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Foreign Accounts on Ganges Plains

With Special Reference to the Early Graeco-Roman Anthology for the Rebuilding of the Economic History of Upper and Middle Ganges Valley during Maurya Period

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Abstract:

The fourth century BCE was a remarkable for the history of world where two countries saw the rise of imperial forces. In India Magadha Empire was transforming a pan Indian Empire under Nanda and Maurya. Other side Greek army marched to become the master of the world under the leadership of Alexander. The two powerful Empires of contemporary period encountered each other by military expeditions; in consequence, India became the witness of the arrival of foreign travellers and ambassadors right from the last quarter of 4rd century BCE. Now both came closer with the exchanging of ambassadors and as we know that Greek ambassadors Megasthenes, Deimachus, Dionysius visited in the court of Mauryan rulers. These ambassadors during the visit of Mauryan court, observed the various aspects of the cultures of the plains of Upper and Mid-Ganges, and noted down the valuable information pertaining to these areas. Among the vast information on Ganges valley, this paper has carved out the economic condition of the period as they observed and penned. So, the paper will analyse the foreign accounts on the aspects of agricultural affairs such as climates, rainfalls, rivers, irrigation, soils, crops and cultivation, water distribution system for agricultural field along with the other aspects of economic activities like crafts, occupation, industry, trade and commerce, land and distance measurement system, crafts and occupations, and taxation to understand the economic condition of upper and middle Ganges valley.

Keywords: Megasthenes, Monsoon and rainfall, Fertility, Trade routes, flood, famine, Gangetic Plain.

Introduction: Right from the very early civilization India had well connected with Western world such as Mesopotamia, Egypt, etc. through commercial activities, which was forsaken with the decline of Indus Civilization; but once again, the commercial liaison commenced geared up around the 6th century BCE with the flourishing Empires, like Persian and Greek, and reached its climax during the Roman Empire. But the initial knowledge of western

world about the oriental countries was based on nebulous, accidental and unconnected notions and always seen as countries of miracles, land of treasures and wonderful things for Greeks. Therefore, in the writings of early Greek historians, India had been seen by two basic scenarios; the first consideration was that, India was the land of treasures and wonders, and another in the perspective of Indian Sage (*Sophistai*). Alexander's invasion on north-western frontier of India played an introductory role for direct link between these two great civilizations, which further led the great economic and cultural connection with the exchange of Ambassadors between them and provided stability in their relations; which sustained up to the fall of Roman Empire, or even further also. Thus, Greco-Roman world had a very long contact with India, which has been divided into four phases by Bongard-Levin: Phase I: before Alexander's campaign, Phase II: Alexander's campaign, phase III: the period of embassies, and phase IV: period of crisis of the Roman Empire around 2nd century AD.ⁱ

In the first phase, their knowledge about India was nebulous, when they visualized it as the land of treasures and wonderful things. In the second phase, they came into direct contact with India through Alexander's campaign, but their knowledge about this country was limited up to the frontier areas (along the terrain of the Indus river). The third phase is crucial and remarkable, when two great military powers (Mauryas and the Greeks) came closer with war, treaty and marriage alliance; and in consequence ambassadors were exchanged. Virtually, in this phase, the Ganges valley was connected with western world directly, and consequently the arrival of the Greek ambassador began in Mauryan court, like: Megasthenes in Chandragupta Maurya's reign, Deimachus in Bindusara's court and Dionysius in Ashoka's time. In the fourth phase, their interest was delimited on religious and philosophical searches of oriental religions; however, commercial activities remained well active in this phase also. Phase third of Indo-Greek liaison, which presents us a good deal of economic information is chosen for this paper for the review and thorough analysis.

Sources: During Mauryan period commercial set up was well-established between east and west, which indicates that a mass of western people used to visit in Ganges valley,ⁱⁱ either as traders, or tourists, or with political intentions such as ambassadors; but it is strange that Megasthenes is credited generally, to provide first-hand information about India, though a number of other authors before and after him existed who have provided first-hand information. Later authors like Eratosthenes, Strabo, Arrian, Diodorus, Pliny, Alian, Justin, Plutarch, etc. wrote on this subcontinent borrowed information not only from him but also from others. We do not have the original work of Eratosthenes, but like Megasthenes, his references are also quoted by later authors. Strabo referred only three times Megasthenes' name, and used other authors also such as Nearchus, Onesikritos, Aristobulus, Eratosthenes, etc. quotations in his work. Diodorus has not mentioned even a single time about him and while mentioning about measurement of the country he used his source in pluralistic form,ⁱⁱⁱ which clears the doubt that his source of information was not only he, but he was one among others. C. H. Oldfather who translated his work in English believes that he used other sources also. Majumdar says that fragment 'I' and 'II' of Diodorus' work has not been

taken from same source. A thorough critical analysis has been made on it by Sandhya Jain in her work.^{iv}

In one of his passage, Pliny claims that the knowledge on was not only explored by Megasthenes; but also, by Alexander and his armies as well as his successors like Seleucus, Antiochus, and their admiral fleet Patrocles, and the ambassador Dionysius.^v There are many writers and geographers were accompanied with Alexander during his invasion on India such as Ptolemy, Aristoboulos, Nearchus, Oneskritos, Eumenes, Hieronymos, Chares, Kallisthenes, Kleitarchos, Androstenes, Polykleitos, Kyrtilos, Anaximenes, Diognets, Archelaos, and Amyntas, etc., but their works have been lost now.^{vi} Ctesias also have written about India. This makes it clear that, other options were also available for first-hand information other than Megasthenes; but the fact is that, except him, Deimachus, and Dionysius hardly anyone has seen Ganges valley.^{vii} The work of all these ambassadors were lost, but the several Megasthenes' description were surviving in other author's work, and only a few quotations of Deimachus is surviving in Strabo's account. Staying as guest in Pataliputra made his observation reliable than others,^{viii} therefore his accounts has been sustaining the prime source of information about India for ancient period. Nilakanta Sastry says that no other writers of Hellenistic age "seems to have added anything of real importance to what Megasthenes had stated about India" and "writers who came after Megasthenes improved their knowledge of India's geography, but their account of Indian civilization was accurate only in the measure in which they followed Megasthenes."^{ix}

