

# Geological Factors Responsible For Harappan Trade: A Case Study of Haryana

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**Abstract:**

*As the issue of long distance trade in early phase of Indus civilization has been a subject of curiosity and fascinating the scholars, this paper is a regional study to establish the important role played by the geology of Haryana in the growth of trade during the phases of Harappan Civilization. The geo political situation of the Haryana region is mainly responsible for its economic prosperity and growth of Harappan civilization. The archaeological findings are the valuable evidence for tracing the trade-contacts of Haryana with contemporary western regions. The goods were imported or exported both by land route and the water channels to the southern regions and Middle East countries. Apart from the usual channels of movement through the north-west a distinctly new configuration during this period was the way in which the Swat-Dir area was integrated with Afghanistan and Central Asia on the one hand and linked with the Kashmir valley on the other. Geographical locations and concentration of Harappan settlements on geo-archaeological map of Haryana shows the extensive reciprocal internal contacts with each other, which was the responsible factor for the prominent position of Haryana in the Harappan trade economy as a whole.*

**Key-words:** Physiographic, Province, Agro-products, *Gabarband*, Pre-Cambrian, Communication, Inter-discipline, Site-catchment, *Sarasvatī – Driśdvatī*, *Chautāng*, *Ghaghara-Hākrā*

**Introduction:** In the growth of Harappan Civilization in Indian sub-continent, the contribution of Haryānā has been of immense value. Due to occupying very important geological positions, the region builds a reliable model for understanding the geological factors responsible for the trade economy of Indus

Civilization. Recently the excavations in Farmana Zone opened a new chapter in the

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early farming communities of the *Sarasvatī* valley. It has pushed back the antiquity of settled life of Harappans in Haryana from 3<sup>rd</sup> millennium to 7<sup>th</sup> millennium B.C. Previously, the explorations conducted by different scholars of Kurukshetra University Kurukshetra and more particularly those by Suraj Bhan brought to light a large number of settlements of early farmers of *Sarasvatī* valley.

**Aim of the Study:** A rough demarcation between man and nature, however, cannot be made and as Norman Pounds explained, "Wherever man and natural products are concerned the 'idea' intervenes". (**Norman Pounds 1980: p13**) In this way natural regions are simply region of possibilities for any cultural groups. The problem before us is to what extent geological environment guides the development of Harappan trade in Haryana?

Thus, the aim of the research paper is to examine the role of geological factors gave impetus to the Harappan trade economy and how the geological and geographical formations of Haryana region affected the development and growth of a civilization. How these things help in nurturing the trade mechanism in Haryana during Harappan period and its relation with outside regions. Another objective of the study is to show which sites emerge as the prominent centers of trade and centers of raw materials due to their geological location.

**Methodology:** The hypothesis behind this approach is what Subbarao has rightly said that "for an intelligent understanding of the pattern of development of culture in India, one should begin with the geological factor". (**Subbarao 1958: p. 8**) An observational analysis denotes availability of water as the major factor responsible for



the attractive sites and site catchments. In fact, maximum concentration of Harappan settlements appeared along the river beds or in the water-divide areas. In this way, an inter-disciplinary approach has been applied to derive significant observation and conclusions about the development of Harappan trade economy by considering geological features of the region of Haryana.

**Theme of paper:** It is for some good reasons that we are opening the account with the geographical factors. Geography is now no longer a narrative of dull facts about the earth but it should show the relationship between the human cultural development and the physical features influencing it through the ages. It is to interpret human life in this light and to remodel it in order to derive the maximum benefit to mankind from nature. Every region has its own character to which man and its atmosphere contribute a lot and so is the case with the Haryana in the *Sarasvatī – Driśdvatī* valley. So a strict demarcation between geography on the one hand and culture & archaeology on the other is neither possible nor desirable. The raw material is common to the both the branches.

Haryana is one of the most important areas which have given a surprising picture of cultural movement and local tradition. The discovery of the Hakra Ware Culture and subsequently Harappan culture in *Sarasvatī – Driśdvatī* valley doubtless constitutes a landmark in the archaeology of Indian subcontinent.

