth will create fastest road to environmental improvement along the path of economic growth. It is presumed that higher incomes generate demand for environmentally friendly goods and services leading to adoption of environmentally friendly technologies and adoption of environmental protection measures. Resources accumulated through economic growth will facilitate environmental friendly innovations and technological development which enhances productivity of natural resources and reduces the rates of environmental degradation and resource depletion. It implies that growth creates its own environmental sustainability.

Many scholars have attempted to model the pollution income relationship and generated smooth inverse U shaped pollution- income path. Some have even observed multiple changes of direction ad introduced N shaped of EKC. In this perspective, this paper is an attempt to re-examine the interaction of growth and environment econometrically in cross- section framework.

REVIEW OF SELECTED LITERATURE

Simon Kuznet (1995) presented the relationship between income inequality and economic development to be inverted U shape in his research paper. According to him, economic growth causes increased inequality at low levels of economic development but after a point with further economic development the distribution of income becomes more equal. Though environmentalist as well as the economists argued that the fitness of environmental resources would prevent economic growth from continuing forever. Meadows et.al (1972) pointed that the growing economic activity requires more and more energy and material inputs, while generating waste by- products in large quantity, would then undermine the carrying capacity of the biosphere and result in the degradation of the environmental quality. This would eventually put economic activity itself at risk and endanger the future growth potential. This is popularly known as growth literature as “Limits to Growth”.

Since 1991 the EKC has become a basic framework of analysis in the technical literature of environmental policy. The EKC concept became popular by the classic works by Grossman and Krueger’s (1991) and Shafik bandopadhyay (1992), among others, in early 1990s. Beckerman (1992) argued that “there is clear evidence that, although economic growth usually leads to economic degradation in the early stages of the process, in the end the best- and the probably the only way to attain a decent environment in most countries is to become rich” and that “as income rise, the demand for improvements in environmental quality will increase, as will the funds available for investment”. Many authors regarded the inverted U relationship between GDP per capita growth and indicators of pollutant as a “stylised fact”. This was also proved y may scholars empirically ad theoretically as well.

Mostly, EKC literature focuses o the separate environmental indicators ad income measures. There have been few studies in the EKC literature which tries to assess the overall environmental performance using holistic measures. Yoshioka (2010) is one of the few studies using Environmental Performance index

(EPI) in Environmental Kuznet Curve estimations based on the cross section data for the year 2006 EPI. The author does not confirm the EKC for the overall index but only for several indicators within the index. Kashyana (2011) investigates the EKC hypothesis using the EPI for the year 2006 ad 2008. This study confirms the EKC hypothesis, i.e., the environmental quality initially worsens but eventually improves with ana increasing level of Per capita income. There are also empirical evidence showing that the environmental degradation with respect to economic development does not follow an inverted N shape, which means that environmental degradation first decreases with income, and then slightly increases before increases before decreasing again at the highest levels of economic development.

As a result of increased awareness and volatile climatic changes in last two decades, the EKC relationship has generated theoretical and empirical debate. Various empirical EKC research has drawn their inferences about EKC so far. Some literature surveys questioned the validity of this hypothesis. Others point out that there are technical weaknesses inn some analysis as well as the presence of omitted variable bias (Stern, 1998, 2004; Dinda,2004; Kaika and Zerves,, 2013a, b). despite lot of research and theoretical arguments, the empirical robustness of the inverted U shape relationship remains inconclusive. Given the conflicting results it will be useful to revisit EKC debate by estimating EKC using EPI. To the best of our knowledge, it is the first study using 2010 and 2016 EPI for EKC estimations. This study also examines the impact of EKC relationship after controlling the effect of HDI, GII and GCFGDP. This study will certainly be an addition to the existing literature on the subject.

DATA AND RESEARCH METHODOLOGY :- The present study made an attempt to estimate the relationship of environment performance and economic growth. Data o GDP per capita, PPP (constant 2011 international $), GI per capita, PPP (constant 2011 international $), Gross Fixed Capital Formation has been drawn from World Bank's World Development indicators, 2016. The data pertaining to environmental performance index is ajoinnt project between the Yale centre for Environmental Law and Policy (YCELP) and the centre for International earth Science Information Network (CIESIN) ai Columbia UNniversity inn collaboration with the Samuel Family Foundation and the World Economic forum. EPI is contructed by using various indicators capturing environmental health and ecosystens vitality. Each of the categories in turn consist of a number of sub categories, such as air quality, water resources, biodiversity and habitat, natural resources, climate and energy. The index is based on the proximity to target methodology, which is focused on a set of environmental outcomes linked to policy goals. By formulating specific targets and measuring how close each country comes to them, the EPI provides a basis for policy analysis and for evaluating environmental performance and also facilitates cross country comparisons. The data on human development index and Gender Inequality Index is taken fron human development reports of various years, published by UNDP annually.