Apart from these celebrated writers there would be several others group of people, who used to provide information on Ganges valley. In one passage Strabo says "The merchants of the present day who sail from Egypt to India by the Nile and Arabian Gulf have seldom made a voyage as far as the Ganges. They are ignorant men and unqualified for writing an account of the places they have visited."^x This statement hints that Strabo expected crucial information from merchants who used to go India, but he got unsatisfied with them, because they did not make any documentation of their place of visit; nevertheless they definitely used their experiences for those wished to know about India, but the tendency not to write their experiences led them to forgotten. Strabo's statement could also be justified by Diodorus' work where he used his source in pluralistic form, which suggests that he used several sources for his knowledge on India; and with the close study of his account, it could be said that merchants who used to sail for India were definitely used to gather information about India. A lot of terracotta figurines of foreigners of this period found from Patna, Buxar, and other sites indicate that people from Graeco-Roman countries used to visited Mauryan capital and other parts either as traders, or travellers. These people were most probably would be also the major sources to get first-hand information about Ganges valley, but their role was forsaken.

Megasthenes, the Greek ambassador on the court of Chandragupta Maurya is believed to live much time in Pataliputra. Unfortunately, this work is not available now in its original form; but its several stray quotations was surviving in the works of several later authors, like, Strabo, Arrian, Pliny, Ptolemy, Diodorus, etc. In 19th century his work was tried to trace in other later writers account; as Felix Jacobi gathered 36 pages of Megasthenes Indica

with the name of *Fragmente der griechischen Historiker*; and in 1858, Schwanbeck, a French scholar gathered and compiled his stray quotations in French, which was later re-edited and translated into English by McCrindle in 1877. Thereafter, the book became the main alien source to get authentic information of Mauryan period. Though, there were controversy on the authorship of the book where several quotations which were probably not related to him were also accredited to him. Several objections on the authorship of this edited version of *Indica* have been filed so far, which is skipped here, because the theme of this paper is, to focus on the economic condition of Ganges plains as described by western authors of those days.

The political set up between these two empires fabricated a favourable platform, which led diplomatic activities; and in consequence, ambassadors were exchanged. Thus, they sieged this opportunity to explore and understand the strengths of India, as has been said by Pliny.^{xi} Megasthenes stayed in Pataliputra as an ambassador of Seleucus. Arrian has observed that he did not see India more.^{xii} His descriptions on agriculture, climates and others are very much familiar to Ganges Valley, and he himself used the term Ganges valley at some places. Information apart from the Ganges valley are limited. Ramchandra Dikshitar also agrees with Arrian's observation and says that "... there is no statement that he went into the country-parts outside the capital."^{xiii} Majumdar says "Megasthenes' *Indica* has long enjoyed the reputation of being a rich mine of useful and authentic information about India."^{xiv} It is certain that most of his observation would be confined in and around Pataliputra, but he also would have been observed many information on the way of his journey to Mauryan capital via the royal road. This road, according to him went further east up to the sea-coast, but the information of eastern region or lower Ganges valley was vague, as he himself says. Hence, the area of his observation cannot be exceeded beyond upper and middle Ganges plains, therefore area of study of this paper is confined up to upper and middle Ganges valley of Mauryan period.

Graeco-Roman accounts are the crucial sources to know about the economic condition of Ganges plains of Mauryan epoch; which discussed several aspects of economic and commercial life such as agriculture, climate, irrigation system, fertility of soil, types of crops, forecasting the rainfall, flood, famine, ownership of land, road and transportation, distance between two places, trade and commerce, taxation, occupation, crafts and industries, and officials related to economic activities, etc. All these topics have been discussed thoroughly below.

Agriculture: Agriculture and agricultural activities found enough place in their accounts and various aspects of agriculture related activities have been discussed. Even several unique information on agriculture, climate and on other topic which hard to find elsewhere in Indian literature, have been observed by them. Monsoon and river system of this subcontinent were unique phenomena for them; therefore, most of them have penned on these topics. Their statements on agriculture related topics such as rainfall and climate, irrigation, fertility of soil, forecasting of rainfall, crops, flood, famine, ownership of land, etc., have been discussed ahead, thoroughly.

Rainfall: Rainfall, and abundance of river streams were quite unique phenomenon for them; which made them astonished, therefore these were described not only by Megasthenes, but also by Eratosthenes, Diodorus, Arrian, Strabo, etc in successive centuries. Diodorus has said that there were two rainfalls annually in India, one in the winter season when people of the country sow wheat; and another in summer solstice which was the proper season for sowing rice, bosporum, seasamum and millet. He was amazed by the monsoon system which astonishingly fell on the plains of this subcontinent every year on certain time, and due to this system, the plains of India got flood in summer season, and no year lapsed without rain which made deep impact on agriculture; therefore, peoples of the country were very much convinced for their crop. They were sure that either of the two crops would be productive, if the rain of one season will be missed also; and this was one of the reasons to prosperity of the country.^{xv}

Arrian by referring Megasthenes and Eratosthenes says that summer is the main season for rainfalls in the plains of India, and in this season much of the plains are overflowed by rain water. In western world, it was believed that rivers were the cause the rainfall in plains of India in summer season, as they quote that vapour, which was cause to rainfall, vaporised from plenty of rivers of the Indo-Gangetic valley. The belief is very much evident in Eratosthenes' narration, quoted by Strabo that "from the vapours arising from such vast rivers and from the Etesian winds, as Eratosthenes states, India is water by summer rains and the plains are overflowed."^{xvi} Pliny quotes an earlier writer Posidonius' quotation that "there (India) are two summers and two harvests yearly, separated by a winter accompanied by etesian winds, while at our midwinter it enjoys soft breezes."^{xvii}