**Geo-cultural features of the region:** The term *Dhāna* represents smallest settlement of a habitation *Thar* Desert region has been generally identified locally in Haryana as *Bāngar*, *Nardak*, *Bihad*, *Bagad*, similarly *Khāder*, *Jangal* (*Janghal*), etc. All these nomenclature gives an expression of the area, land, its nature and people inhabitants therein and accordingly were called *Bāgadi* or *Bāgado* (in case of ladies) *Khadervey* or *Khadro* or *Paharo* or *Parva* etc. In the light

of such oral traditions without any ambiguity, it seems that Haryānā also derived its name on account of land, people and culture. (Jagpal Mann 2013: p.9)

**Geological Formation of Haryana:** Geologically Haryana is bounded by the *Arāvalli* hills in south, *Thar* Desert in southwest, river *Ghaghara* in northwest, *Śiwālik* Hills in the north and river *Yamunā* in the east. The *Ghaghara* Basin lies mostly in the states of Haryana and Rajasthan. The geological formation of the state of Haryana range from Pre-Cambrian to the recent times and can be dividing into *Arāvalli* system, *Śiwālik* system and alluvial plains.

**Śiwālik Zone:** The *Śiwālik* system is located to the northeast of the *Chautāng* Basin basically composed of sedimentary rocks. There are hardly any hilly tracts in northern Haryānā, except a few in Ambālā, Panchkula and Yamunā Nagar districts. The tract lies near the foothills of Himalayas and forms part of the sub-mountain tract of Pinjore, Kalka, Nalagarh, etc. The discovery of Stone Age tools from Pinjor, Chandigarh and Ferozepur-Jhirka, further suggests the Prehistoric antiquity of the human habitation in this region.(G.C. Mahapatra 1966: 221-27) This region was meant for some raw materials for stone and wood industry for Harappan trade centers in the vicinity of Haryana.

**Arāvalli Region:** *Arāvalli* hills are the oldest formations present to the south and west of the *Chautāng* Basin, which is composed of quartzite, quartzite sandstone, mica, schist, jasper, agate, rhyolite and crystalline limestone. (V.N. Misra 1977: p.37) The *Arāvalli* hills are exposed in the Gurgaon, Mahendergarh, Rewāri and Bhiwani districts of Haryānā. The *Arāvalli* ranges formed a narrow strip all along the border districts of Haryānā, south-west to north-east direction upto Delhi.

Although, the fine Agate was imported from the agate mines of Rajpipla

(Gujarat) through some middlemen. (S.R. Rao 1991: p. 182) However, agate was also available from the off shoots of *Aravalli* and *Vindhyan* hills to the Harappans. (E. Pascoe 1931: pp. 674-91) This region was a great source of minerals and semi gems besides yielding the timber for boat building. (H.S. Pareek in MGSI, Vol. 115) The hills tribes collected the mineral and forest products and supplied them to the Harappans living in the plains perhaps through some middlemen. Visibly, Archaeological evidence based on hunting-gathering and agro-pastorals has been evidence in Tilwara, Bagor and Ganeshwar-Jodhpura. Tilwara situated on the left bank of Luni, has reported two phases of occupation, the lower one regarded as Mesolithic. This phase is characterized by microlithic. The main type consisting of backed blades, obliquely blunted blades, lunatic triangles, points and few trapezes displaying a remarkable perfection in form and workmanship. The materials used were quartz, quartzite, chert and rhyolite. Quartz was available in river bed, whereas other materials in the Malini formation located near Tilwada. (Amrender Nath 1999: pp.17-18)

**Plains:** The *Chautāng* (very often identified as Rigvedic *Driśdvatī*) river was a major feeder to the Ghaghara (very often identified as Rigvedic *Sarasvatī*) in the past, most probably until around 2000 BCE. Both of the rivers flow parallel to one another from some distance, but the river *Chautāng* takes a more southerly course, It turns west, passes through Hisar and the well-known archaeological sites of Balu, Rakhigarhi, Siswal, Sothi and Nohar. (Bal Bhadra 1972: p. 37) It joins the *Ghaghara* near Suratgarh, where the Harappan site of Kalibangan situated. The *Chautāng* plain is formed of deposition of alluvial sediments. The whole expanse of the alluvial plain with relict channel beds of the rivers *Chautāng* and *Ghaghara* have occasionally shifted their beds in the Holocene times leaving interlocked alluvial plains along its receding course. (D.N. Wadia 1939: p. 65) The thickness of the river *Chautāng* are filled-up with sediments