To achieve the objective of the paper, correlation technique have been applied. The correlation coefficient between any two variables (ρ_{xy}) is defined as follows:

$$\rho_{xy} = \frac{COV\,(x,y)}{\sigma x.\sigma y} = Cov\,(X,Y) = \rho_{xy}\,.\,\sigma x.\sigma y$$

EMPIRICAL RESULTS :- Descriptive Statistics (DS) are calculated to illustrate the basic features of data used in this paper. DS are estimated for two periods: 2010 ad 2016 as show in Table1 and 2. The mean value of EPI score is 12.4 and 16.7 for the year 2010 and 1014 respectively. Though sample size varies, it gives reasonable idea of decreasing environmental performance and increasing inequalities in the level of environmental quality over time. The mean per capita GDP in purchasing power parity terms is US$ 17943.9

and US$ 16919.9 for the year 2010 1md 2016 respectively. The mean value of human development measured by HDI and GII is 0.7 and 0.4 respectively. For both years, gross capital formation remains at 23.6% of GDP. The most interesting feature is the Kurtosis which measures the magnitude of extremes. If a variable is normally distributed, then the kurtosis should be three. It is found to be very high except for EPI score. Jarque Berra statistics also suggest that all variable series except EPI are not normally distributed.

TABLE 1
Descriptive Statistics for the Year 2010

	EPI	GDPPCPPP	GNIPCPPP	HDI	GCFGDP	GII
Mean	58.4	17943.9	16735.9	0.7	23.6	0.4
Median	59.2	10546.5	10206.9	0.7	21.5	0.4
Maximum	93.5	127235.7	71380.7	0.9	71.4	0.7
Minimum	32.1	725.3	720.8	0.3	9.3	0.0
Std. Dev	12.4	21104.8	16430.1	.2	9.2	0.2
Skewness	0.1	2.2	1.3	-0.4	1.9	-0.1
Kurtosis	2.5	9.5	3.9	2.0	8.8	1.8
Jarque-Bera	1.7	358.6	31.1	9.5	272.0	7.7
Probability	0.4	0.0	0.0	0.0	0.0	0.0
Observations	163	142	104	149.0	134	125

Table 2
Descriptive Statistics for the Year 2016

	EPI	GDPPCPPP	GNIPCPPP	HDI	GCFGDP	GII
Mean	50.7	16919.9	19241.6	0.7	23.9	0.4
Median	50.1	10739.0	13709.9	0.7	21.9	0.4
Maximum	87.7	127562.2	74444.0	0.9	71.4	0.7
Minimum	18.4	584.4	1009.0	0.3	9.3	.0
Std. Dev	16.7	19196.2	15948.1	0.2	9.1	0.2
Skewness	0.2	2.3	1.2	-0.4	1.9	-0.2
Kurtosis	2.2	11.0	4.2	2.1	9.0	1.8
Jarque-Bera	4.7	507.2	19.4	8.1	271.8	7.4
Probability	0.1	0.0	0.0	0.0	0.0	0.0
Observations	143	143	64	140	129	115

Table 3
Correlation Matrix for the Year 2010

	LOG(EPI)	LOG(GDPPC)	LOG(GNIPC)	LOG(GFCF)	LOG(HDI)	LOG(GII)
LOG(EPI)	1.00	0.69	0.70	-0.27	0.74	-0.62

LOG(GDPPC)	0.69	1.00	1.00	-0.22	0.95	-0.79
LOG(GNIPC)	0.70	1.00	1.00	-0.22	0.96	-0.79
LOG(GFCF)	-0.27	-0.22	-0.22	1.00	-0.23	0.21
LOG(HDI)	0.74	0.95	0.96	-0.23	1.00	-0.76
LOG(HDI)	-0.62	-0.79	-0.79	0.21	-0.76	1.00

Table 4
Correlation Matrix for the Year 2016

	LOG(EPI)	LOG(GDPPC)	LOG(GNIPC)	LOG(GFCF)	LOG(HDI)	LOG(GII)
LOG(EPI)	1.00	0.90	0.90	-0.21	0.91	-0.81
LOG(GDPPC)	0.90	1.00	1.00	-0.16	0.97	-0.81
LOG(GNIPC)	0.90	1.00	1.00	-0.16	0.96	-0.81
LOG(GFCF)	-0.21	-0.16	-0.16	1.00	-0.16	0.21
LOG(HDI)	0.91	0.97	0.96	-0.16	1.00	-0.80
LOG(HDI)	-0.81	-0.81	-0.81	0.21	-0.80	1.00

CORRELATION COEFFICIENT :- Correlation coefficient measure the strength of association between two variables. The score has strong positive linear relationship with per capita GDP, with per capita GNI and with HDI. Result further reveals thst Gender Inequality Index and gross capital formation as percentage of GDP is negatively associated with EPI scores.