Irrigation: The availability of water and its management system played a decisive role for the destiny of Gangetic valley, because monsoon cycle and profusion of rivers have been providing adequate water for the agricultural works for the beginning of the human evolution. Natural means of irrigation has two forms, first monsoon which direct falls into agricultural land, and second by rivers; and both kind of sources have been discussed in Greco-Roman literature. Monsoon, which has been the prime source of irrigation in Ganges valley, was a strange experience for them; therefore, eagerly quoted by most of writers. In fact, they were amazed on the monsoon and river system of Ganges valley that how every year on a certain period rain falls, and does not fail to hit any year. They were also astonished on multitude of the river streams of the Gangetic plain. Diodorus, who was living first century BCE, quoted (Megasthenes' statement?)^{xviii} about the monsoon and river system of India that, the country is very rich by water; because, two annual rainfall along with plenty of rivers provide ample amount of water for irrigation.^{xix} Other writers like Eratosthenes and Strabo have also talked on two annual rainfalls. Eratosthenes has said that, "India is watered by summer rains and plains are overflowed."^{xx} Arrian have also same opinion.^{xxi} Megasthenes has mentioned that, plains of India were full of rivers, even Ganges itself had nineteen tributaries, wherein most of them flows from this valley.^{xxii} Panini's statement on the exploitation of river for irrigation,^{xxiii} confirms Graeco-Roman's statement; however, most of the rivers, which are mentioned by him belong to Indus plain. Thus, the monsoon cycle and abundance of river streams provided well water facility for irrigating

crops, throughout the Ganges valley. Megasthenes has also described that, in rainy season plains of Ganges submerged into water; and every year had two rainfalls, which provided well water facility for the agricultural work, and hardly any year passed without adequate rainfall.

People of the Ganges valley were mainly depends on monsoon for irrigating the agricultural land from primitive period, but in course of time they were also learnt to control the water, and developed several methods to artificial arrangement of water for their agricultural works; and up to the Maurya period, they accumulated a good knowledge on water management system, which is visible in books under review. They were impressed with water facilities of this country, therefore Diodorus has remarked that “the larger part of the country is well watered”,^{xxiv} however he has not made cleared that these facilities were in the form of monsoon and river or artificial arrangement. But his other statement “In addition to the grain of Demeter (wheat) there grows throughout India much millet, which is irrigated by the abundance of running water supplied by the rivers”^{xxv} indicates that a big part of Ganges plain was watered by canals and river-streams.

The water management by constructing canals was a common phenomenon in Indian subcontinent, which had been seen by Graeco-Roman, but Strabo talks on a unique system of water management. He says that an officer, who was the superintendent of rivers, and whose duty was to “inspect the sluices by which water is let out from the main canals into their branches, so every one may have an equal supply of it.”^{xxvi} This statement affirms that during the Maurya period managing water by making canals, and its branches consists of sluices displays the technical advancement in the field of water management and irrigation. Professor Otto Stein however, simplifies Strabo’s quotation by decoding it mere “as any waterway that could be shut up”^{xxvii}, while Ramachandra Dikshitar defines it “waterways which can be closed, and out of which is let out slowly so that all may have access to it”^{xxviii} seems to more logical. Kautilya talks on sluice gate of tank, and fixes penalty for those, who letting out water from tank, etc. from other place than sluice gates of tanks.^{xxix} The Junagarh Inscription of Rudradaman, which tells that the Sudarshan lake was furnished with *pranālīs*, i.e. sluices, and canals of Maurya period^{xxx} also strengthened Dikshitar’s analysis.

The hydrological advancement of Mauryan period can be infer by a stanza of Dhamapada (a pre-Maurya work), where a term *nettikās* has been used, which is considered “not simply water-carrier, but builders of canals and aqueducts, who forced the water to go where it would not go by itself.”^{xxxi} The quotation of Patanjali’s Yogasutra “the farmer who pierces the barrier of an irrigation canal himself causes the water to flow. Rather, in the same way that he simply unblocks the sole impediment to the force of gravity upon the mass of water”^{xxxii}, illustrates that during the period farmers were not only know the use of canals for irrigation, but they also understood the principle of the movement of water and the impact of gravity on it, which made them advanced in water management system.

Fertility of the Soil: Western world was very much amazed with the productivity of the soil of Ganges valley, therefore they paid attention on it; and they observed that silt deposited by inundations of rivers, moisture of the soil and favourable temperature were major factors for the fertility of the soil of plains of India. Diodorus, while discussing on the

factors for the fertility of the soil, has said that many great plains of this subcontinent have great fertility, and all are intersected by a multitude of rivers. He again says that, "... waters, agreeably to the natural law, flow down together from all sides to the plains beneath, where they gradually saturate the soil with moisture, and generate the multitude of rivers."^{xxxiii} He also made statements on the moisture of the soils, rainfalls, and heat of summer season also, that is "For practically all the plains of India enjoy the sweet moisture from the rivers and from the rains which come with astonishing regularity, in a kind of fixed cycle, every year in the summer, since warm showers fall in abundance from the enveloping atmosphere and the heat ripens the roots in marshes, especially of the tall reeds."^{xxxiv} Thus, he believed that, the adequate amount of water facility, either in the form of rivers or rainfalls, or artificial water management worked as the backbone of the agriculture; and the 'genial temperature', used to help to germinate seeds, and ripen crops and fruits. These were leading factors for the productivity of crops of Ganges plain.^{xxxv}

Graeco-Romans had a strong belief that the soil of the plains of this country was formed by the inundations of rivers; as Arrian quotes Megasthenes and Eratosthenes for their believe that a great part of India is a level plain which has been formed by the alluvial deposits of the river, as he himself says that "... and these rivers, though by no means large, are capable of forming, as they flow to the sea, much new land, by carrying down silt from the uplands, where their sources are, it would be unreasonable to reject the belief in case of India that this plain is formed from the silt deposited by the rivers."^{xxxvi}

