

India's Energy Interest in the Caspian Sea Region: A Case Study of India-Turkmenistan Relations

**Thesis submitted in partial fulfillment of the requirements for the Degree on
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And that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere / elsewhere.

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PREFACE

The present study is an ontological orientation outlining the origin, growth, and development of India's energy security studies in the world. India is a country that is located in Southern Asia, bordered by three big oceans, namely, Bay-of-Bengal (in the eastern side), Indian Ocean (in the southern part), and the Arab Sea (on the western side). As India is the biggest gateway in this ocean face, for that reason, this country has been playing a significant role in the global market, vis-à-vis from ancient times. As we know, India is one of the largely populated countries in the world; its GDP is overgrowing and it also focuses economic-trade aspect in a broad parameter. India always tries to connect itself with the global market for its products or of its demand. That's why; India's strategy is changed from 'soft power strategy' to 'smart business strategic interests'. As India is one of the largest populated and economy over the growing country; various regions namely, South East Asia, Central Asia, and European Union, United States' of America, and Middle East Asia are ceaselessly trying to connect them with its market. Therefore, the topographical location of India is playing a crucial role in international relations. But this super vast region and highly populated democratic, secular, sovereign country need a huge quantum of energy for its economic and social expansion. At present, energy is the main concern for a country's development and security. But, in India's territory, there is not enough potentiality to meet its demand. For that reason, the void remains. For India's energy security concern, I like to focus India's interests towards the Caspian Sea basin, particularly; Turkmenistan which has been taken as a case study of my research work.

I have taken Turkmenistan for India's energy demand, because, at present, Turkmenistan plays a crucial role in its huge natural gas reserves in the Caspian Sea basin which attracts the attention of the world. After 2010, this country has been interested to connect its large market to the global forum. Before 2010, Turkmen people's main occupations were fishing and cultivation; because most parts of this country are covered in desert. After the discovery of a large number of natural gas resources, the country has since adopted an energy export policy as the backbone of its economy. Simultaneously, the Caspian Sea basin is also gaining interest towards the world forum especially Turkmenistan is concerned. But all the big powers; the USA, Russia, and China are at loggerheads to dominate this region. Now, India is also trying to get in touch with this region for its huge energy demand. But there are several prospects and challenges to connect

India with Turkmenistan as well as the Caspian Sea region. The prospects and challenges are emphasized and analyzed in my research work.

As India and Central Asia are located in one territorial region; for that reason, direct connectivity can be made between India and Turkmenistan. If the exploration of the feasibility of actual connectivity can be implemented from India to Turkmenistan, then energy import costs will be greatly reduced for India. The topic of the present research work is **“India’s Energy Interest in the Caspian Sea Region: A Case Study of India-Turkmenistan Relations”**. Under this title, I have seven chapters.

In the **introductory** chapter, the issues of security concept have been dealt with epistemologically, how energy security forms into the international relations theory, various theorists who focused on the security studies and energy security concept in the paradigm of international relations.

The second chapter is **‘India’s Energy Needs and Domestic Supply’**. The second chapter substantiates India’s position to meet its energy security goal in the present century. India’s energy reserves, production, distribution, domestic energy security target-related policies have been taken by the government and companies involved in the energy production aspect. In this research area, an attempt has been made to conduct an exemplary study focusing primarily on the gap between energy production and consumption; and how much imports provide the energy needed annually; which is the main emphasis in this chapter.

The third chapter examines **‘Energy Potentiality of the Caspian Sea basin’** focusing on the importance of the Caspian Sea region, and its huge potentiality, geographical location in the world, size; geological aspects, etc. For India, it is extremely vital to connect itself to Turkmenistan’s energy basin. But, in terms of energy needs; the essentiality of the Caspian Sea basin is most important to be examined. The Caspian Sea basin is surrounded by five countries, namely, Azerbaijan, Iran, Turkmenistan, Kazakhstan, and Russia. But this region is very vulnerable to issues related to the claim of territorial water encroaching on each other sovereignty. The chapter also discusses its legal and political objectives of these countries.

The fourth chapter is **‘India’s Energy Security Strategy in the Caspian Sea Basin’**. This chapter shall indicate India’s strategic interests towards Central Asia and the Caspian Sea region.

At first, the chapter discusses India-Central Asia relations, particularly direct communication and connectivity will be the prime factor. But in my research work, India's main connectivity and interests shall be towards the Caspian Sea basin. This connectivity will be made through the International North-South Transport Corridor and the swap system from this region. But several challenges are the leading factor for India's foreign policy towards this region; like great game politics, China's dominance, Sino-Pakistan deterrence against India, terrorism, etc. are discussed.

The fifth chapter is '**Energy Issue in Turkmenistan's Foreign Policy**' deals with Turkmenistan's energy potentiality, domestic production, reserves of crude oil and natural gas in this territory, domestic connectivity, stratography of basins, energy components, and energy exports policies and initiatives are taken by President's of Turkmenistan will be the main prospects of the study.

The sixth chapter is '**Energy and India-Turkmenistan Relations**' indicates the bilateral relations between India and Turkmenistan, particularly energy is the most vital issue for this cooperation. The chapter deals with strategic engagement between New Delhi and Ashgabat. The direct communication and connectivity models; like the International North-South Transport Corridor (INSTC) and Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline project's prospects and challenges, etc.

In the '**Concluding**' chapter, the total research work is highlighted correspondingly. It is very important to answer every research question and testing the hypothesis properly. Not only that, at the end of my research work, a theory will be generalized in conclusion. This theory will be served seriously in this last chapter.

At the time of writing this thesis, I have relied on both primary and secondary sources. I have studied government reports, documents, and speeches of various high officials as well as academics. I have completed books, journals, newspapers, conferences, seminars, webinars, libraries, digital forums, workshops, round table meetings, international visits, and domestic field works to complete the work. I have deeply used the qualitative-quantitative method of research (survey, interview, questionnaires, and formal-informal discussions, etc.) in my work to conclude "**India's Energy Interest in the Caspian Sea Region: A Case Study of India-Turkmenistan Relations**".

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ABBREVIATIONS

ADB	Asian Development Bank
AIMAG	Asian Indoor and Martial Arts Games
AOC (NE)	Assam Oil Company in Northeastern
AOC(W)	Attock Oil Company in Western
APTEL	Appellate Tribunal for Electricity
ASEAN	Association of Southeast Asian Nations
ASOC	Azeri State Oil Company
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy
BBMB	Bhakra Beas Management Board
BCM	Billion Cubic Meters
BEE	Bureau of Energy Efficiency
BK/H	Billion Kilowatt per Hour
BOC	Burmah Oil Company
BPCL	Bharat Petroleum Corporation Limited
BPSRWE	British Petroleum Statistical Review of World Energy
BTC	Baku-Tbilisi-Ceyhan pipeline
BU	Billion Unit
CAC	Central Asia Centre
CAR	Central Asian Republics
CAS	Central Asian States

CASA	Central Asia and South Asia project
CCPA	Connect Central Asia Policy
C-DAC	Center for Development of Advanced Computing
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CESC	Calcutta Electric Supply Cooperation
CICA	Conference on Interaction and Confidence Building Measures in Asia
CIF	Cost, Insurance and Freight
CIS	Commonwealth of Independent States
CNODC	CNPC Exploration and Development Company
CPNC	China National Petroleum Corporation
CPRI	Central Power Research Institute
CTU	Central Transmission Utility
DDG	Decentralized Distribution Generation
DISCOM	Distribution Company
DVC	Damodar Valley Corporation
E&P	Exploration and Production
EAS	East Asia Summit
EBRD	European Bank for Reconstruction and Development
EEZ	External Economic Zone
EIL	Engineers India Limited

ENTEC	Esfahan Nuclear Technology Center
ERRC	Eastern Railway Refinery in Chittagong
EU	European Union
EVR	Essar's Vadinar Refinery
FOB	Fuel Oil Block
FOB	Free on Board
FSU	Free Standing Unit
FTO	Regional Features of Obesity
GAIL	Gas Authority of India Limited
GDP	Gross Domestic Product
GGSDO	Geological and Geophysical Surveys and Drilling Operations
GPFA	Gas Pipeline Framework Agreement
GRFO	Grievances Redressal Forum and Ombudsman
GW	Giga Watt
GWOT	Global War on Terror
ICSSR	Indian Council of Social Science Research
IFEP	India's Foreign Economic Policy
IGA	Intergovernmental Agreements
IJC	Inter-Governmental Joint Commission
INDEG	Indigenization Groups
INS	Indo-Stanvac Petroleum Project
INSTC	International North-South Transport Corridor
IOC	Indian Oil Corporation

IOCL	Indian Oil Corporation Limited
IPI	Iran-Pakistan-India pipeline
ISI	Inter-state Intelligence
ISIS	Islamic State of Iraq and Syria
ITC	International Transport Corridor
ITERA	Information and Telecommunications Education and Research Association
JWC	Joint Working Committee
K-G	Krishna and Godavari
KGOE	Kilograms of Oil Equivalent
KW	Kilo Watt
LNG	Liquefied Natural Gas
LOC	Line of Control
LPG	Liquefied Petroleum Gas
MAKAIS	Moulana Abul Kalam Azad Institute of Asian Studies
MEPTI	Mobil Exploration and Production Turkmenistan Incorporation
MFN	Most Favoured Nation
MGISC	Mahatma Gandhi International Sanitation Convention
MMPTA	Million Metric Tonne Per Annum
MMT	Million Metric Tons
MoP	Ministry of Power

MRPL	Mangalore Refinery and Petro-Chemicals Limited
MSR	Maritime Silk Road
NATO	North Atlantic Treaty Organization
NCDC	National Coal Development Cooperation
NEEPCO	North-Eastern Electric Power Corporation
NELP	New Exploration Licensing Policy
NEP	National Economic Policy
NHPC	National Hydro Electric Power Corporation
NIIT	National Institute of Information Technology
NIOC	National Iranian Oil Company
NIS	Naftna Industrija Srbije
NLDC	National Load Dispatch Centre
NPCIL	Nuclear Power Cooperation of India Limited
NPTI	National Power Training Institute
NRL	Numaligarh Refinery Limited
NTPC	National Thermal Power Corporation
OECD	Organization for Economic Cooperation and Development
OIL	Oil India Limited
OMEL	ONGC Mittal Energy Limited
ONGC	Oil and Natural Gas Commission
ONGD	Oil and Natural Gas Directorate
OPEC	Organization of Petroleum Exporting Countries

OVL	Oil and Natural Gas Commission Videsh Limited
PFC	Power Finance Corporation
PGCI	Power Grid Corporation of India
PLL	Petronet LNG
PRC	Peoples Republic of China
PSC	Production Sharing Contract
PSU	Public Sector Undertakings
QSD	Quadrilateral Security Dialogue
R&D	Research and Development
RCF	Rashtriya (state) Chemicals and Fertilizers Limited
REC	Rural Electrification Corporation
RECCA	Regional Economic Cooperation Conference on Afghanistan
REDB	Rural Electricity Distribution Backbone
RGTEL	Reliance Gas Transportation Infrastructure Limited
RLDC	Regional Load Dispatch Centre
SAARC	South Asian Association Regional Cooperation
SCO	Shanghai Cooperation Organization
SDS	Swap Deal System
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SJVN	Satluj Jal Vidyut Nigam

SLDC	State Load Dispatch Centre
SREB	Silk Road Economic Belt
STU	State Transmission Utility
SVOC	Standard Vaccum Oil Company
T&D	Transmission and Distribution
TAPI	Turkmenistan-Afghanistan-Pakistan-India
TCF	Trillion Cubic Feet
TCS	Tata Consultancy Service
TGP	Turkmenistan Gas Pipeline
THDC	Tehri Hydro Development Corporation
TIITC	Turkmen-India Industrial Training Center
TSCL	Tata Steel Company Limited
UAE	United Arab Emeritus states
UDAY	Ujjal DISCOM Assurance Yojana
UNCLOS	United Nations Convention on the Law of the Sea
UNECE	United Nations Economic Commissions for Europe
UNESCO	United Nations Educational, Scientific Cultural Organization
USSR	Union of Soviet Socialist Republics
VAT	Value-added Tax
VEI	Village Electrification Infrastructure
WB	World Bank