Table 4 shows correlation coefficient for the year 2016. Though the values vary but the direction of relations remain invariant. It is surprising fact to know that the domestic capital formation is also found to be negatively associated to the environment performance index. It seems that investment has not been scrutinised on environment safety parameters. The figures are as follows:

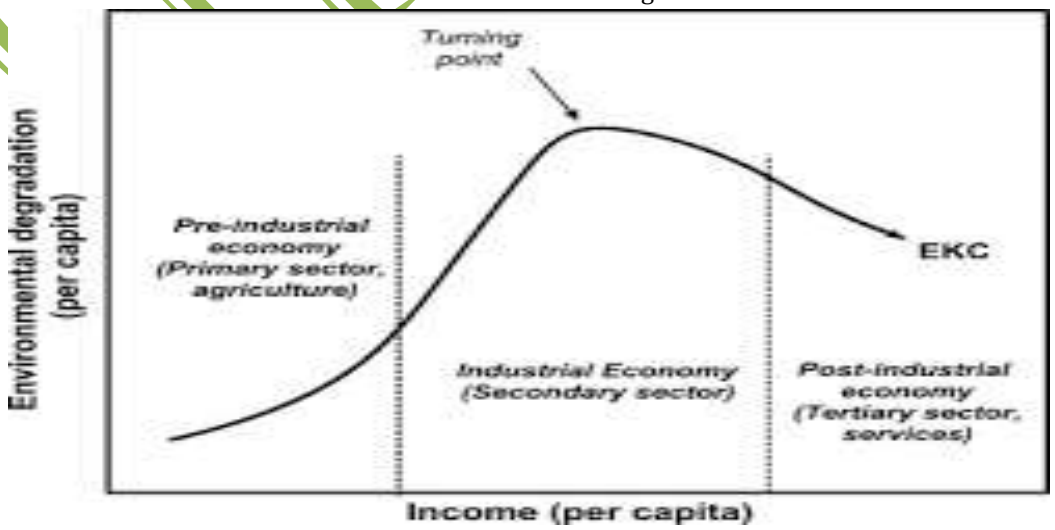
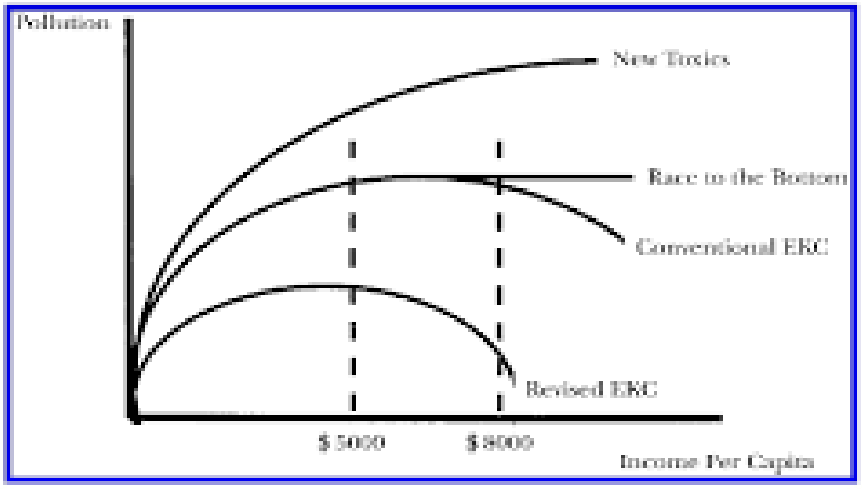
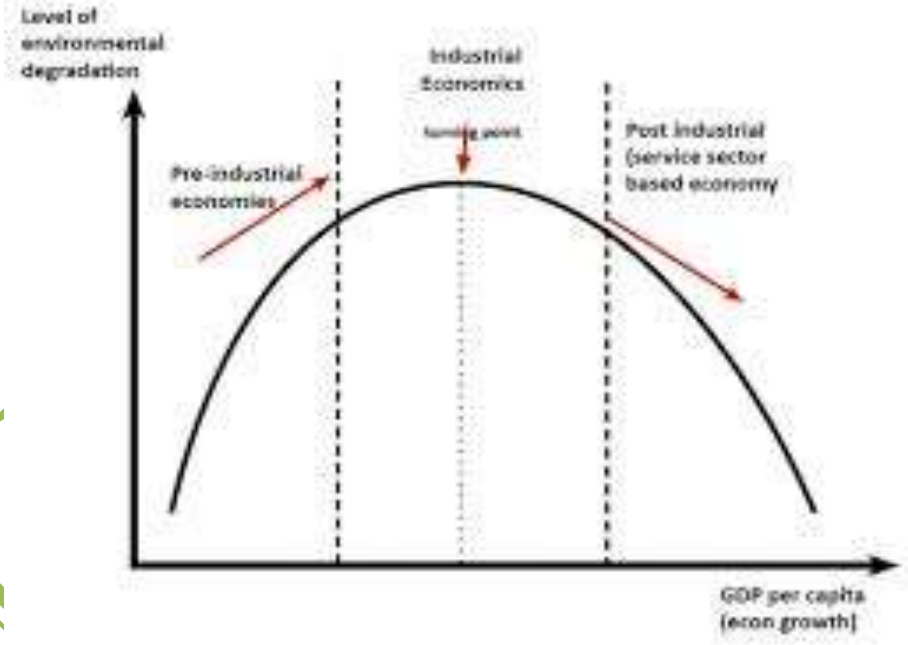