Strabo says that "all the country beyond Hupanis (Hyphasis or Sutlej) is allowed to be very fertile."^{xxxvii} Further, by quoting Megasthenes he said that, Megasthenes gestures the fertility of the soil by the production of two annual crops which was both in the form of fruits and grains; and for justifying his words, he quotes Eratosthenes' statement that, "Eratosthenes writes to the same effects, for he speaks of a winter and summer sowing, which both have rain: for a year, he says, is never found to be without rain at both seasons, whence ensues a great abundance, since the soil is always productive. Much fruit is produced by trees; and the roots of the plants, particularly of tall reeds, are sweet both by nature and by *coction*. Eratosthenes also like Diodorus believes that moisture of the soil and temperature are responsible factors for the well productivity of Ganges plain, as he himself penned "since the moisture by which they are nourished is heated by rays of the sun, whether it has fallen from the clouds or been drawn from rivers."^{xxxviii}

Forecasting the rainfall: To forecast the rainfall the position of stars and planets do not examine by meteorologists in modern time, but it was a common phenomenon of early historic period. Megasthenes^{xxxix} has discussed that a group of the people used to predict the about the weather of the region in the beginning of the year. He has said that, people used to gather together for getting information regarding to weather of the year, and the persons from the class of philosophers used to forewarn people about the wet and dry weather, and of favourable winds. He again has said that people and state used to be conscious for their prediction; therefore, they always ready to face any kind of difficulties, if it was forewarned. It also seems that these predictions not always corrected therefore, he has

quoted that, these group of predictors be so serious for their forecast, and if any one fails to forecast correctly, has to leave their job of forecasting for life time.

Indigenous sources also talk on weather forecasting of early historic periods. Undoubtedly, these astronomers and weather forecasters were from the same class as Megasthenes has depicted. By keen eyes, the movement of stars and planets used to examine; and by the experiences which generated by generations were invested to forecast the weather report. Therefore, Kautilya says that “a forecast of such rainfall can be made by observing the position motion ‘pregnancy’ (*garbhādhān*) of the Jupiter (Brihaspati), the rising and the setting and motion of the Venus (Sukra) and the natural or unnatural aspect of the sun.” He again says that “From the sun, the sprouting of the seeds can be inferred; from (the position of) the Jupiter, the formation of grains (*stambakarita*) can be inferred; and from the movements of the Venus, rainfall can be inferred.”^{xi}

Crops: Referred authors have also discussed several kinds of crops, whose cultivation was common in a greater part of India. Deodorus has mentioned some sort cereals which were cultivated; like- millet, different sorts of pulse and rice, wheat, *bosporum*, sesamum; and also, some edible plants, which were either cultivated, or grew spontaneously. Due to double rainfalls, two harvests were cultivated annually; one in the winter season, wherein wheat was the main crop used to sow,^{xii} wherein Strabo has added barley, pulse, and some kind of esculent fruits also.^{xiii} The second, in summer solstice, which was the proper season for the cultivation for rice, millet, *bosporum* and sesamum. Several edible products for animals were also either cultivated or grew spontaneously. Peasants always felt secured for their crops that, if one harvest would be abortive, the other will be fruitful.^{xiii} Diodorus says that the production of fruits were common, wherein several fruits were grown spontaneously, and esculent roots, which were cultivated in marshy land, yielded in enough quantity, and therefore was easily procurable for masses. He also tells that, there was the class of people, grouped in neatherds and shepherds; used to helped husbandmen in their agricultural activities for removing pests, wild beasts, and birds which devour the seeds sown by them.^{xliv}

Ownership of Land: Three different types of proprietorship of land are visible in early historic period i.e. crown, private and community; but Megasthenes has said that all land is the property of the crown and his creditability is also undoubtable. It seems that lack of proper study of the ownership of land was the reason for such statement. His basic source of information was royal officials, wherefrom he used to gather information regarding state affairs. His statement that all land was the property of crown would indicate those land only which was the property of king, not all land. It is quite possible that he got information only about the royal land i.e. *sītā*, which was undoubtedly the property of crown; and misguidedly generalised that all land was king’s property, and did not made further effort to trace about other kind of proprietorship of land existed or not. It may also possible that a big of agricultural land around Pataliputra would be royal land (*sītā*). Megasthenes collected most of his information from Mauryan capital; and most probably during officials dealing with royal land he made his enquiry about taxes and ownership. Other side *sītādhyakṣha*, which literary means the superintendent of royal land, but actually he was the

superintendent of agriculture, also might be misguided him to understand the nature of land proprietorship. He might have been concluded, if the *sītā* was king's land, and *sītādhyakṣha* was the superintendent of all agricultural land, so definitely all land would be the king's property.

Flood and Famine: Graeco-Roman authors have quoted that plains of India used to sink into the water in the rainy season, but they never mention flood which caused the destruction of agriculture. In contrary, they quote that peasants always be happy regarding to their cultivation, and they were quite sure for their crops of every year. The reason behind it was, the two harvests annually. So, they had strong believed that, one crop would be cultivated successfully at least, if one harvest would prove abortive; and this assurance had been come by their generations and experience. However, most of years they successfully cultivated both crops. These statements itself possess a clue that failure of harvest was not unknown and the failure would must be due to flood in most of the case, because by flood summer harvest would be destroyed; but the winter crop would be fruitful, however they may be other reasons also for harvest failure. Another indication regarding flood and famine is found in a quotation of Diodorus' account, where he has said that there was a class of Philosophers whose duty was to "foretell to the multitude droughts and rains, as well as the favourable blowing of winds, and epidemics, and whatever else can be of aid to their auditors. For both common folk and the king, by learning in advance what is going to take place, store up from time to time that of which there will be a shortage and prepare beforehand from time to time anything that will be needed."^{xlv} This is a clear indicates that monsoon did not equally distributed in all regions, and this inequality led to occurrence of flood and famine, therefore common men as well as state used to store grains as per predictions of these philosophers. There is some other important clues regarding flood found in westerner's account that "cities as are situated on the banks of rivers or in the sea-coast are built of wood instead of brick, being meant to last only for a time, - so destructive are the heavy rains which pour down, and rivers also when they overflow their banks and inundate the plains."^{xlvi} This quotation explicitly inform that flood was not an uncommon phenomenon in those days, and cities which were near to rivers or sea used to affected by flood; and therefore they were force to construct houses of wood, so that losses of live and property could be limited. A thorough study of archaeological sites for better understanding the floods of this period badly needed.