WIES	World International Energy Statistics
WTO	World Trade Organization
XAR	Xizang Autonomous Region

Introduction

From the beginning of antiquity, the word ‘security’ has influenced human life. The concept of war, conflict, and security terms in international relations is known as the ‘core concept’. The term ‘security’ was first known from the book of the Greek strategic thinker Thucydides, “History of Peloponnesian War”. Before we proceed with a summary of the evolution of the development of the concept of ‘energy security’, let us examine that the research work we have undertaken has an inexplicable theoretical aspect of the international theoretical framework. This theoretical aspect has flourished through the evolution of theories of international relations which must be briefly described. The Greek strategic thinker Thucydides first came out with his book on the concept of ‘security’. The book contains 400 pages. A part of the book contains a chapter on ‘Malian Dialogue’. In this part of the book, the author has widely elaborated the terms ‘security concept’.¹ Besides, concepts like political realism, national security, resistance to the necessity of security and non-alignment, etc., are the theories of International Relations. Therefore, by giving the right security we can build a life free from danger. In this context, Thomas Hobbs can be quoted as, “there is no place for industry... no arts, no letters, no security; and which is worst of all, continual fear, and danger of violent death; and the life of man, solitary, poor, nasty, brutish, and short”.²

‘Security’ is one of the central issues in the modern concept of international relations. The concept of security has changed from different perspectives over time. The term security is very difficult to analyze. In the traditional period, the term ‘security’ refers to military aggressiveness or power. However, in the current context of international politics, the concept of security has changed, and it can be considered as economic consideration and a concept of societal welfare. Thus, the concept of security can be interpreted in different forms and values for which this same concept conflicts with the present age.

¹ ‘Malian Dialogue’ elaborated by Thucydides, the security concept meant dialogue between a strong and weak nations. In fact, Athens was a powerful state, but Malians are not powerful. But it is true that the Malians did not want to surrender in any way. Therefore, those who are strong in the hope of being protected and those who are less powerful want to receive resistance and alignment from the strong or powerful.

Wassermann, F. M., “The Melian Dialogue”, *Transactions and Proceedings of the American Philological Association*, Vol. 78, 1947, pp. 18-36. This article is available on: <http://www.jstor.org/stable/283480/> (Accessed on 27th January 2016).

² Jackson-Preece, J., “Security in International Relations”, *The London School of Economics and Political Science*, Vol. IR3140 No. 2790140, 2011, p. 14.

The concept of security and its basic criteria is well known to all besides studying the concept of energy security; I think a brief theoretical discussion about security is necessary to get the right idea about energy security.

Security Concept in Traditional and non-Traditional methods:

In International Relations, there are two approaches regarding in concept of security. These two traditional approaches are realism and liberalism.

Realism is the first and foremost matter of discussion in the field of security studies. The source of this approach comes from Thucydides (460 BC- 395 BC). His famous book, “History of the Peloponnesian War” is well known as the most powerful security concept. In this book, the author has rightly analyzed the security dilemmas which can create conflict or war between two countries. Niccolo Machiavelli (1469-1527) in his book “The Prince” has highlighted the general framework of a real prince. He can protect the state and its citizen by giving them proper security. Besides internal security, the prince also safeguarded its citizen from external aggression by providing external security. The ancient Indian thinkers namely, Kautilya, in the 3rd Century BC, who in his popular book “Arthashastra” thoroughly elaborated different aspects of security, among these were doctrines of ‘Sargunnya’ and ‘Saptanga’ were most significant. Kautilya who was a renowned diplomat described the role of the state by way of ‘Madhyama and Udashina’. During this time these concepts were meant as collective security, the balance of power, big power theory, and organization security. Thomas Hobbes (1588-1679) was a great contributor to the theory of realism. His well-known treatise “Leviathan” is the Bible of realism still today. His theory was how individuals through a social contract can be established state. This establishment of the state concept surely makes the priority of security. Hobbes categorically stated that individual in the state of nature was a nomad and they assembled for hunting. In this way, they formed a community. The purpose of this community was to lead an agrarian life. Thus, they felt the necessity of community life for protection from the attack of a wild animal. But their purpose of community life did not end here. Now, they saw that individuals could be attacked by other individuals or other individuals belonging to other communities. Hence, the fear of attack remained. This state of situation has been rightly described by Hobbes as a “state of nature and pre-civil condition”. Here, Hobbes explained that in the state of nature man was not secured. From this idea he went on to the idea of creation of a

sovereign and individual fears can be jointly collaborated by a security pact. It would guarantee him safety from others' attacks or aggression. All these ideas Hobbes formed from the notion of security threat. In this way, he tried to explain that the sovereign state, that is to say, 'Leviathan', efforts which cannot be denied by anyone in the society. If denial happens, it means a security break. National security is important but security in the international sphere is also important. Hobbes has rightly pointed out that in this way the sovereign state will come into force. Other communities will also follow this strategy and other states will also follow this natural line. It appears to form this situation that security has become a 'security dilemma'. Hobbes realized this dilemma and declared that individuals in his state will enjoy the right to life and it is guaranteed and utilizing this right he or she can get security from the international sphere. Other sovereign states will also be judged. As a result of this state of affairs, war becomes inevitable. It appears from this that war, according to Hobbes, is a 'potential tool'. Through war the state can expand its boundary, that is to say, employing enhancing power, the state tries to build its security intact in the international system. Therefore, it is understood that in ancient times, the arms race, a military force determined individual security vis-à-vis the state which encouraged to maintain geopolitical security. This is the theory of realism that is most pivotal among all other theories in International Relations.³

It appears from the above discussion that the core concepts of security which lay in realism are as follows:

Power: Power is an important component of security. From ancient times to the present, the importance of power has increased as a means of protecting every country and as a result of the rise of power in the hands of the ruling elite. However, the idea of increasing power has been changing since ancient times. In the old days, power was only identified as a military power and it gradually increased in geographical areas. However, at present, the field of protection has been widened.

National interest: According to realist thinkers, a state is made up of individuals. Thus, individuals have their values that are unique to these values and the sense of identity that is their own. Thus, the protection of the state is not only for the individual but also for their culture and identity as a whole. So, if we accept the concept of protection as a whole, we

³ Panveet Singh., *International Relations*, (Chennai: McGraw Hill Education (India) Private Limited, 2018), p. B-10.

should also consider their culture and their identity. The foreign policy objective of any state is to protect its national interests. Thus, protection has been discussed or studied around the main purpose of protection - the individual, his culture, and general identity.

Balance of power: Realist theorists are of the view that the state who is responsible for the security of its own always thinks about its enemy states that are against the interest of the incumbent state. For this reason, to strengthen the security of the individual state particularly after the First World War, every state started ‘weaponization’. Weaponization, it is thought, gives the security of its state but the problem is that it hampers the national security of other states. As a result, big or small states adopt increasing weaponization and through this, they are safeguarding their national interest. Herein lies, the idea of the balance of power whose basic concept is security and for this, weaponization has become a means to achieve this end.

Deterrence: Deterrence is a term that is as important as energy and power balance. The term was used extensively in the nuclear age. Nuclearization and the arms race are now dangerously rampant in the world. As a result, the current concept of balance of power has become a new concept, ‘deterrence’. This means, ‘threat of punishment from the other party if the other party fails to act as expected by the threatening party’.⁴ The idea is that the fear of imposing deterrence on the nuclear alternative is used to achieve and benefit.

Gradually, the theory of classical realism began to lose its influence. Then in the sphere of international politics, the big power nations came into the picture and small power existence began to unite. All this happened during the ongoing stage of the cold war. Here the theory expounded by the great international theorist, Merton Kaplan, can be cited. His six elements of system theory are like:

- a. Balance of power
- b. The Cold War model
- c. The loose-bipolar system and the tight-bipolar system
- d. Universal international system
- e. Hierarchical international system
- f. The unit VETO system

⁴ Ibid., p. B-11.

In 1957, Merton Kaplan's book, "System and Process in International Politics", where he analyzed system theory, began to gain popularity. At this time, the old idea of the realist- 'particular to universal' began to lose its validity. When the world was engaged in a forming coalition, classical realist, rose to the occasion and gave birth to a new idea called 'new realism'. This new idea spread in 1979-80 when Kenneth Waltz wrote his remarkable book, "Theory of International Politics" (1979). According to Waltz, the international system is formed by smaller units. We call this smaller unit a 'nation-state'. But small nation-states are gradually influenced by great powers. According to the new realist, there has been developed a hierarchical system in the world. In this system, great powers are at the top and the nation-states at the bottom. The nation-states combine them according to their identical interest. In this way, the concept of security goes from particular to universal and then universal to particular. Therefore, the organizational structure determines the external security which tries to maintain global security.⁵

In international theory, **liberalism** has gained much popularity like realism. At this time, liberalists changed their stand on 'state is an instrument of war'. Among the realist thinkers, Joseph Nye, Karl Deutsch, Robert Keohane, and John Burton are notable. Their main purpose was to define the role of the state. That is to say, the state is an agency of cooperation. It is composed of individuals. They think that the individual can think, to express an opinion. Accordingly, for his or her security, he/she intends to cooperate with others. In this way, a welfare society and peaceful society can be formed. Hence, mutual interest and modernization are the core areas of liberalism. But in the international system in the course of the war, its expansion, and industrialization spreads. Then, the most essential question in human life becomes economic security. The beginning of the industrial revolution and its continuance develops the concept of neoliberalism, because, classical liberalism was confined to the individual affair. The period, 1782-1850, is taken as a period of neo-liberalism. Gradually, this theory is manifested in various names, interdependence theory, institutional liberal mechanism theory which is known as international organizational theory; and the sociological liberalism

⁵ In fact, the concept of structuralism or organizational concept gain popularity for giving security to the world to a great extent but many states began to hegemonies the world by taking energy security as their prime concern. Among them the remarkable examples are Gulf War-I when the role of Iran is noteworthy. In 1953, the United States introduced Atoms for Peace initiative. As a result of this, US initiative, Iran began to start nuclear programme in his country. But in 1979, Ayatollah Khomeini in whose time Islamic revolution took place, nuclear programme was stopped. Yet after Iran-Iraq war and Gulf War I, Iran began to start nuclear programme. The reason is obvious. Saudi Arabia had no nuclear weapon. In this way, Iranian Shia hegemony began to spread and safeguard their country. This is an exception to the hierarchical international system. Ibid., p. B-12.

theory which is also known as communication theory. According to this theory, the security and management of international relations are the involvement of international institutions/organizations. Besides this, it includes the cooperation of state, democracy, mutual interest, human cognition, and so on. Therefore, the liberal theory has two features:

Arms control: Conflicts between the two states over interests and power could turn into military conflicts. Sometimes, some states that are optimistic about power may face an attack by aggressively powerful states. To protect the property of the people of the country, the state can increase the power of its weapons. This is where the arms race begins. According to liberals, the arms race can never provide protection; Rather, it may increase the likelihood of war. For this reason, each state must collectively move towards arms control. Thus, through arms control, it can be said that it has imposed controls on the development, production, stockpiling, piling, and proliferation of weapons and the use of weapons, especially weapons of mass destruction. Indeed, arms control can be fully exercised in two or more ways, by state diplomacy, international treaties, and treaties. According to the liberals, arms competition can be increased and arms detail can be reduced. Liberals think that having fewer weapons in states leads to insecurity. This reduction of arms must be made jointly by all the states, and when it is implemented, it will bring about a stable situation in which the lesser weapons states are concerned.