causing differences in the physiographic positions. Geologically, much of the plain and its surface has been build up by the silting action of the streams. **(R.L. Singh 1971: p. 83)** The alluvium deposit is composed of clay, slit, sand and gravels brought by the *Sarasvatī*, *Driśdvatī*, *Yamunā* and many other seasonal rivers. The plain of the region may be divided into the following categories: **(i) Bhāngar:** It is the most elevated land comprising of the old alluvium of sand, clay, silt and *kankar* nodules. **(ii) Khādar:** The flood plains of the *Yamunā* or *Ghaghara* are locally known as *Khādar*. It composed of sand, silt, mud and clay. The *Khādar* plain is at a lower level than *Bhāngar* on account of the erosive action of the river. Both of the areas are extensively productive in agro-products. The Harappans in this region enjoy enough surplus production of cereals & legumes as well as commercial crops and consequently initiated trade in agro-products. **Sand Dunes (Deserts):** Resulting from the arid activity, the sand dunes are found spread over the vast alluvial tracts in Haryānā. The sand dunes are blown over to a considerable distance by the dust storms and these become stabilized by the growth of vegetation or the rise of sub-soil water table. Covering about 29 percent of the total area of the State, the sand dunes can be seen in Sirsā, Fatehābād, Hissār, Toshām, Lohāru, Dādri and Jhajjar Tehsils. **(Silak Ram 1972 p.31)**

**Agricultural geography of the region:** Haryana is a desiccated alluvial tract having many seasonal streams. The most important among these are the *Sarasvatī*, *Driśdvatī*, *Yamunā*, *Pathrālā*, *Somb*, *Markandā*, *Tangri*, *Ghaghara*, *Sabi*, *Kasawati* and *Dohan*. These are some notable streams which flow in the region of Haryānā. Although all these are seasonal rivers and no perennial river flows through the middle of it, yet the *Yamunā* River flows along its eastern border,



the land benefits a lot from this stream. Topographically, the *Chautāng* Basin is flat and monotonous upland plain today. The crops very well supported by this fertile soil include the major *Kharif* Crops (*bajra*, maize, *jowar*, cotton, rice and sugarcane) and the *rabi* crops (wheat, gram, barley and mustard). The Harappans of Haryana made full use of the fertile alluvial of *Sarasvatī – Driśdvatī* valley to produce enough agricultural products. The sizeable section of population must have engaged in agriculture to feed the comparative big Harappan settlement, in which most of the population shifted themselves to the newly introduced industries. The crop economy of the Harappan finds considerable geographical difference as the wheat and barley were popular in the region of Haryana. A long range of cereals and legumes indicate that farmers engaged themselves in agriculture with new technical advancement in agricultural tools and crop patterns.

Since the region was well irrigated (during ancient times) due to perennial rivers system of *Sarasvatī – Driśdvatī* and consequently was abundant in greenery all-around, and hence, it was named Haryānā. The region of Haryana depended upon flood water of river water for watering their field. Flood water was stored in reservoirs for irrigation purposes. The occurrence of dam or gabarbands in Baluchistan for storage of water had been considered by Stein. (A. Stein 1931: p.7) Possibly the Harappans in this reign also collected rainy water for irrigation purpose by making gabarband as is evidenced at Balu. (S.P. Shukla 1997: p.9) Further it is the indication of heavier rainfall in this region. Even after the rainy season the rivers were a source of water for irrigation.

**Geological Aspects of Harappan trade:** The Trade intimately linked with the growth of city and towns. It has been postulated that with the growth of urbanism in

Harappan period in *Sarasvatī* & *Drishdvatī* Valleys many trading centers appeared in the region under study. In Mature Harappan period Haryana enjoyed a position of central province of Harappan Empire. This Central Province of Indus Civilization covers a wide range of geographical situations, each with its resources, potential and links. There are many towns which were 'the centers of prosperity'. There are five major economic zones (Banawali-Bhirrana, Rakhigarhi, Farmana, Mitathal and Bhagwanpura) developed in this region having its central capital at Rakhigarhi. Rakhigarhi is the place which has clearly defined routes to Sind, Punjab and South India along with an equally clear network of internal routes. **(Randell W. Law 2011: p. 151)**