Megasthenes has affirmed that famine never had visited India, and never been a general scarcity of the supplying of nourishing food.^{xlvii} For this statement, he has given some justification, like double rainfall and double harvest annually, fertility of the soil which sustains moistures, sufficiency of water, suitable climate, great number of men power, etc.; but the most remarkable thing regarding to non-occurrence of famine was the isolation of peasants from war, and the consciousness among mass and state regarding the importance of agriculture, as it has been said that "husbandmen are regarded as the class that sacred and inviolable, the tillers of the soil, even when battle is raging in their neighborhood, are undisturbed by any sense of danger, for combatants on either side in waging conflict make engaged in husbandry to remain quite unmolested. Besides, they neither ravage an enemy's

land with fire, nor cut down its trees.”^{xlviii} It was a quite unique characteristic of Indian politics and Ethics of war. It indicates that Indian kings were well aware of the importance of agriculture for means of livelihood and taxes during 3rd-4th century BCE, and during those periods the main objective of a king to subjugate neighbouring kings, not to loot. It was the time the notion of *chakravartī samrāt* (sovereign king) was taking shape, and only Mahapadma Nanda and his successors ruled over a vast area for a few decades, before Chandragupta Maurya; and therefore, the notion for occupy the neighbouring state at any cost would not have been developed. But, soon the notion of *chakravartī samrāt* started to grow rapidly among Indian kings, who began to follow the notion of win the battle at any cost; which is visible in Arthashastra where Kautilya advises to king that, a king should destroy the seasonal crops of his enemies during his military march,^{xlix} so that they would be weakened economically and in resultant, it become easier to conquer them. Thus, he legitimatises such tyrannical activities to destroyed enemy’s power, and the ethics of war which was seen by western travellers was began dominated by the notion of winning a battle at any cost in successive periods.

Trade and Commerce: Graeco-Roman sources have not highlight commercial activities; nevertheless, by some inconspicuous reference information could be carved out regarding trading activities of Ganges valley. Megasthenes classified Indian society into seven classes, wherein class fourth was consisted of traders. His statement on the city administration of Mauryan capital that, the city used to control by a committee of six governing bodies; wherein four bodies i.e. superintendent of industrial arts, superintendent of trade and commerce, superintendent of manufactured articles, and superintendent of collecting taxes on sold articles highlight the commercial activities of Maurya period. This alludes that during the time a setup of commercial system was well-established, and state understood the value of industrial enhancement, accordingly governing bodies were constituted for better command on their functions. Pliny says that some groups of people were indulged in mercantile activities and import and export goods from abroad also.¹ Pausanias a Greek traveller and geographer of second century CE talks on Indian traders and their mode of exchange that “Traders to India tell us that the Indians give their own wares in exchange for those of the Greeks without employing the money, even though they have gold and copper in abundance.”^{li} Totius Orbis Descriptio, a Latin translation of a lost Greek original work of mid of the fourth century CE inform us that silk and all kinds of necessities were exported from India.^{lii} These silks were imported to India from China and forwarded to western countries by Indian merchants.^{liii} Appian (Second Century CE) says that Indian commodities were sent to Rome via Persia and Arabia also by merchants of Palmyra.^{liv} Ivory and black ebony were common commodities to export western countries therefore found place in the poems of great Roman poets like Virgil.^{lv}

Diodorus and Strabo say that, peasants refrain entirely go to the city,^{lvi} reveals that there must have been commercial groups of people, which were active as mediators between the rural and urban areas, who carried goods from village to town, and from town to village, about which indigenous sources also provide information on such groups of people, whose main work was to carry village production into town and town production into villages.

Trade routes: Authors under reviewed, do not discuss on trade route of Ganges valley directly, although they talk on a royal road of Maurya period which went western-most border or Gandhara region up to Mauryan capital Pataliputra, and even up to the mouth of the Ganges. Strabo, by referring Eratosthenes and Megasthenes provides the length of this road up to Pataliputra 10,000 stadia, which was measured by *schoeni* (a unit of measurement). Beyond Pataliputra, measurement was not fixed, but was guessed on the basis of time taken in the voyages up to sea via the river Ganges, which was around 6000 stadia. The entire length from west to east was 16000 stadia fixed by Eratosthenes.^{lvii} Arrian also, by referring these two authors has provided similar information on it.^{lviii}

Pliny has listed the distance between important trading posts or urban centre, which lies on the royal road, as he says “From Hyphasis 168 miles to the Hesidrus, and to the river Jomanes as many (some copies add 5 miles); from thence to the Ganges 112 miles. 119 miles to Rhodapha (other gives 325 miles for this distance). To the town of Kalinipaxa 167-500. Others give 265miles. Thence to the confluence of the Jomanes and Ganges 625 miles (many add 13 miles), and to the town Palimbothra 425. To the mouth of the Ganges 738 miles.” Hesidrus is identified with Sutlej; Hyphasis, with Beas; Jomanes, with Jamna near present Bureah; Ganges, with a near-place of Hastinapura; Rhodapha, with Dabhai near Anupshahr; Kalinipaxa, with a town lying near the Kalinadi at Kannauj.^{lix} Some errs are found on Pliny’s assigned distances, which has been critically studied by McCrindle.^{lx}