Collective security: As a way of establishing peace, collective security can be defined on one side as the balance of power, and on the other side, the formation of the world government as a medium state of collective security. In the case of balance of power, at least, the existence of an alliance between two states is essential; in the field of collective security, there remains only a general alliance where a member state, if launches attack against other member states, collectively organize attack for the defeat of the state or states engaged in conflict.⁶ Hence, the prime features of collective security, according to the liberal theorist, are as follows:

- a. To ensure security jointly

⁶ Purushattam Bhattachariya, and Anindya Jyoti Majumdar., *Antorjatik samparker Ruprekha (An Outline of International Relations)*, (Kolkata: Setu Prakashani, 2007), p. 41.

- b. The peaceful conference should be organized by all states after an interval of a deficit time.
- c. Cultural and educational changes among states
- d. Maritime security, energy security, anti-terrorism measures should be taken. Other economic exchanges may be organized by the states peacefully.
- e. Reduction of war and stopping the weaponization programme.
- f. Utilizing this effort, Global Government can be formed from which 'One World' conception can be generated.
- g. It brings about internationalism and human rights which remove perverted nationalism.

It is from the above theoretical analysis of the concept of security that broadly two kinds of interpretation about security concept has been evolved. Hence, by security, it is not only free from the atmosphere of danger; it connotes a climate free from threat and brings about the limit in the matter of threat from other states.⁷ Since security originates from fear, control of fear is necessary. Besides, some countermeasures are also essential, such as taking neutrality, and in a broader aspect, military and non-military measures important only for third world countries. But determining security, these two differences depend on several issues, that the importance of political factors in the security issue in developed and developing countries.

Currently, the state is facing major security threats from neighboring states who feel its security is at stake. This threat is more effective than posed by the external threat. At present, the administration is facing pressure from the people to meet their aspirations if foreign policies, as well as foreign policy, are not strong enough. Due to the weakening of the internal administrative system, the response process has lost its relevance. As a result, state pressure is mounting and the state is weakening around it. Then it is likely to be threatened by neighboring states or states. This has led to some security challenges such as border disputes, terrorism, and maritime insecurity is concerned.

Now, security can be clearly defined by a remarkable book, "Clash of Civilization and Remarking of the World Order" by noted international expert, Huntington who came to light in

⁷ Munir Alsaad., *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to Osmania University, Hyderabad, 2014, p. 46.

an article published in 1992 and 1996. According to the author, “*when the age of ideology had ended, the world now has only normal states characterized by cultural conflict. So the primary axis to the conflict in the future will be along cultural and religious lines.*”⁸ The author has pointed out that the notion of various civilizations as the top rank of cultural identity will turn increasingly useful in interpreting the core area for conflict. These new cultural, religious, racial, or ethnic factors led to a new dimension to the idea of security in international relations.

Among the security approaches, the most effectively used definition is given by Barry Buzan. According to the author, security is ‘freedom from the threat’. According to the international system, the security system ‘the ability of communities and nations to maintain their existence, independence and cohesion career against the forces of change which they consider hostile’ and security can only be relative and cannot be entertained.⁹ Therefore, the meaning of security is survival, Buzan (the author), has stipulated five basic dimensions to highlight the security concept which is as follows:

Political Security: It means the security of political institutions and its stability by which the system of government is running and the ideal policies of the government are being applied with the help of law.

Military Security: It implies an armed attack and defense capabilities.

Economic Security: At present, the most essential security issue relates to economic security. The economic security of a state determines the standard of living of the state which is usually seen in the international sphere.

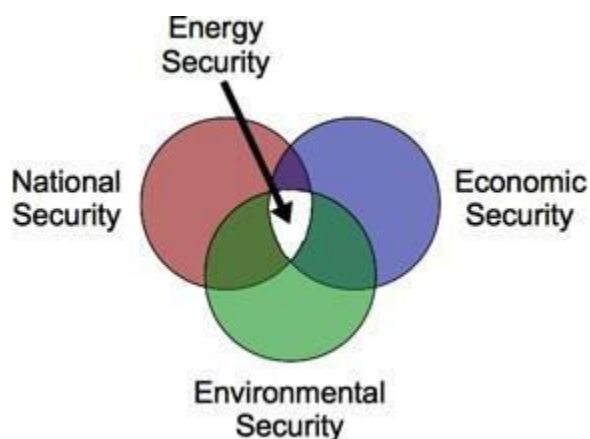
Besides these, the other securities are functional security, humanitarian security, environmental security, maritime security and last of all the most important part of security in this 21st Century is ‘energy security’. In this age of civilization, arms race, the balance of power, diplomacy, foreign policy, institutionalism and globalization-all these taken together calls security of energy in the present context.¹⁰ From the above discussion on security, it is clear that national security,

⁸ Ibid., p. 45

⁹ Ibid.

¹⁰ Barry Buzan., “New Patterns of Global Security in the Twenty-First Century”, *International Affairs Institute*, Vol. 67 No. 3, 1991, pp. 4-6.

economic security, and environmental protection - are the three most important elements that are most important for a state to protect its energy. The figure has given the total concept of security.



Source: http://indiaenergy.gov.in/iess/implication_energy.php

Energy Security Concept:

In April 1912, Germany and Britain began preparing for war. Winston Churchill was known as the First Lord in the British administration. At that time, Churchill shifted the use of coal and instead began to use oil as fuel for war. As a result, the British Navy was entirely dependent on oil. For national security oil became important energy in Britain. At this time, Britain began to import oil from Iran. This policy was opposite to earlier coal imports from Wales. The company that imported oil to Great Britain from Iran was known as the Anglo-Iranian Oil Company. Afterward, the name of this company changed which was called British Petroleum. The British Government financed British Petroleum. It determined the aims and object of the said oil company. Based on this issue, the military hegemony of the British Government was evident in the Persian Gulf Region.

Accordingly, energy was increasingly taken as the most important component of the fuel. With the rise of modern technology, energy has become especially important for use in the modern civilized world. Thus, the war became a force rather than a war. Gradually energy policy, foreign policy, and national security - all these concepts began to come together. Thus, in the middle of the nineteenth century, when the influence of power was increasing, all the country kingdoms began to defend each other. Energy security became an important issue for liberal thinkers. However, after 1970, the concept of energy security became complicated. The oil crisis and

rising oil prices on the international market began during the 70's - all the energy-deficient states began to think about this problem and then their new thinking on how to keep themselves out of this danger became their new thinking. In 1999, the United Nations defined 'energy security' as a requirement, 'uninterrupted availability of energy in various forms and adequate quantities at reasonable prices'. The United Nations has expressed this view because energy security is primarily seen as a problem of supply and expenditure. Other organizations, such as, Energy Information Administration (EIA) of the US, the Department of Energy, and the World Coal Institute used the definition of energy which became supply centric definition of energy.¹¹

From the security point of view, energy determines social progress and it is one of the most important bases of economic growth. The origin of any state if one wants to discover it; energy is the central point. At present, 80 per cent of the energy demand of the world is met by oil, gas, and coal. Unfortunately, all these global reserves are non-renewable and limited in countries like, Middle East, Central Asia, etc. On the other hand, in the light of the modern world, energy is a very important and necessary element. For this reason, at present in the sphere of world politics, energy has become an issue of conflict.¹²

At present, in the sphere of world politics, some things like energy and foreign policy, maritime safety of energy supplies, play-offs between strategic energy investments and the development of free global energy markets, nationalization of energy resources, and the value of increased energy self-sufficiency are important issues.¹³ These issues are not the result of the strategic ventures or the act of diplomatic relations of ambassadors which may happen at an instance. It happens based on the necessity of energy vis-à-vis national security. After 1970, in the world system, the competition of the state powers is based not on traditional war conflict but the competition for the procurement of energy. For instance, in 1973, in the Arab-Israeli war, the Arab-oil embargo on the countries of Europe, Japan, and America, etc. was taken place for the global energy crisis. It occurred primarily because of a lack of supply and high prices of petroleum products.¹⁴

¹¹ Anant Sudarshan, and LigiaNaronha (ed.s), *India's Energy Security*, (London and New York: Routledge, 2009), p. 5.

¹² Munir Alsaad., *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to Osmania University, Hyderabad, 2014. p. 52.

¹³ Anant Sudarshan and Logia Noronha (ed.s), *India's Energy Security* (London and New York: Routledge, 2009), p. 5.

¹⁴ Munir Alsaad., *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to Osmania University, Hyderabad, 2014. p. 53.

During the last thirty years, all these issues have become important. At present, security, that is to say, energy security is relevant. By energy security it is not only meant the supply of power for domestic demands and supply of deficit fossil fuel; but, in its totality, developing awareness and economic co-operation among the countries in the world. Therefore, the concept of energy security and its wider use has made it broader in the domain of security by the experts.

A New Orientation of Energy Security in International Relations:

In 1973, the oil crisis has become an important thing in the world both in economic and social spheres. It made a negative influence on both sectors. From that period onwards in the theory of international relations, energy resources are a matter so important that every state in the world began to think about how to develop the system of energy distribution free from chaos and criticism. Herein lies the four elements of energy security which may be as follows:

Realist theory

Liberalism theory

Copenhagen School of approach

Institutional theory

Realist Theory: In 1978, Morgenthau developed this theory. According to him, the global system is anarchical. The reason is obvious. In the international system struggle and competition always exist. In this situation, the nation-state should see whether the self-interest of the nation is protected or not. That is to say, it can be attained only by the economic and military security of the nation-state. Morgenthau who is a realist thinker has rightly pointed out that ‘cooperation’ is a very hard subject, particularly for the state who desires to safeguard its sovereignty; because, to Morgenthau, it is straight by nature, an element of distrust and the center of cooperation.

It appears from the views of the realist that national security is the most important issue wherein energy security becomes very much vital. It is not possible to isolate these two concepts. The concept of energy is related to power. It can be said that the national security of any state is incomplete without energy security taken into account although; most of the realists’ thinkers did not write or think about energy security. But most of them focused on the role of power and how to achieve security. The real reason behind this is in the field of international politics, power is the main factor. Despite this, the realists claimed that there was the importance of military and physical power which the nation-state must have to possess to achieve energy security. In fact, at

the time of war, an adequate supply of energy is essential for use of military power. Therefore it can be easily understood that energy security if intended to protect, deep strategic thinking is essential. Besides, a military campaign is to be launched for the distribution of energy in the nation-state. The reason behind this can be mentioned using a state's effort to find out the energy resource enriched areas vis-à-vis military campaign employing which a state can protect security. For example, with the event of the discovery of oil resources in the Persian Gulf region, the United States began to build its military bases in the Gulf-Arab states. The only reason behind this was to protect US interest so far as energy security is concerned. Another important reason behind this US venture was to control the oil field of Iraq and to change Iraq's policy towards China and Russia so far as oil export is concerned. Therefore, it can be safely said that the core aspect of the realist thinker is to ensure energy security. It can be analyzed in two ways, for instance, first, adequate and proper strategic thinking, second, struggle to control resources.

Liberalism theory: Liberalism theory has mentioned the following matters in the domain of security like equality, the importance of justice, civil rights, freedom of the press, freedom of religion, free trade and investment, right to life, liberty, and property. All these are taken together to bring about international peace, international morality, and justice. According to this school, state and non-state actors play an important role in international relations. Hence, the liberal's core idea about energy security was based on the perspective of the economic situation prevailing in the concerned state. According to them, if one deals with energy security, price is an important factor to be taken into account. In fact, to liberals, energy resources in the world are limited. Hence, the prime need at this hour is to establish international regional cooperation through international regional organizations, like International Energy Agency (IEA), Oil and Petroleum Energy Corporation (OPEC), Association for Southeast Asian Nations (ASEAN), etc. All these agencies have been working in the field of energy. The purpose of all these agencies has been to attain the right cooperation and exchange of information and experiences about energy security. This is important for developed as well as developing countries. The liberals are of the view that economic, political, and social cooperation among the countries of the world is essential to avoid war/conflict. In a sense, despite the realists' intention to decrease the influence of non-state actors, the liberals did whatever was required in increasing the influence of non-state actors.

Copenhagen School of Approach: Copenhagen school expounded the most modern theory of international relations. This school discusses security studies of international relations. Among the experts of this school, Barry Bozan, Jaapde Wilde, and Ole Waever are great for giving security studies an important thing in the field of international relations. This school focuses on three concepts, for instance, sectors, regional security, complexes, and securitization.