Figure 1

Environmental Kuznets Curve: Different Scenarios





CONCLUDING REMARKS :- The study has made an attempt to test the Environmental Performance Index. In this study, the relationship between income and environmental quality has been examined to re test the EKC hypothesis. In addition to income per capita, gross capital formation, human development index and gender inequality index are also included while estimating the EKC hypothesis. Econometric models are estimated on cross section data for the year 2010 and 2016. This study contribures to the EKC literature by using not a separate but a composite indicator of environmental quality, represented by EPI score.

The results of this study accepts an inverted U shape of EKC hypothesis and rather it concludes predicted cubic or N shape of EKC. As this study based on EPI not on environment degradation index, Nshape of EKC is equivalent to inverted N shape of EPC in this paper. It

implies an increase in GDP degrade the environment at initial stages, after attaining critical level of per capita, environment improves but again environment degrades. Results of this study also signify the role of higher level of human development and lower level of gender inequalities in the improvement of environmental quality. These results highlight the significance of policies promoting human development and reducing gender inequalities.

The study reveals that the capital formation is negatively related to the environment performance index. It seems that investment has not been scrutinised on environment parameters. Given the fragility of environment, it is necessary on the part of nations to take mandatory steps to improve the environment. Generally, environmental norms are compromised or twisted to facilitate MNCs or national big enterprises to promote investment. Environment regulations are relaxed on myopic notions on the name of creating Investment friendly environment. To protect global environment, there is a need to negotiate some basic global norms of environmental protection for international investment at multilateral forum. So far, all negotiations at multilateral level have become a blame game between developing and developed countries.

As the EPI index creators concede themselves, the main limitation of the EPI is the lack of time-series data and the inability to track change in environmental performance over time. However, it still allows us to perform cross country analysis to explain overall environmental performance. Though, the present study has used some variables as control variable such as HDI, GII and GFCFGDP while examining EKC but the study does recognise the role of other variables.

REFERENCES:

1. Planning Sustainable Cities. (2009). **Global Report on Human Settlements**, United Nation Human Settlements Programme, London: Earthscan Publishing.

2.http://www.tcpa.org.uk/data/files/etws_energy.pdf

3. Ryser J. & Franchini T. (2009). **Toward Low-Carbon City: Madrid and London**. 45th ISOCARP Congress.

4. Ministry of Energy and Electricity. (2003). **Energy in Egypt Annual Report**, Organization for Energy Planning Publication.

5. Engineering & Technology. (May 2009). Pool, R. **A Tale of Two Cities**. Volume: 4, Issue 7.

6. Nady, R.(2008).**The Integration between Sustainability and Ecoresorts**. Dissertation of the degree of Master in Architectural Engineering and Environmental Design. Unpublished thesis to the Arab Academy for Science, Technology and Maritime Transport.

7. Middle East Policy. (Winter 2009). Luomi, M. **Abu Dhabi's Alternative-Energy Initiatives: Seizing Climate-Change Opportunities**. Volume: XVI, Issue 4.

8. Engineering & Technology. (September 2008). Crampsie, S. **City of Dreams**. Volume: 3, Issue 5.

9.http://www.wspgroup.com/upload/documents/PDF/news%20attatchements/Masdar%20CaseStudy.pdf

10.http://www.courses.cit.cornell.edu/crp384/2008reports/07Masdar.pdf

11. The Chemical Engineer: TCE. (March 2008). **The City of the Future: No Waste, No Cars, No Carbons**. Issue 801

12. Technology Review. (March/April 2009). Bullis, K. **A Zero-Emissions City in the Desert**. Volume: 112, Issue 2.

13.http://www.resorcesmart.vic.gov.au/documents/MasdarCityUAEEmirates.pdf