In Indian literature, however it has not been mentioned as a royal road but as ‘Uttarāpatha’^{lxi}, which was often used for trading activities; and also, to reach Taxila, which was a renowned centre of education in those days. Graeco-Roman writers’ statement that road up to Pataliputra was measured properly, while beyond it, it was not measured. This means the route, that went via Pataliputra to the North-west was highly valuable for royal dynasties for political as well as economic aspect, comparatively, the route that went to eastern sea; and, the narration ‘royal road’ alludes that, this road had high traffic also, and was maintained and supervised by government authority. He talks on an official named *agronomoi*, whose one of the duties was to construct or maintain roads, and to install stone pillars on every ten stadia to get know the distances.^{lxii} Eratosthenes, while discussing the distance between the western border of India up to Pataliputra says, that he got information on distances among places from the authoritative registers, which were available on fixed distances.^{lxiii} This alludes that in Maurya period, a separate official had been constituted who was responsible for taking care of roads, and whose duties was to construct and maintain roads. The other works of this official was to measure the distances between two places and penned it in registers, and also to fix milestones on every 10 stadia or 1 *krośa*. Check-posts of this department had been installed throughout the royal road on certain distances, so that anybody could get information on the distance among various places; and most probably, the data which is found in Pliny’s Natural History regarding distances among various places must have been derived from these registers. The metering of long-distance and formation of a separate official who used to keep data of various distances informs us that Indians had been expert in measuring the land and distance and were quite aware of the value of it. Therefore, Alexander Cunningham remarks “their close agreement

with actual size of the country is very remarkable, and shows, that the Indians, even at the early date in their history, had a very accurate knowledge of the form and extent of their native land.^{lxxiv}

Rivers were also used as a medium of traffic and transportation in Ganges plains, during this period. Graeco-Roman's account have not put light on it directly; however, some indirect speeches attract our attention towards it. As, Megasthenes, besides the tributaries of Indus and Ganges penned a list of 58 navigable rivers, whose streams did not join into Indus and Ganges;^{lxxv} and has quoted 17 navigable tributaries of Ganges,^{lxxvi}, although Pliny has told that the figure was 19.^{lxxvii} Diodorus has described that India has many large rivers "which are navigable which stretch along the northern frontier, traverse the level country (i.e. Gangetic plain), and not a few of these, after uniting with each other, fall into the river called Ganges. Now this river ... empties its waters into the ocean."^{lxxviii} The Ganges was used as voyage from Pataliputra to the eastern sea (mouth of the Ganges).^{lxxix} Boats were means of river transportation as Strabo writes "the admiral of fleet lets out ships on hire for the transport both of passengers and merchandize."^{lxxx} Above statements project a clear picture that, rivers were used for navigation purpose also and Ganges undoubtedly, was the busiest river traffic of northern India. Bullock-cart (Bullock- train are said by Strabo) was the main medium of transportation of goods.^{lxxxi}

Craft, occupation and Industry: Foreign records give information about class of artisans, who were indulges into miscellaneous types of crafts and occupations, like- huntsmen, shepherds, neatherds, armourers, traders, woodcutters, blacksmith, carpenters, goldsmith, weavers, peasants, potters, etc. The fourth class of society was the class of traders and artisans, wherein those were indulged in armourer, shipbuilding, and others who used to make implements for farmers and for others were in good economic condition; because, these classes were freed from paying taxes, and received maintenance from the royal exchequer.^{lxxxii} Some groups from artisan's categories had to pay tribute and rendered certain prescribed services for the state.^{lxxxiii}

The occupations of artisans seem to be highly important for the state, which could be imagine by the statement of Graeco-Roman author that, if someone maims anyone, so in return, his same limbs including a hand was mutilated; and chopping hairs were the highest degree of penalty to infamous; but, if someone harmed artisans' eyes or hands, was put to death.^{lxxxiv} It also indicates that crafts and industries were developed as one of the major sources of income of the state, therefore state was very much conscious about safety of eyes and hand of artisans which were the main instrument for them; and Items manufactured by them were considered highly valuable for regulating commercial activities of the state and producing necessary implements for the society. Occupation of goldsmithing, and garment industry were well-flourished. Precious stones and metals were used for making ornaments and decorate garments. It is said that Indians were very much found of ornaments and fine garments, which seems to be a factor for developing the skill of goldsmithing and garment industries. The skill of making garment were developed in such extent that, gold and precious stones were used to brocade in garments. The proficiency in the fabrication of garments of muslin can be infer by the statement of above-mentioned writer that, flowered-

designed garments made of muslin were also produced.^{lxxv} The specialization of the craft and occupation according them had been well classified in the Maurya period; as Pliny's has said "for the people of the more civilized Indian races are divided into many classes in their mode of life: they cultivate the land, other engage in military service, other export native merchandise and import goods from abroad, while the best and wealthiest administer the government and serve as judges and as counsellors of the kings."^{lxxvi}

Graeco-Roman authors have not provided information regarding industry of the Gangetic plains; however, some inconspicuous information related to industries such as Liquor industry,^{lxxvii} armour-making industry, shipbuilding,^{lxxviii} metal based industry^{lxxix}, and textile industry are visible.^{lxxx} As it is informed that Pataliputra was controlled by a council of six bodies, wherein the first department looked after affairs related to industrial arts.^{lxxxii} Western sources also put some light on mining work and craftsmanship of Maurya period; as Diodorus has noted down, "it has also underground numerous veins of all sorts of metals, for it contains much gold and silver, and copper and iron in no small quantity, and even tin and other metals, which are employed in making articles of use and ornament, as well as the implements and accoutrements of war."^{lxxxii}

Taxation: Megasthenes has mentioned that two different kind of land taxes were paid by peasants to the state. The first one, what he called it a land-tribute, was paid to the king, because all India was the property of the king, and no private person was permitted to own the land while; second was the tax paid to the royal treasury, which was one fourth part of the produce of the soil.^{lxxxiii} The first is would be *bali*.^{lxxxiv} The term *bali* is however a controversial term, because different literatures referred it with different meaning, but Asoka's Lumbini inscription indicate it as a land tribute and during Mauryan period it was a recognised and compulsory tax which was a source of income for the state. The second was the tax on the produced on the soil, which is commonly called as *bhāga* in indigenous literatures generally prescribed 1/6 of the produce.^{lxxxv} In Arthashastra it is called *śadabhāga*,^{lxxxvi}