Copenhagen and his followers did not mention energy security in their theory but they mentioned that the international system is a matter of chaos. According to them, every state wants to make them self-sufficient in energy. It appears from this that through a proper adequate energy security system state can develop its economic, military, and social capabilities. This school of thought has mentioned this process as 'securitization'.¹⁵ The main focus of this theory is to give the importance of energy security. This school of thought thinks that the unregulated use of energy resources may face problems in the world system. As a result of this, two problems may arise, for instance, pollution and climate change. It also claims that the low price of energy resources may spread negative influences in the sphere of economic domination and economic growth in the state.

Institutionalization theory: This theory is an old theory like the concept of politics. Therefore, it begins from Plato and Aristotle down to Locke, Hobbs, and Madison-during this time this theory was an important topic as a political institution. For instance, at the time of Plato, the main subject of discussion behind the formation of the government was political behavior and how it affects political institutions. Again, according to Aristotle, the institutional structure can create political incentives that can be turned into normative values.¹⁶ The main idea of institutionalism is the process of legalization. It requires for better security environment. Here the emphasis was given on institutions. But at present, some thinkers who are giving the theory of energy security have emphasized sea routes. It is important lies in the sphere of transportation of oil. Because two-third part of oil transport is done by oil tankers, whereas 40% of transportation is made through the pipeline system.¹⁷ The prime approach of these thinkers in the

¹⁵ Ibid., p. 70.

¹⁶ Subrata Mukherjee, and Sushila Ramaswamy., *A History of Political Thought Plato to Marx*, (New Delhi: PHI Learning Private Limited, 2012), p. 78 and pp. 137-138.

¹⁷ Munir Alsaad., *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to Osmania University, Hyderabad, 2014. p. 77.

context of energy security was: political fictionalization. That is to say, collective security is formed by an institution and then by forming the organization, it becomes formal.

From the above discussion, it can be seen that the protection of the current world political power has become an important issue. It is not limited to the interests of any particular state. The concept of energy security is formed in collaboration with all states. That being said, the basic concept of protection is very important in this context. Since there are many theories about the need for energy, different theorists have analyzed the nature of energy conservation in different ways. Energy protection can be defined in times of war or in times of cooperation which ultimately determines energy security which is the main goal of the state. Either way, it is in terms of energy or cooperation or coordination, energy protection is the main need. Now, fuel imports from industrialized countries depend on energy security. That is to say, the goal of the industrialized nations is to acquire energy resources at a sustainable and consistently reasonable price. Then, according to energy-exporting countries, ensuring the continuity of the export process on a long-term basis is energy security. It can be said that the main need is to use advanced technology to increase energy production and reduce exploration costs. Protecting the economic and political interests of energy exporting countries is what is needed to achieve stability in the energy market. Not only that, it is necessary to support foreign investment for exploration and development activities in support of production sustainability in the fuel market. Thus, the responsibility for energy security is not a major concern of consumer countries because, in the current integrated global energy security system, security depends on all states that are interested in the issue. Thus, to promote development, there is a need for international stability to ensure global energy security.

India's Energy Needs and Domestic Supply

India is located in Southern Asia and has a total area of almost 3.3 million kilometer² making it a largest peninsula in the world and also the world's seventh largest country. It is bordered in the north-west by Pakistan, in the north by China, Nepal, and Bhutan, and in the north-east by Myanmar and Bangladesh. In the South, 7,600 kilometer of coastline is on the Arabian Sea, Indian Ocean and Bay of Bengal.¹ The Union Territories of India - Lakshadweep Island and Andaman-Nicobar Islands are located in the Arabian Sea and the Bay of Bengal. For the administrative part, India is divided into 28 states and 9 Union Territories. It is the second largest country in terms of population at nearly 1.3 billion people, growing over 1.4 per cent each year since 2004 according to the World Bank data.² The total cultivable area is approximately 183 million acre and it constitutes over 55 per cent of the total area of the country. According to the 2009 report, approximately 849 million inhabitants or some like 70 per cent were living in rural areas. The country's average population density then was an estimated 367 inhabitants/ km².³ India is the fastest growing trillion-dollar economy in the world and the fifth largest overall, with a nominal Gross Domestic Product (GDP) of US\$2.94 trillion. India has become the fifth largest economy in 2019, overtaking the United Kingdom and France.⁴ India was the third largest energy consumer in the world after China and the United States. Its need for energy supply continues to climb as a result of the country's dynamic economic growth and modernization over the past ten years. India enjoys a profusion of traditional energy sources like coal, crude oil, natural gas and renewable energies. But due to her high population, these sources are not enough to meet the growing needs and therefore it resorts to imports from abroad.⁵

¹ This article is available at: <https://archive.india.gov.in/knownindia/profile.php?id=2/> (Accessed on 6th March 2019).

² World Bank, Data, Population Overview, 2011. This data is available at: <https://www.worldbank.org/en/country/india/overview#2/> (Accessed on 9th January 2021).

³ This data is available at: http://www.fao.org/nr/water/aquastat/countries_regions/IND/IND-CP_eng.pdf/ (Accessed on 4th March 2019).

⁴ This data is available at: <https://www.investopedia.com/insights/worlds-top-economies/> (Accessed on (Accessed on 4th March 2019).

⁵ This data is available at: <https://www.eia.gov/international/analysis/country/IND/> (Accessed on 4th March 2019).

Figure-2.0: India's Territory



In the last two decades, India has undergone changes in social, economic and cultural sectors. Side by side, India's economic growth has been increasing. India's annual growth rate is 6-7 per cent. The transport sector has experienced a high growth rate which eventually enhanced the consumption of energy. Data shows that all India petrol consumption is 26 thousand billion metric tons annually, that is to say, per person consumption is 26.78 liters/ person/ annum.⁶ In India out of total population in the world, 17 per cent live in India. But it is a matter of agony that only 22 per cent crude oil and natural gas resources of the world are stored in India.⁷ Hence, there lies external security concerns, that is to say, the crude oil import dependency is increasing day by day, whereas in 2001 the dependency level was 35 per cent, in 2016, is increased to 72 per cent. From this, it appears that in respect of India which is highly populated, energy is the most important criteria for measuring the level of its development.

In 2006, the Planning Commission (now the name has changed to Niti Aayog, since 2015) of India has submitted an Energy Policy Report which stated,

*"The country is energy secure when we can supply lifeline energy to all our citizens as well as meet their effective demand for safe and convenient energy to satisfy various needs at affordable costs at all times with a prescribed confidence level considering shocks and disruptions that can be reasonable expected."*⁸

India's Energy Needs: Challenges and Strategies:

Energy is an essential matter in a country for its development. The economic growth of a country directly depends upon the energy supply. India is presently a growing economy and it requires surplus energy for the continuous expansion of its economy. India's domestic consumption is manifold compared to the domestic supply. India is the fourth largest consumer of energy in the world.⁹ India is one of the net importers of crude oil and natural gas from the international markets. But India faces enough challenges to meet its energy demands. The main subject of this internal challenge is to supply energy to its consumers sufficiently. For this reason, the essential subject to all persons has been to get access to defendable energy which is advantageous. India

⁶ This article is available at: <http://www.quora.com/How-much-petrol-does-India-consume-daily-on-average/> (Accessed on 4th March 2019).

⁷ This article is available at: <http://marketrealist.com/2014/12/amount-crude-oil-india-produce/> (Accessed on 4th March 2019).

⁸ Anant Sudarshan, and Ligia Noronha (ed.s), *India's Energy Security*, (London and New York: Routledge, 2009), p.6.

⁹ This article is available at: <https://www.thehindubusinessline.com/economy/India-is-fourth-largest-energy-consumer-in-the-world-Report/article20591885.ece/> (Accessed on 4th March 2019).

produces annually the energy which is 2.49 per cent of the world's total production of energy.¹⁰ The cost of fuel is larger than 5.6 per cent of the total expenditure incurred in the world.¹¹ India's huge population (approximately 1.3 billion), which is approximately 17 per cent of the world's population¹² - India's per capita energy consumption is one of the lowest in the world.¹³ In 2015-16, the per capita expenditure of power and electricity are 670 KGOE (Kilograms of Oil Equivalent) and 1075 KW/h, which is the one-third of the average consumption of the world. In 2017 in India, around 25 per cent of population is without any electricity connection and 40 per cent are deprived of use of cooking gas. If one compares India's energy demand with that of the members of Organization for Economic Cooperation and Development (OECD) countries, India's demand for electricity is 5 per cent less of the country belonging to the OCED. Larger part of supply of electricity in India comes from crude and liquid fuel.¹⁴ India is one of the most powerful nations so far as demand for energy in the world is concerned. The *table-1.0* given below highlights energy consumption in India from 2004-2014 which will show the increase of energy consumption happens at the increase of population. It will prove that at every instance of population increase energy demand increases.

Table-2.0: Energy Consumption in India (Million Metric Tons)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
442	450	460	480	500	540	570	580	590	600	680

Source: World Bank Data, 2015. This data is available at: <http://www.theglobaleconomy.com/India/> (Accessed on 4th March 2019).

It appears from the above table that from 2004 to 2014, in these ten years, energy consumption increases gradually. Therefore, comparing this data to others country in the world, India is

¹⁰ India at present produces 1,160.1 billion units of electricity in the financial year 2017, which is 4.72 per cent higher than the previous year. India is known as the third electricity producer just after China and the USA. India's power generation has grown at a rate of CAGR of 7 per cent since 2010.

¹¹ Data shows that, in 2017 India's primary energy consumption was equivalent to 754 million tons of oil. M. Li., "World Energy 2018-2050: World Energy Annual Report (Part 1)", *Peak Oil News & Message Boards: Exploring Hydrocarbon Depletion*, 28th June, 2018. This data is available at: <http://peakoil.com/consumption/world-energy-2018-2050-world-energy-annual-report-part-1/> (Accessed on 10th March 2019).

¹² U. N. Sushma., "India Is Now The World's Third Largest Electricity Producer", *Racing Ahead/Quartz India*, 26th March 2018. This data is available at: <http://qz.com/india/1237203/india-is-now-the-worlds-third-largest-electricity-producer/> (Accessed on 10th March 2019).

¹³ It may be said that about 280 million people do not have the opportunity to use energy. Comparatively speaking, the per capita energy consumption in China is 4,000 KW/h. The US per capita consumption of energy is about 15,000 KW/h. U. Bhaskar., "India's per capita electricity consumption touches 1010 kWh", *Live Mint Budget 2019*, 20th July 2015. This data is available at: <http://www.livemint.com/Industry/jqvJpYRpSNyldcuUIZrqQM/Indias-per-capita-electricity-consuming-touches-1010-kWh.html/> (Accessed on 10th March 2019).

¹⁴ Niti Aayog, Government of India, "Draft National Energy Policy", June, 2017. p. 11. This data is available at: http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf/ (Accessed on 10th March 2019).

known as the third largest energy consumer state. After independence, the use of energy from non-commercial source to commercial source has greatly increased. The demand for energy is increasing gradually, for instance, in the change of demographic structure, rise of urbanization, socio-economic development and the sustaining self-reliance in vital sector of economy. Below a *table-2.1* in this regard is given:

Table-2.1: Sector wise Consumption in Energy 1990-91 to 2020-21

	1990-91	2000-01	2011-12	2020-21*
1. Domestic Production of Commercial Energy**	150	207	582	1275
2. Total Commercial Energy (1+2)	181	296	804	1705
3. Non-commercial Energy***	122	137	929	2435
4. Total Primary Energy Demand	303	433	1072	2826
5. Net imports	32	89	111	168

*For 2021 is given on the basis of calculation made according to the year wise increase of energy consumption sector wise.

R. M. Dwivendi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p.4 and Niti Aayog, Government of India, "Draft National Energy Policy", June, 2017. p. 97.