**Geology of Harappan trade route in Haryana:** The *Drishdvatī* and the *Sarasvatī* fed this region, which now-a-days are seasonal rivulets and have disappeared or dried up completely except in certain areas. In ancient times the *Drishdvatī* joins *Sarasvatī* Suratgarh after crossing Sirsa. The economic prosperity also added to its strategic importance due to three main riverbeds of *Sarasvatī*, *Drishdvatī* and Chautang with their numerous feeding channels. **(Bal Bhadra 1972: p. 37)** *Drishdvatī* remained a significant river of the Indo-Gangetic divide in the past. *Drishdvatī* appears to have been originally formed by the modern *Boli* with the *Khilonvālā*, the *ciken*, and the *Palāsi* and *Nimbuvālā* hill stream as its affluent. The united stream now runs almost due south and formed the southeastern boundary of Kurukshetra (*R̥gveda*, II, 4, P. 16) and joins the western Yamunā-canal about three miles east of Chachhrauli town. It went further west and passed Sugh (ancient *Srughna*) on its right. The *Drishdvatī* then ran almost west to the side of Present Jagādhri Railway station and afterwards turned south-west and went through Dāmlā, Lād-wā, Pujam, Nilokheri in Kurukshetra and Karnāl Districts. The *Rākshi nadi* joins the *Chautāng* near Pujam and provided trade route to connect Jognakhera





with the Harappan settlements of Ambala. The same route was utilized to obtain stone/semi-precious stone and wood from *Śivālik* area. (H.S. Pareek, “Pre Quaternary Geology and Mineral Resources of North western Rajasthan” in **MGSI, Vol. 115**) Beyond this, the *Chautāng* now represented by a drain cut through its bed, can be observed along Sitāmai, Nising, Jind, Hānsi, Hissar and Siswāl. In Rājasthān territory its traces can be detected among the sand dunes in Gangānagar district along with Bhadrā, Sothi, Nohar, Rāwatsar etc. till it joins the wide *Sarasvatī* bed in the north of Suratgarh. (*Manusmriti*, II P. 19) River *Driśdvatī* established trade relation of Rakhigarhi with the trade centers of Rajasthan on one hand and the trade centers of Karnal district of Haryana and further the Harappan settlements in western Uttar Pradesh.

The *Sarasvatī* originating from the lower Himālayā and traversing the tract, the mighty *Sarasvatī* dropped into the Arabian Sea in ancient times. It is quite possible that it was as large as *Sutlej* in Harappan period reached the sea, as the *Ṛgveda* described it as going down to the ocean. (H.S. Jarrett, *Ain-I-Akbari*, II, P. 286) Undoubtedly it was identical with the modern *Sarasvatī* which flowing to the west of Thānesar (ancient *Sthānvisvara*) and east of Pehowā (ancient *Prthudaka*) where small Harappan trading centers e.g. Jognakhera and Bhaganpura and Daulatpur. All these Harappan centers played a vital role to establish a line of communication between the centers of central province of Harappan empire and Harappan centers across Yamuna River. (B.C. Law, *Geographical Essays*, pp. 86-87) It flows to the West of Thānesar and is joined in Patiālā territory more westerly stream *Ghaghara* and passing Sirsā and lost in the desert at Bhatner, Sirsā and Hanumāngarh district or a little further in Suratgarh. But a dry river bed (*Hākrā* or *Ghaghara*) can be traced from that point



to the Indus. The *Ghaghara* rises in the outer-Himālayan ranges between *Yamunā* and *Sutlej*. It enters the plain near Pinjore. It has a wide shallow bed in the Ambala District but its channel sinks deeper in Patiālā, Hissār and Bhatindā districts intermittently. The *Ghaghara* has a wide flood plain down of Ottu near Sirsā where the ancient *Sarasvatī* flowing through the *Rangai* bed joined it in the past.

The *Ghaghara-Hākrā* river channel was used as the most important external trade route which clearly developed in the Early Harappan period. The *Ghaghara* river system (which also includes *Chautāng*) emerges from the lower Himalayas and piedmonts and passes through the Indian states of Haryana and Rajasthan and then enters into the Bahawalpur region of Pakistan. It linked the Indus plain and *Sarasvatī-Drishdvatī* divide. The Cholistān tract (locally called Rohi) of Bahawālpur was the connecting link between the two. The distribution of Kot Dijian sites in the Bahawalpur region and *Hākrā* ware sites up to Rākhigarhi are the sure indication of a developed line of communication in the 4<sup>th</sup> millennium B.C. (Nayanjot Lahiri 1992: p. 38) Cotton from Malwa, fine chert from Sukhar-Rohri, lapis-lazuli from Badaksan in Afghanistan, gold from Southern India, silver from Southern India and Afghanistan, semi-precious stones from Waziristan, crystal from Kathiawar and chunk shell from Lothal brought in this region through Ghaghara-Hakra, which in fact was the major line of communication.