Megasthenes has said that one-fourth part was the tax on the produce of the soil, but Indian literatures advocate one-six part of the produce generally. Virtually, Indian literatures represent the idealist approach of king's share, which may or may be not implemented by kings in reality, while Megasthenes' statement seems to the actual practice of the period^{lxxxvii}, and this seems to be logical more, because 1/6 as land tax would not be adequate for maintaining such a vast territory, grid of bureaucrats and lakhs of standing army whom were paid in cash. Even Kautilya himself has suggested that at the time of distress and replenishment for treasury the king shall demand one-fourth of grains.^{lxxxviii} Generally, artisans also had to pay taxes, but some groups of this categories like armour-maker, shipbuilders, those who made implements for peasants and others, and the sailors employed in the navigation in the rivers were free from paying taxes; even they were received maintenance from the state. It seems that those artisans worked for the state were free from paying taxes and receiving maintenance from the state, as Kautilya also says "Artisans shall be provided with wages and provision in proportion to the amount of work done by them."^{lxxxix} Traders used to pay certain tax on their commodities, and no one had allowed to

deal in more than one kind of commodity unless he paid a double tax.^{xc} The sixth governing body of Pataliputra was accountable of the tax collections on sold items, and also fixed the rate of it, which was generally, one tenth of the price of items.^{xcⁱ} There was also a penalty for mixing old goods with fresh.^{xcⁱⁱ} Taxes were also levied on births and deaths.^{xcⁱⁱⁱ}

In Mauryan time taxation were developed on large scale, and become sophisticated. As Pliny says that “Their king has in pay a standing army of 600,000 foot-soldiers, 30,000 cavalry, and 9000 elephants: whence may be formed some conjecture as to the vastness of his resources.”^{xc^{iv}} The vastness of the resources of Mauryas, which has been described by him on the basis of the figure of the paid standing army of Chandragupta Maurya could be possible by the vast development of taxation and economic development only. In *Arthashastra* (Book V Ch. III), a detail discussion has been made on the salary and payment of bureaucrats, officials, soldiers and waged labours. The theft punishment, and punishment for selling not genuine product in market, etc. were chastened into the form of economic penalties, which indicate that the taxation was elaborated on high level; and these administrative and revenue developments could be possible by the economic enhancement. Strabo has quoted officers of various departments, who were responsible for collecting taxes and superintend the occupations connected with the land, woodcutting, carpentry, blacksmithing and mining, etc.^{xc^v} These all together make it explicit that during Maurya period the taxation was expanded a lot and Graeco-Romans were well aware of the vastness of revenue system of Maurya period. Foreign accounts are silent on the medium of exchange of goods, and obscured about the taxes were collected in cash or kind.

Conclusion: Alexander campaign on Indus Valley set a new era for India and the western world, in consequence the door of India was unlocked for them; and this opportunity was used by them to explore and write about this subcontinent, what they looked and perceived. A thing, that can be determine with the study of the fragmentary-form of *Indica* and other sources, that they were quite amazed with some of the characteristic of India and Indian; and therefore many authors of later period borrowed those references and placed in their accounts, which was unique for them, such as rainfall, multitude of rivers, formation and fertility of the soil, dimension of the country, elephant and other animals, tribes, mountains, society, physical description of the city of Pataliputra, etc. Apart from these, some other information related to economic values have been also penned, such as the ownership of land, kings share on agricultural productions, irrigation system, officials, crafts and occupations. The vastness of the resources of the Mauryas was visualized by Pliny, which exhibit the vast development of taxation system and economic development of the period. The zenith of this development can be inferred by the system wherein theft punishment and punishment for selling not genuine product in market, etc were chastened into the form of penalties; which is correspondence to the ideology of taxation found in *Arthashastra*.

In sum up, it can says that these foreign accounts discuss several aspect of economic activities of Ganges valley of Maurya period; like- agricultural affairs, crafts, occupation, industry, trade and commerce, as well as governing bodies related to economic activities; and by close analysis of these source a good deal of information regarding monsoon, rivers, irrigation, soils, climates, crops, water distribution system for agricultural field, land and

distance measurement system have been extracted; which help us to understand the economic condition of Ganges valley. They had strong belief that two annual rainfall, abundance of rivers and water channels for irrigation, fertility of soil, and climate were causes to the excessive agricultural production. The importance of artisans has been also discussed which is hard to find in indigenous sources. At last, from the detail provided by foreign accounts, it might be summarized that, Ganges Valley had a well-flourished economic system; where the surplus production of rural area, specialization of occupations, and commercial activities strengthen the economy; while administrative expansion helped to control the commercial activities, collecting taxes, and maintaining law and order.

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ⁱⁱ *A good deal of terracotta figures and figurines of western people belongs to Maurya period is found at Patna, Buxar and other sites indicates that Graeco-Roman people used to visit often in the cities of Ganges valley, especially in the Mauryan Capital Pataliputra.*

ⁱⁱⁱ *"India as a whole, they say, extend from east to west twenty-eight thousand stades, and from north to south thirty-two thousand."* Here 'they say' explicitly reflect that there was a common notion among some authorities who believe that India is 32,000 stades long and 28000 stades broad. Oldfather, C. H., (trans.), *Diodorus of Sicily Vol. II*, Harvard University Press, 1967, p. 3.

^{iv} Jain, S., *The India They Saw Foreign Accounts: 5th Century BC to 7th Century AD (Vol. I)*, Ocean Books Pvt. Ltd., New Delhi, 2011.

^v Rackham, H. (trans.), *Pliny's Natural History (Vol. II)*, Harvard University Press, London, 1947, p. 381.

^{vi} Kalota, N. S., *India as Described by Megasthenes*, Concept Publishing company, Delhi, 1978, p. 19.