Available at: http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf/

**Domestic Production of Commercial Energy includes coal, lignite, oil, natural gas, power, wind power, hydro and nuclear power

***Non-commercial Energy resources include the traditional fuels such as cow dung, wood, biogas, crop residue and constitute a significant percentage of total primary energy consumption in the country. At present, in rural areas this energy is used for domestic purpose in greater quantity (for cooking and other fuel needs of the rural people).

Energy, therefore, is an essential input for production. If, India wants to increase its high growth; energy must be supplied according to demand. Energy needs to be supplied both in commercial and non-commercial sectors according to demands. It is clear from the *table-1.1* that after interval of every ten years that the demand in its sector is increasing by three times. Net import of energy is also increasing by interval of every ten years respectively. Under this situation, in order to face the challenges in the production of energy, the institutions engaged in this field should be reoriented so that the ever increasing demand of energy can be met.

It can be said that energy reserves of India is very limited compared to its overgrowing requirements of its energy consumption. Two things- lack of adequate supply of energy to the growing consumers and the gradual uninterrupted increase of the prices of the energy. 70 per

cent of crude oil needed in India comes from crude oil rich countries. India is self-sufficient in coal reserves and the coal reserved in India can be used in the next 40-50 years to come. Therefore, proper use of fuel and its reserve require an integrated energy policy which is very much important. Energy security is crucial for the growth of economy and survival of the state and it should be the key concern of the state. At present, by security, it is not only concern with economic security but also energy security which is most important. For an internal integrated security, a right energy policy is sine qua non.

Objectives of Energy Policy:

The broad objectives of the energy policy are as follows:

- Compulsory audit is mandatory to measure the quantum of consumption of energy.
- With more efficiency, bench marking of units is vital.
- The machineries of energy consuming should be made labeling and rating.
- Those who are employed in the energy sector, it is very important to improve the energy sector.
- Promoting efficient energy set up for right use of energy.

According to the Niti Aayog report, June 2017, there are the seven objectives of the target of energy use by the consumers:¹⁵

- Business man, households, transport and agriculture.
- Energy efficiency and de-carbonizations measures on the demand side.
- Production and distribution of coal.
- Electricity generation capacity, transmission and distribution.
- Augmenting supply of oil and natural gas by domestic E&P (Exploration and Production) and through acquisition of foreign investment.
- Refining and distribution of oil and gas.
- Installation generation and distribution of renewable energy.

¹⁵ This data is available at: http://niti.gov.in/writereaddata/files/document_publication/DOCPLANper_cent20June17.pdf/ (Accessed on 10th March 2019).

Therefore, what is required at this time is to develop public awareness about the use of energy. That can be done by the government. Some of the policies of purchase of crude oil from abroad are required to be developed so that consumer could enhance their energy efficiency.

Another aspect that is vital is that the energy providing organization must take its tax which is desirable to the consumers. All energy providing organization in India like, coal, electricity, crude oil and natural gas, and renewable energy sources should have 'a one tax policy' which is consistent. It is enviable to combine together all this organization in a circle. It is possible to introduce this policy in the field and importance should be given to organize this system further. In this way, energy market can be made and, in fact, market distortion could be lessened and the efficiency of profit will be increased. For the further step, it is pertinent to focus on energy policy related challenges according to the sector. Thus, this policy related challenges for energy can be described in the following manner:

- (i) What is essential is to improve energy security for lessening import dependence because import dependence is a threat from multinationals.
- (ii) It is found that the energy production in the domestic sector has been facing challenges in the various areas.
- (iii) Another aspect, very much vital, in this regard is to increase the economy by adopting correct energy policy. If government is connected with energy development directly, a competitive price of energy, that is to say, is very critical particularly in the sphere of energy intensive sector.
- (iv) At present, petroleum product has become very much popular in India. It has increased directly the economic activity widely in India. Because, investment in petroleum sector has increased directly, resulting in the increase in the activities of Research and Development (R & D) of the government. For this reason, it is assumed that the refining and the distribution in this sector have become transparent. In this way, in the sphere of all energy sectors, direct investment is required and then transparency in this sector will prevail.

The sections below have focused on the needs, consumption and distribution of energy resources in India. There are five energy sectors in India like electricity, coal, oil, gas and renewable

energy. The sector wise objectives and challenges of the energy sector have been discussed below.

Institutional and Legal Framework for Management of Energy in India:

In India, four Ministries like, the Ministry of Power, the Ministry of Coal, the Ministry of Petroleum and Natural Gas and the Ministry of New and Renewable Energy (Government of India) - are engaged in supervision of energy affairs. In addition to this, the Department of the Atomic Energy that is also one of the most important department and directly under the charge of the Prime Minister of India is also looking after the energy problem in India.¹⁶

These four departments looked after some important energy sectors, such as primary energy supplier that is known as coal. Presently, coal is 55 per cent of the total primary energy supply, next to coal stands oil, 30 per cent and natural gas 9 per cent. Only 2 per cent renewable energy sources are available in India.¹⁷ The subsequent sections discuss the sector wise energy production and consumption in India.

Electricity:

In 1879, the supply of electricity began at Darjeeling when 130 Kilo Watt (KW) hydroelectric Centre was established. In 1897, a thermal power station was built on based on coal at Calcutta.¹⁸ Afterwards, fifty years before independence electricity was only used in urban area and the supply of electricity was only for lighting. At that time almost all initiatives for production of electricity was taken by private entrepreneurs. Primarily so far as electricity installation in India was seen, most of them were confined to urban areas. They were established only for fulfilling

¹⁶ R. M. Dwivedi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 9

¹⁷ Economic Survey 2016-17, Ministry of Finance, Department of Economic Affairs, Government of India, Volume-2, August 2017. p. 120

¹⁸ The first electric light was lit in Calcutta in 1879 and then in 1881. With the Calcutta Electric Lighting Act in 1895, Kilburn & Co. obtain the license of electrification in Calcutta as an agent of *Calcutta Electric Supply Corporation Limited*. The Calcutta Electric Supply Corporation Limited was registered in London, the UK. On 17th April 1899, the first thermal power plant of the Calcutta Electric Supply Corporation Limited was commissioned at Emambagh Lane near Prinsep Ghat heralding the beginning of thermal power generation in India. In 1970, the control of the Company was transferred from London, UK to Calcutta (Kolkata), India. In 1978 it was named *The Calcutta Electric Supply Corporation (India) Ltd*. The RPG Group was associated with the Calcutta Electric Supply Corporation (India) Limited from 1989, and the name was changed from the Calcutta Electric Supply Corporation (India) Limited to the **CESC Limited**. The electrification of Kolkata city took place seventeen years after New York, which boasted of Electricity in 1882 and eleven years after London, which was electrified in 1888. India also started hydro electric generation by the end of 19th century. The first hydroelectric installation in India was installed near a tea estate at Sidrapong, Darjeeling Municipality in 1897. The first electric streetlight in Asia was lit on 5th August 1905 in Bangalore. This data is available at: <https://www.quora.com/Where-was-electricity-first-introduced-in-India-was-it-Bangalore-in-1906-or-Calcutta-Kolkata-in-1899/> (Accessed on 20th March 2019).

the demand of the industries. In the last part of 19th century, the first power station was established at Calcutta (presently known as Kolkata) and in the next two centuries the power stations were built in great cities of India. Most of these stations are thermal power.¹⁹ Up to 1920, the trend of development was time-consuming, but after that period, the expansion of power station took place. Moreover, supply of electricity got legal recognition in 1910. It was called India Electricity Act. After some years, the second legislation, Electricity (Supply) Act, 1948 was passed by the legislature by strength of this act the electricity boards in different states of India were formed. In fact, for increase in electricity network, the State Electricity Board played a significant role. In Indian constitution, electricity was incorporated in the Concurrent List (List III, Entry 38, and Seventh Schedule).²⁰ Sometimes since the electricity is in the Concurrent List dispute between Central and State Government seen over the work of electricity connection, etc. Since both parliament and state legislatures are empowered to legislate in the Concurrent List, expansion of electricity sector, sometimes, faces this dispute. Despite this for reforms in this sector both Central and State Governments took several positive initiatives. The Ministry of Power is an important department in this aspect.²¹

Electricity Generating Capacity, Challenges, and Policies: an overview from Independence till 2010:

According to the resolution of the industrial policy of 1956, the production of power was only reserved for public sector. After independence the generation and transmission of power as well as distribution were done by public sector only. But the fact is that the power sectors could not be able to fulfill the demand of electricity to the consumers. It is only for this reason that the power sector faced losses. Herein lies the challenges which were related to the storage versus demand, deficiencies of project management, resource constraints and law and order problem.

¹⁹ The first hydro electric station was established in 1902 at Sivasamudram, Mysore. Following this project, Tata Hydro Electric Station came up at Bombay, India.

R. M. Dwivedi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 17

²⁰ This data is available at: <http://www.insightsonindia.com/2018/12/18/concurrent-list-of-the-indian-constitution/> (Accessed on 20th March 2019).

²¹ In various ways Indian electric supply companies faced various challenges in matters of energy distribution. Not only have that, in the case of electric demand in great cities India's energy security failed. The Ministry of Power usually looked after electrical production and the development of infrastructure, generation, transmission and delivery as well as various aspects of maintenance of project. The main function of the Ministry of Power has been to coordinate between electricity board and private sector in 1992, on 2nd July, it got recognition in 2001, Energy Conservation Act and in 2003, Electricity Act always maintained cooperation and both of them were transparent in regard their production and preservation of energy.

After independence, the problems in the power sector remained. Despite this, efforts were taken to install electricity grid. In 1950-51, when 5 billion Kilo Watt/ hour (kW/h) volume of electricity was generated, in 1960-61 it increased to 17 billion kW/h. The rate of increase was much lower than the demand of energy. It reveals from the study that the reason behind this was highlighted in the Five Year Plan: 1956-57 to 1960-61. In the mentioned period, it was stated that the potentiality of the power generation in East and West and South was enough, that in the stated period some power grids were installed in the Himalayan and other Central Indian rivers. In this Five Year Planning, it was estimated that the potentiality of the power generation was to the tune of 35 million kW. Whereas, in Western zone, there was 4 billion kW generation capacity and in Eastern zone of India, the capacity was recorded 7 billion kW. The Narmada, Tapi, Mahanadi, Brahmini and Baitami basins which were situated in Central Indian zone had potentiality of generation of 4 billion kW and 20 billion kW respectively in Ganga, Brahmaputra, Indus and North and North-Eastern region of the Himalayan mountain. Although the establishment of grid in this region is uninterrupted, this work, in fact, it is hoped that in the next Five Year Plan this work of power generation is likely to be completed. But it is a matter of fact that all these works for generation faces various challenges. For instance, economics of development, load demand, period of construction and other local factors may hinder the work. In this way, during Eleventh Five Years plan: 2007-08 to 2011-12 the government gave a stress upon generation of electric power. This policy continued but the irony of the fact was that the generation was not boosted, whereas the potentiality of the power generation was 411 Giga Watt (GW) only during this period it increases to 210 GW. Among this volume of production, 308 GW power generations had no certainty. The *Table-2.2* given below reveals the trend of production in India.

Table-2.2: Progress of Electricity Generation in India (in billion kilowatt/ hour)

Year	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2005-06	2006-07	2007-08	2008-09	2009-10
Electricity Generation (Billion Kilowatt/ hour)	5	17	56	111	264	499	617	662	704	724	768

Source: R. M. Dwivendi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 18

It is observed that at increase of the capacity of installed generation, transmission and distribution (T & D) capacity were also increased. The necessity of this increase was vital. Because, the government thought that rural electrification was highly essential when urban electrification was going on. In February 2004, India took an initiative that was included in Tenth Five Year Plan: 2002-03 to 2006-07. During this plan period various efforts were taken to maintain consistency in transmission and distribution (T & D). Among this, state level electricity board was formed. But India could not be able to bear the cost of production of power of the SEBs (State Electricity Board). The reason is obvious; India was not able to recover the cost of production. Not only that one of the prime reason was that the government was not able to make distribution rightly- it was the main reason for loss in running SEBs. As a result, India realized that it was not proper to show this loss in the state budget, resulting in that every state in India began to show deficit budget. As a result in the sphere of power production, there was deficit in the case of essential maintenance of SEBs. It was evident that in the Nine Five Years Plan, the annual losses of SEBs estimated to twenty-four thousand billion. As a result, the annual loss of central public sector undertakings was estimated to be thirty-five thousand billion.²² In the transmission and distribution cases SEBs losses 24 per cent. For that reason, this country has failed to launch its electrification programme in remote places in India.