In the central and southern Haryana, shifting channels of the *Chautāng* river have been identified between the *Ghaghara* and *Yamunā* rivers. The *Chautāng* was a major tributary of the river *Ghaghara* is also a seasonal stream in its upper course. The *Ghaghara* and *Chautāng* rivers, though dry now, seem to have been important in Harappan period, as surveys in these regions have revealed heavy concentration of sites of that period. The prominent Harappan sites Ropar, Kotla-Nihag-Khan and Sarangpur

were connected with Banawali-Bhirrana complex through upper course of river *Ghaghara*. Harappa was also easy to reach from Rakhigarhi via Banawali through the *Ghaghara* and Sutlej valleys. From Ropar the river Sutlej provided possible river-route for the Early Harappan centers of Haryana State. (Y.D. Sharma 1982: p. 142, Fig. 13.1)

The rivers of south Haryana (*Kantāli*, *Dohan*, *Krishnawati*, *sābi*) provided routes which setup a line of communication between Haryana and Rajasthan. Probably, the rivers (*Sāhibi*, *Indori*, *Dohan* and *Kansavati*) originated from *Arāvalli* hills used as local trade routes in the later phase of Harappan civilization by Harappan centers falling in the vicinity of Mahendergarh, Mewāt and Gurgaon districts of southern Haryana. The river *Kantāli* has its origin in the area of Ganeshwar and it once seems to have joined the ancient *Driśdvati*. The river *Dohan* originated to the north of the Baleshwar copper mines in Neem-Kā-Thānā (District Sikar). Suraj Bhan and other researchers have explored a few Early Harappan sites (*Dādri*, *Manhairu*, *Chāng*, *Tigrānā*, etc.) on the dry-bed of *Dohan*. (R.C. Agrawal & Vijay Kumar 1982: p. 128) Through these sites Early Harappans come to *Mitāthāl* and other sites concentrated in the area of old-bed of *Yamunā*. The river *Kasaunti* (*Krishnawati*) and *Sota* also originated from the nearby Baleshwar-Dariba and Ahirwāla-Dariba copper hills respectively, situated in the vicinity of Ganeshwar. (R.C. Agrawal & Vijay Kumar 1982: p. 128) These two rivers were also used as communication routes by the Early Harappans to reach the different places of Haryānā. The river *sābi* also provided a route via *Rewāri*. (R.C. Agrawal & Vijay Kumar 1982: p. 128)

**Conclusion:** Due to occupying very important geological position Haryānā has been of immense value. The contribution of, the region builds a reliable model for understanding the geological factors responsible for the trade economy of Indus Civilization.



The crop economy of the Harappan finds considerable geographical difference as wheat and barley were popular in the region of Haryana. In Harappan period, as surveys in these regions have revealed heavy concentration of sites of that period which not only played an important role as centers of different art & crafts but for commercial or non-commercial agricultural & farming products.

The Harappan trade Centers of Haryana region covers a wide range of geographical situations, each with its resources, potential and contacts. There are many towns which were 'the centers of prosperity'. There are five major economic zones developed in this region having its central capital at Rakhigarhi. Rakhigarhi is the place which has clearly defined routes to Sind, Punjab and South India along with an equally clear network of internal routes. The prominent Harappan sites Ropar, Kotla-Nihang-Khan and Sarangpur were connected with Banawali-Bhirrana complex through upper course of river *Ghaghara*. Harappa was also easy to reach from Rakhigarhi via Banawali through the *Ghaghara* and Sutlej valleys. From Ropar the river Sutlej provided possible river-route for the Early Harappan centers of Haryana State. Hence, the eco-geological factors cannot be underestimated for the growth of Harappan civilization. Rather, they should also be emphasizing to the solution for unsolved chapters of Indus civilization and aftermath.

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