^{vii} *There are some other ambassadors visited in Mauryan court like Deimachus and Dionysius but their works on India have not been survive except a few narrations placed by later authors.*

^{viii} The Reliability of Megasthenes' account has been questioned by Strabo (Strabo II, I, 9) and proclaimed him as a liar, nevertheless his work was always used as the prime source for India, specially Ganges valley.

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- ^{xiii} Dikshitar, V. R. R., *The Mauryan Polity, Madras University Historical Series, No. VIII*, University of Madras, Madras, 1932, p. 332.
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- ^{xvi} McCrindle, J. W., *Op. cit.*, 1877, p. 55.
- ^{xvii} Rackham, H., (trans.), *Op. cit.*, p. 381.
- ^{xviii} *Several of Diodorus' statement related to India which is considered to taken from Megasthenes is controversial, because he has not mentioned Megasthenes at any place.* (Jain, S., *Op. cit.*, p. xxii)
- ^{xix} Oldfather, C. H., *Op. cit.*, pp. 7-9.
- ^{xx} McCrindle, J. W., *Op. cit.*, 1877, pp. 54-55.
- ^{xxi} *Ibid.*, p. 197; Rooke *Op. cit.*, 1813, p. 211.
- ^{xxii} Rackham, H., (trans.), *Op. cit.*, p. 387; McCrindle J. W., *Op. cit.*, 1877, pp. 186-90.
- ^{xxiii} David, W., *The Yoga Sutra of Patanjali: A Biography*, Princeton University, 2014, p. 139.
- ^{xxiv} Oldfather, C. H., *Op. cit.*, p. 5.
- ^{xxv} *Ibid.*, p. 7.
- ^{xxvi} McCrindle, J. W., *Op. cit.*, 1877, p. 86.
- ^{xxvii} Dikshitar, V. R. R., *Op. cit.*, p. 332.
- ^{xxviii} *Ibid.*, p. 331.
- ^{xxix} Shamasastri, R., *Kautilya's Arthaśāstra (5th Ed.)*, Sri Raghuvir Printing Press, Mysore, 1956, p. 193.
- ^{xxx} *ARASI 1914-15*, p. 70
- ^{xxxi} Muller, F. M., (trans.), "The Dhammapada: A Collection of Verses", *The Sacred Books of the East, Vol. X, Part I*, Oxford, At the Clarendon Press, 1881, p. 23.
- ^{xxxii} David, W., *Op. cit.*, p. 139.
- ^{xxxiii} Oldfather, C. H., *Op. cit.*, p. 11.
- ^{xxxiv} *Ibid.*, pp. 7-9.
- ^{xxxv} McCrindle, J. W., *Op. cit.*, 1877, p. 36.
- ^{xxxvi} *Ibid.*, pp. 46-47; Rooke, *Arrian's History of Alexander's Expedition with Notes Historical, Geographical, and Critical, Vol. II*, London, 1814, pp. 12-13.
- ^{xxxvii} McCrindle, J. W., *Op. cit.*, 1877, p. 67.
- ^{xxxviii} *Ibid.*, pp. 54-55.
- ^{xxxix} *Ibid.*, p. 41.
- ^{xl} Shamasastri, R., *Op. cit.*, p. 128.

- xli *Ibid.*, p. 32.
- xlili *Ibid.*, p. 55.
- xliv *Ibid.*, p. 32; Oldfather C. H *Op. cit.*, pp. 7.
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- xlv Oldfather, C. H *Op. cit.*, pp. 21.
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- xlviii *Ibid.*, p. 33.
- xlix Shamasastri, R., *Op. cit.*, p. 369.
- ¹ Rackham, H., *Op. Cit.*, p. 387.
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- liii *Ibid.*, p. 211.
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- lv *Ibid.*, p. 454.
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- lvii McCrindle, J. W., *Op. cit.*, 1877, p. 50.
- lviii *Ibid.*, p. 185; Rooke, *Op. Cit.*, 1813, p. 208.
- lix McCrindle, J. W., *Op. cit.*, 1877, pp. 12, 129-30.
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- lxxiv *Ibid.*, pp. 71, 73-74.
- lxxv *Ibid.*, p. 70.
- lxxvi *Ibid.*, p. 136.
- lxxvii *Ibid.*, p. 72.

^{lxxviii} Ibid., p. 84.

^{lxxix} Ibid., p. 72.

^{lxxx} Ibid., p. 70

^{lxxxii} Ibid., p. 87.

^{lxxxiii} Oldfather C. H., *Op. cit.*, pp. 5-7.

^{lxxxiiii} Ibid., pp. 21-23.

^{lxxxv} Thapar R., *The Penguin History of Early India: From the Origin to AD 1300*, Penguin Books, New Delhi, 2003, p. 187.

^{lxxxvi} Olive Parrick (Tr. & ed.), *Dharmasutras: The Law code of Ancient India*, Oxford University Press, New York, 1999, pp. 95, 195, 251; Shamasastry R., *Op. cit.*, p. 58.

^{lxxxvii} Shamasastry R., *Op. cit.*, p. 99.

^{lxxxviii} Megasthenes' source of information was royal officials, wherefrom he would be collected information on it. Dhanananda, the predecessor of Chandragupta Maurya was famous for his wealth, which were collected by imposing heavy taxes and duties. It is quite possible that the tax on produce of the soil was increased during his period, and Chandragupta might be followed the same taxation rate on agricultural produce, which was also highly necessary for his expensive wars and maintaining huge standing army and bureaucrats.

^{lxxxix} Shamasastry R., *Op. cit.*, p. 272.

^{lxxxix} Shamasastry R., *Op. cit.*, p. 130.

^{xc} McCrindle J. W., *Op. cit.*, p. 87.

^{xc} Ibid, p. 87.

^{xcii} Ibid, p. 87.

^{xciii} Ibid, p. 87.

^{xciv} Ibid, p. 139.

^{xcv} Ibid, p. 86.