In 2004, among the India's energy policy, the most important was rural electrification. In that case the government took a policy which enshrined that a village was to be declared electrified when the following conditions were fulfilled: among the basic infrastructure of electrification, electricity distribution lines and transformer distribution might be distributed properly; inhabitant locality, particularly dalit-basti/ hamlet (tribal areas). Another criterion for selection of area of electrification was that the area must be dominated by tribal. But where there was the provision for renewable energy, transformer distribution in those places were not necessary.

India felt that in villages' power connectivity was the prime target. It was taken as the prime objective that at least 70 per cent of the rural families had the facility of consumption of power. India also felt that the electricity was important for schools, Panchayat Offices, health-centers, dispensaries and community centers in villages. Hence, distributions of power in these places are sine qua non.

²² R. M. Dwivedi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 305

In 1991, for proper distribution and production of power, reforms in this sector began. Before one year of the setup of the Ministry of Power (MoP), Government of India, the national level Central Electricity Regulatory Commission was formed and at the state level, the State Electricity Regulatory Commission was also established. After the establishment of these regulatory bodies, in the production and distribution sectors there was transparent motion which enabled the government and in 1998 the parliament passed Electricity Laws (Amendment) Act. It made the government to introduce participation of private sectors in the production and distribution of power. By means of this act, it was decided that any consumer who are willing to spend the cost of 1 Mega Watt power from any generator, this individual will be able to take generator on their own for production and transmission of power.²³ Therefore, it is clear that rural electrification is the main criterion for socio-economic development in India. Rural electricity involves supply of energy for two types of programmes:

- (i) Electrification of village
- (ii) Proper distribution of energy in rural industries and irrigation.

For this reason, it is found that in 2006, government stressed upon rural electrification programme in April 2003. It included rural electrification policy in the Electricity Act 2003. Section 4 and 5 of this act enshrined various aspects of this act. By strength of this policy, in 2009, India adopted a reliable power supply policy by which every household in the rural areas would be provided with electricity. This policy of rural electrification continued till 2012- minimum consumption for each household was 1 unit. This policy was known as electricity infrastructure and household electricity programme. This policy was introduced in each state and within the three months of the introduction of the scheme, in each state, a district level committee was formed. Then this policy was included in local self-administration system under section under section 166(5). This programme provided 90 per cent capital subsidy in the following areas:

- Rural Electricity Distribution Backbone (REDB)
- Creation of Village Electrification Infrastructure (VEI)
- Decentralized Distribution Generation (DDG) And Supply

²³ Ibid., p. 19

- REDB, VEI and DDG were connected directly to the agricultural activity of the villages. For instance, (i) irrigation pump sets (ii) a small and medium industries (iii) Khadi and village industries (iv) cold chains (v) education (vi) health care (vii) Information Technology. These were able to amend employment generation and poverty alleviation programmes.
- Moreover, it also made possible for rural household electrification for below poverty line households.²⁴

Table-2.3 shows a report on rural electrification, March 2004. This table shows the gap in the area of state wise electricity distribution. It also shows the gap between the household already electrified and the non-electrified household.

Table-2.3: Status of Rural Electrification: Distribution, Fulfillment and the Demand Gap, 2004

Electrified States	Electrified Villages (per cent)	Electrified Households (per cent)
Punjab	100.00	91.90
Haryana	100.00	82.90
Gujarat	100.00	80.40
Maharashtra	100.00	77.50
Tamil Nadu	100.00	78.20
Kerala	100.00	70.20
Andhra Pradesh	100.00	67.30
Himachal Pradesh	99.38	94.80
Karnataka	98.91	78.50
Madhya Pradesh	97.43	70.00
Rajasthan	98.38	54.70
Chhattisgarh	94.00	53.10
West Bengal	83.63	37.50
Odisha	80.15	26.90
North-East	75.32	33.20
Uttar Pradesh	58.73	31.90
Bihar	50.00	10.30
Jharkhand	26.00	24.30

Source: Planning Commission, 2005 (at present it is called Niti Aayog)

²⁴ R. Bilolokar and Ravi Deshmukh., “Rural Electrification in India- and overview”, National Power Training Institute, Faridabad, pp. 7-10. This article is also available at: <http://www.mahadiscom.com/emagazine/mar06/Ruralpercent20electrification.pdf/> (Accessed on 20th March 2019).

Organizations Dealing with Electricity in India:

There are many organizations who are directly involved in the production and distribution of energy. These organizations were formed by an Electricity Act 2003. According to this act, the government had tried to highlight some rational ideas as to the formation of this organization. For instance, the constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal, electricity tariff ensuring transparent policies regarding subsidies and promotion of efficient and environmentally benign policies.

The organizations who are engaged in electricity production and distribution are stated below:

- Central Electricity Authority (CEA)²⁵
- Central Electricity Regulatory Commission (CERC)²⁶
- State Electricity Regulatory Commissions (SERCs)²⁷
- Appellate Tribunal for Electricity (APTEL)²⁸
- Central Transmission Utility (CTU)²⁹
- State Transmission Utilities (STUs)³⁰
- National Load Dispatch Centre (NLDC)³¹
- Regional Load Dispatch Centers (RLDCs)
- State Load Dispatch Centers (SLDCs)³²
- Grievances Redressal Forum and Ombudsman (GRFO)³³

²⁵ In all technical and economic matters, MoP is assisted by CEA which is a statutory body constituted under the erstwhile Electricity (Supply) Act 1984, hereinafter replaced by the Electricity Act 2003.

²⁶ CERC is a statutory body constituted under the provision of the Electricity Act 2003. The main function of CERC is, regulating inter-State transmission of energy including tariff of the transmission utilities.

²⁷ SERCs are statutory bodies under the provisions of the Electricity Act, 2003. Main responsibility of a SERC is: determining the tariff for generation, supply, transmission and wheeling of electricity, whole sale, bulk or retail sale within the State.

²⁸ APTEL is a statutory body constituted for the purpose of hearing cases against the orders of the Regulatory Commissions and the Adjudicating Officers.

²⁹ CTU is a statutory body under the Electricity Act 2003. The functions of the CTU are to undertake transmission of energy through inter-State transmission system and discharge all functions of planning and coordination relating to inter-State transmission system with State Transmission Utilities, Central Government, State Governments, generating companies, etc. Power Grid Cooperation of India Limited is the Central Transmission Utility.

³⁰ STU are statutory bodies under Electricity Act 2003. The functions of a STU are to undertake transmission of energy through intra-State transmission system and discharge all functions of planning and co-ordination relating to intra-State transmission system with Central Transmission Utility (CTU), State Governments, generating companies etc.

³¹ The Electricity Act 2003 has provided for constitution of NLDC for optimum scheduling and dispatch of electricity among the Regional Load Dispatch Centers (RLDCs).

³² Corresponding to the RLDCs which operate at the regional level, SLDCs have been envisaged at the State level with the responsibility of ensuring integrated operations of the power system in State.

³³ The Electricity Act 2003 requires every distribution license to establish a forum for redressed of grievances of consumers.

Other Statutory Bodies:

- Damodar Valley Corporation (DVC)³⁴
- Bhakra Beas Management Board (BBMB)³⁵
- Bureau of Energy Efficiency (BEE)³⁶

Public Sector Undertakings:

- National Thermal Power Corporation (NTPC)³⁷
- National Hydro Electric Power Corporation (NHPC)³⁸
- Power Grid Corporation of India (PGCI)³⁹
- Power Finance Corporation (PFC)⁴⁰
- Rural Electrification Corporation (REC)⁴¹
- North-Eastern Electric Power Corporation (NEEPCo)⁴²

Joint Venture Corporation:

- Satluj Jal Vidyut Nigam (SJVN)⁴³
- THDC India Limited⁴⁴

³⁴ It is one of the major infrastructural projects of independent India. It came into being on July 7th, 1948 by Damodar Valley Corporation Act of the Central Legislature. It covers the area of 24,235 kilometer² comprising 7 districts of Bihar and 5 districts of West Bengal.

³⁵ BBMB was constituted under section 79 of the Punjab Re-organization Act 1966 for the administration, maintenance and operation of Bhakra Nangal project with effect from 1st October 1967. The total installed capacity of BBMB power houses is 2793 MW.

³⁶ It is established under the Energy Conservation Act 2001. It is responsible for spearheading the improvement of energy.

³⁷ NTPC is the largest thermal power generating company in India. NTPC has to its credit 13 coal based thermal power projects and natural gas or liquid fuel based combined cycle project.

³⁸ NHPC is a Schedule a Mini-Ratna Enterprise of the Government of India-was incorporated in 1975 under the Companies Act, 1956. With an authorized share capital of Rs. 15,000 billion and an investment base over Rs. 36,250 billion, NHPC is among the top 10 companies in the country in terms of investment.

³⁹ PGCI was established on 23rd October 1989 with the mandate to “establish and operate Regional and National Power Grids to facilitate transfer of power within and across the Regions with reliability, security and economy on sound commercial principles” as its mission.

⁴⁰ PFC was incorporated on 10th July 1986 under the Companies Act 1956. It is a leading power sector public financial institution and a non-banking financial company, providing fund and non-fund based support for the development of the Indian Power Sector.

⁴¹ RESD was set up in 1969 with the primary objective of providing financial assistance for rural electrification in the country. REC was registered as a non-banking financial company under Section 45-1A of the Reserve Bank of India Act, 1934. In addition, *Kutir* charges up to a maximum limit of thousand rupees of connection with installation of below poverty line as grant through the State Governments or SEBs.

⁴² The North Eastern region of the country is blessed with highest hydro-power potential which is estimated at 48,000 MW constituting about 33 per cent of the total reserves of the country.

⁴³ SJVN was incorporated on 24th May 1988 as a joint venture of the Government of India and the Government of Himnachal Pradesh with the objective to plan, promote, organize and execute hydro-electric power projects in the Satluj river basin in the Himachal Pradesh. The present authorized share capital of SJVN is Rs. 4,500 billion.

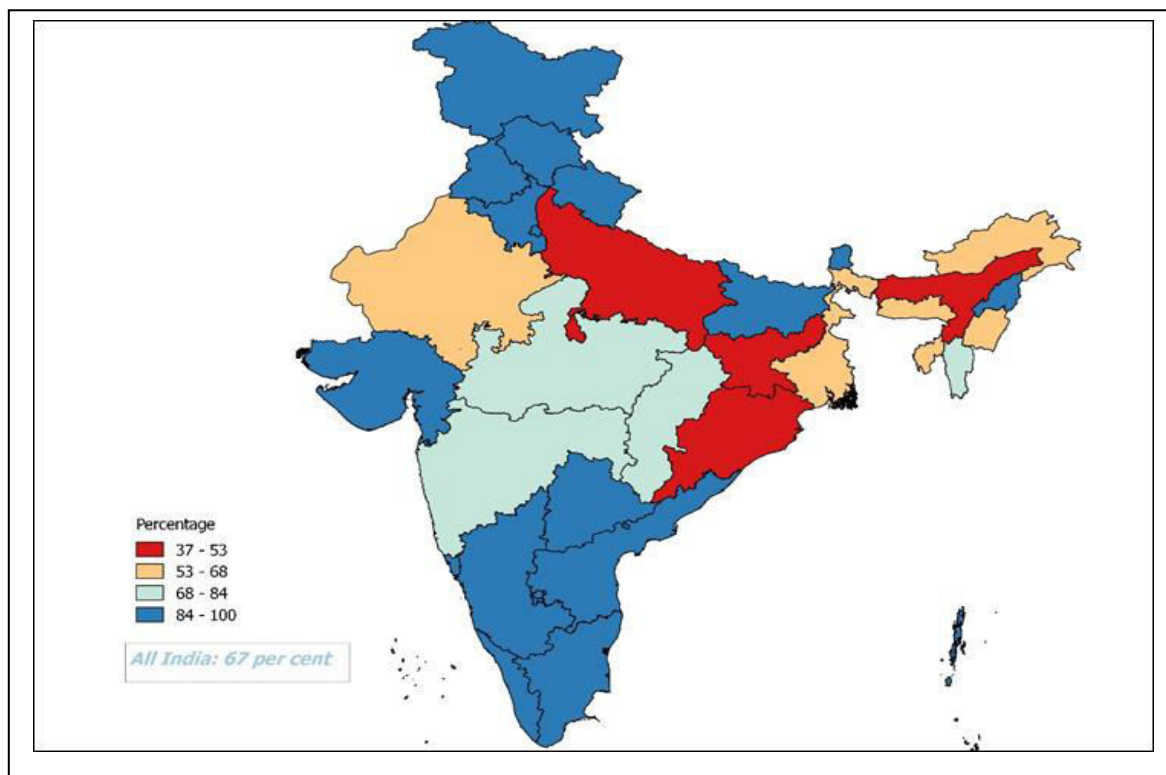
⁴⁴ THDC India Limited is a joint venture of the Government of India and the Government of Uttar Pradesh. THDC was incorporated in July 1988 as a private limited company with the name of Tehri Hydro Development Corporation Limited under the Companies Act 1956.

Autonomous Bodies (Societies):

- Central Power Research Institute (CPRI)⁴⁵
- National Power Training Institute (NPTI)⁴⁶

The National Electricity Policy 2005 incorporated all these organizations. This policy targeted that within 2012, 1000 units/ capita annual consumption of electricity was to be produced for consumption. Below, *Figure-2.1* shows that use of electricity for lighting by household percentage point. As per 2011 census, a picture of electricity consumption in India is given below:

Figure-2.1: Percentage of Households using Electricity for Lighting



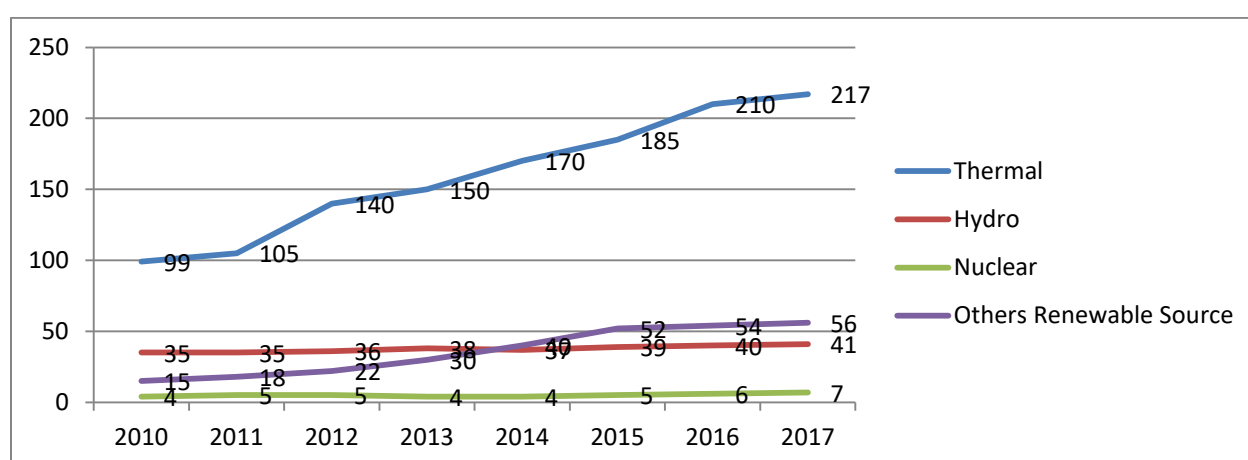
Source: Economic Survey 2016-17, Volume-2, Ministry of Finance, Department of Economic Affairs, Government of India, August 2017. p. 124.

⁴⁵ CPRI was established in Bangalore by the Central Government of India in 1960. The laboratories are located in Bangalore, Hyderabad, NOIDA, Nagpur, Kolkata and Guwahati.

⁴⁶ NPTI was set up by the Government of India, under the Ministry of Power, to function as the national apex body for the human resources development of power sector personnel in India. NPTI is located at NPTI Complex, Sector 33, Faridabad (Haryana). The training institute is completely on computer based. Simultaneously, it provide 210 MW Fossil Fuel Thermal Power Plant to provide off-job/hands on training. Two more simulators of 500 MW and 210 MW have been commissioned at NPTI headquarters, Faridabad and at Nagpur Institute respectively.

The total Installed capacity of power utilities in the country increased from 1430.61 GW in 2008 to 3268.33 GW as on 2017. At the end of March 2017, thermal power plants accounted for an overwhelming 70.83 per cent of the total installed capacity in the country, with an installed capacity of 2671.29 GW. Other renewable Sources (excluding hydro) come next with an installed capacity of 586.80 GW, accounting for 15.56 per cent of the total installed capacity. The share of Hydro and Nuclear energy was only 11.81 per cent and 1.80 per cent of total installed capacity.⁴⁷

Chart-2.0: Installed Electricity Generation Capacity in Giga Watt (GW) in India during the Period 2010-2017

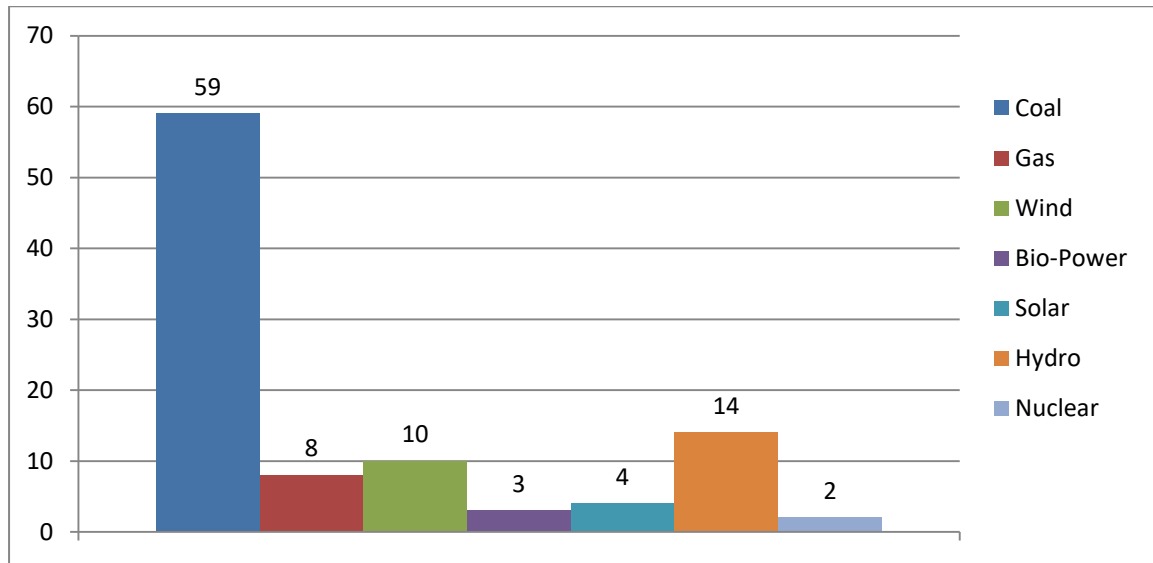


Source: Energy Statistics (Twenty Fifth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2018, p. 10, available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/

If installed capacity of power generation is increased rightly, proper electrification in the country is possible. In 2017, the total electricity production was 327 GW. Among this production 59 per cent came from thermal power and 18 per cent from renewable energy sources. So, out of total production 57 GW came from renewable energy source. Not only that, 56 per cent of electricity production comes from wind based power sector. *Chart-2.1* below shows in the form of a bar graph the power capacity sector wise in 2018:

⁴⁷ Energy Statistics (Twenty Fifth Issues), 2018, Ministry of Statistics and Programme Implementation, Government of India, p. 9, also available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/ (Accessed on 25th March 2019).

Chart-2.1: Power Capacity Sector during 2018



Source: Economic Survey 2016-17, Volume-2, Ministry of Finance, Department of Economic Affairs, Government of India, August 2017, p. 127.

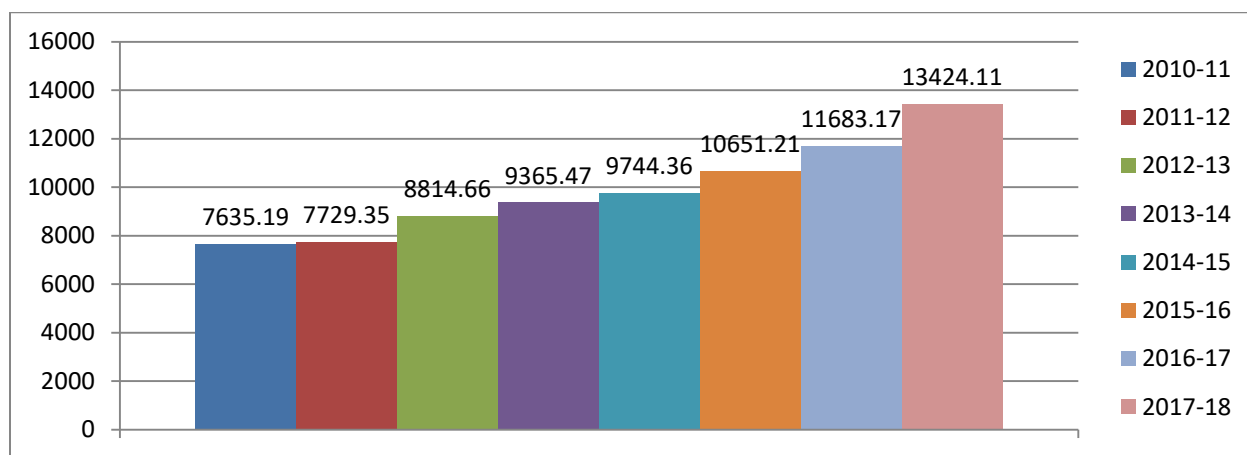
The overall growth in generation of electricity in India in 2018-19 is estimated to be 1249.337 Billion Unit (BU), in 2017-18, it was 1206.306 BU.⁴⁸ In the electricity production sector, the renewable energy source is the most important because India is the largest renewable energy source in the world. According to the target as envisaged in the energy policy, India's 'Vision 2020', the renewable capacity as a whole would be increased to 175 GW. Among this, solar capacity would be 100 GW, wind capacity 60 GW, biomass capacity 10 GW and small hydro power capacity 5 GW. Since the production of coal is very limited, a step was taken to increase renewable energy as the maximum quantum in the energy policy scenario.⁴⁹ This initiative has taken by government in the year 2017-18. But during this pandemic situation in 2020, the governmental target on energy production is at in stake. In the year of 2010-11, the production or availability of electricity were 763519 GW/ hour, whereas in 2016-17, the electricity production availability was 1168317 GW/ hour.⁵⁰ Chart-2.2 shows year wise availability of electricity (in Giga Watt) in India from 2010-11 to 2017-18.

⁴⁸ This data is also available at: <https://powermin.nic.in/en/content/power-sector-glance-all-india/> (Accessed on 26th March 2019).

⁴⁹ Economic Survey 2016-17, Ministry of Finance, Department of Economic Affairs, Government of India, Volume-2, August 2017, p. 128.

⁵⁰ Energy Statistics (Twenty Fifth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2018, p. 33. This data is also available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/ (Accessed on 26th March 2019).

Chart-2.2: Trends in availability of Electricity in India from 2010-11 to 2017-18

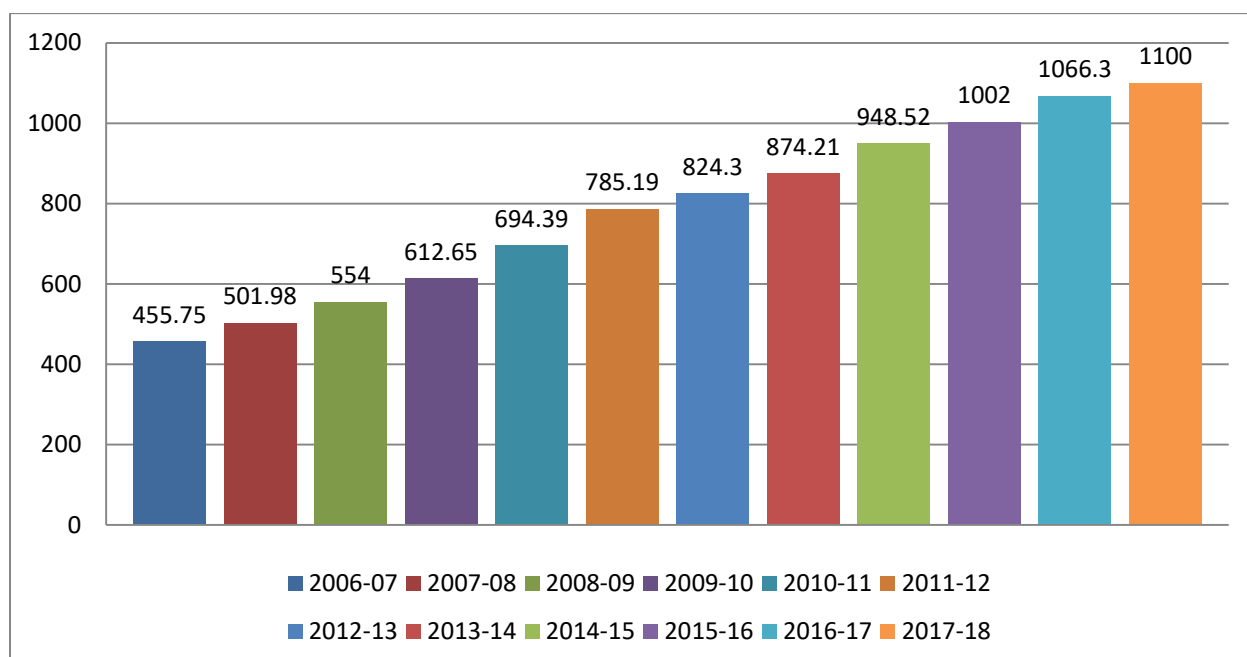


Source: Energy Statistics (Twenty Fifth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2018, p. 34, also available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf

Consumption of Electricity in India:

The consumption of electricity has been increasing day by day. The consumption of this energy has been increased from 501.98 GW/ h during 2007-08 to 1100 GW/ h during 2017-18. Hence, the rate of consumption has been increased by 6.50 per cent per year. A chart of electricity demand is given below. The *chart-2.3* shows year wise total electricity consumption in India:

Chart-2.3: Year Wise Consumption of Electricity in India from 2006-07 to 2017-18 in GW/h



Source: Energy Statistics (Twenty Fifth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2018, p. 58, available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/

For example, the electricity consumption of the sectors is highlighted individually. Of the total consumption of electricity in 2016-17, industry sector consumed 40.01 per cent followed by domestic consumption, 24.32 per cent; agriculture 18.33 per cent and commercial sectors consumed 9.22 per cent of electricity. The electricity consumption in industry sector and domestic sector has been increased at a much faster pace compare to other sectors. The *table-2.4* shows sector wise consumption of electricity from the year of 2006-07 to 2017-18 below:

Table-2.4: Sector wise Electricity Consumption in India from 2006-07 to 2016-17 (In Giga Watt/hour)

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Industry	17.19	189.42	209.48	236.75	272.59	352.30	365.99	384.42	418.35	423.52	435.23
Agriculture	99.02	104.18	109.61	120.21	131.97	140.96	147.46	152.74	168.91	173.19	188.51
Domestic	11.00	120.92	131.72	146.08	169.32	171.10	183.70	199.84	217.41	238.88	250.68
Commercial	40.22	46.69	54.19	60.60	67.29	65.38	72.79	74.25	78.39	86.04	90.07
Traction & Railways	10.80	11.11	11.43	12.41	14.00	14.21	14.10	15.54	16.18	16.59	17.05
Others	23.41	29.66	37.58	36.60	39.22	41.25	40.26	47.42	49.29	62.98	65.97

Source: Energy Statistics (Twenty Fifth Issues), Central Statistics Office, Ministry of Statistics, 2019, available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypcr cent20Statisticsper cent202019-final.pdf/> and Programme Implementation, Government of India. p. 59. This data is also available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/

Table-2.5 highlights year wise electricity production, consumption, losses and import of electricity as per record from the respective authority in India:

Table-2.5: Year wise Electricity Production, Consumption and Losses (in Billion kW/h) vis-à-vis Import of Electricity (in Million kW/h)

Year	Production (billion kW/h)	Consumption (billion kW/h)	Losses (billion kW/h)	Import (million kW/h)
2000	448.6	416.3	32.3	1575.0
2001	454.6	424.0	30.6	1490.0
2002	547.1	509.8	37.3	1385.0
2003	533.3	497.2	36.1	1540.0
2004	533.3	497.2	36.1	1540.0
2005	547.2	510.1	37.1	1540.0

2006	556.8	519.0	37.8	1400.0
2007	630.6	587.9	42.7	1500.0
2008	665.3	517.2	148.1	3189.0
2009	665.9	517.2	148.7	3189.0
2010	723.8	568.0	155.8	5270.0
2011	723.8	568.0	155.8	5270.0
2012	835.3	600.6	234.7	5270.0
2013	880.0	637.6	242.4	10530.0
2014	871.0	698.8	172.2	5700.0
2015	901.0	728.0	173.0	5800.0
2016	1052.0	864.7	187.3	4794.0
2017	1218.0	973.0	245.0	5000.0
2018	1386.0	1137.0	249.0	5617.0
2019	1386.0	1137.0	249.0	5617.0
2020	1386.0	1137.0	249.0	5617.0

Source: CIA World Factbook, December 2020, available at: <https://www.indexmundi.com/g/g.aspx?v=83&c=in&l=en/>

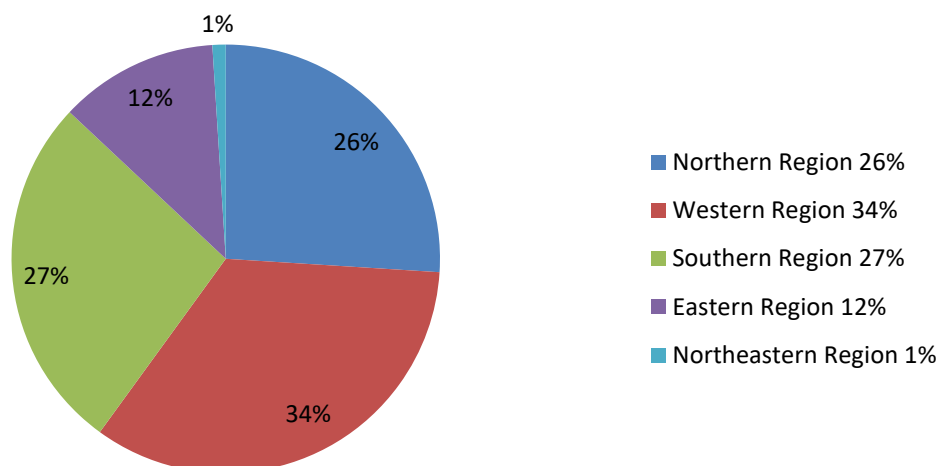
In the above table shows the energy of electricity production, consumption, losses (in kW/h) and import of electricity (in kW/h) has been shown from the year of 2000 to 2020. It is clear from the above table that although production and consumption are high, the energy losses and import of energy figure are sufficiently high. As a result, India was compelled to import electricity continuously. For instance, 1.5 GW power was imported from Bhutan by a bilateral agreement between the two countries.⁵¹

Chart-2.4 shows a pie-chart about India's installed electricity generating capacity in 2018:

⁵¹ In this context, it is relevant to quote the statement of Piyush Goyal, Minister in-charge of Power, Government of India who stated, "Majority of power imported from Bhutan is under bilateral agreement between the Government of Bhutan and Government of India. The tariff is negotiated by both the government to ensure supply of cheap imported power to consumers." Sri Goyal made this statement in Lok Sabha in 2016 during Question Hour.

This quotation is taken from, <http://economictimes.indiatimes.com/industry/energy/power/india-imports-1542-mw-power-from-bhutan/articleshow/51239552.cms/> (Accessed on 28th March 2019).

Chart-2.4: Regionwise Installed Electricity Generation Capacity of Electricity as in 2018 (Total Installed Capacity 344GW)



Source: Energy Statistics (Twenty Sixth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2019, p. 23, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypercent20Statisticspercent202019-final.pdf/>

The above pie-chart shows the region wise production of electricity. The total production of electricity was 344 Giga Watt. India is a very large country. The region wise connectivity is very much poor. This developing country needs more accurate transportation system for supply of proper energy. The transportation difficulty from one region to another region is very much obstructing, and also cost effectiveness. As region wise electricity production is different, for this in those regions where there remains deficit in electricity production in comparison to demand. For that reason, import of electricity is simultaneously very most vital at those regions. For instance, the generation of electricity in Northeastern region is very poor. Again, supply of electricity from one region to another region is quite difficult. As a result, the possibility of import of electricity remains. Again, in every year the electricity wired leakage is happening for which the possibility of import is the agenda of the government. So, in every year electrification by the government is going on and if does not maintain the balance so far as production is concerned. As a result, import is required on the basis of demand of the respective areas. This policy, if continued, will bring about adverse effect on the Indian economy as well as energy

security is concerned.⁵² India imports electricity from bordering countries. During 2017-2022, it has been estimated that the import will come from Bhutan, the quantum being 8 GW, and possibly Nepal as well. It has been expected that import-export of power from Myanmar, Bangladesh, Pakistan, Bhutan and Nepal are also being negotiated. Hence, the interconnection with India's neighboring states is significant from future import-export point of view.

Coal:

In India, East India Company introduced coal mining and tried to use this item of energy commercially. The coal mining was started in the western part of Damodar River, presently, this place was known as the Raigunj in 1774. But the demand for coals has outpaced the production. After the invention of Steam Locomotives, coal became the most vital energy supplier in 1853. The effects of the First World War greatly disrupted India's coal production. As a result, unlimited production-supply of energy was failed by the East India Company. In this period, the East India Company started coal lifting in India and taken this sector as private sector.

Coal is one of the important mineral for many uses, particularly when coal is used for fire, as it produces heat. On the other hand, coal is used in various sectors or industries like, iron and steel industry instead of charcoal. In this way, it would relevant to point out here that coal becomes a vital energy in a country's economic development. As a result, coal turns mercantile capital into industrial capital. For this reason, increase of production in coal is very necessary for multiplier effect in the industries.

In 1932, Sir Cyril Fox estimated that in India, the total reserve of coal was 20,000 Million Tons whereas there are only 5000 Million Tons and 4600 Million Tons of coal was produced in Bihar, Chhattisgarh and West Bengal.⁵³ These types of coal were prevalent during the age of Gandwana.⁵⁴ Huge quantum of sufficient coal reserves is located in the eastern region of India.

⁵² This statement is based on the telephonic interview of Professor Anindya Jyoti Majumdar, the Head of the Department of the department of International Relations; the former Director of Strategic Studies in the Schools of International Relations, Jadavpur University, Kolkata, India on 16th February, 2019.

⁵³ R. M, Dwivendi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 79

⁵⁴ According to the age of geology in India, the Indian coal is divided into two types, for instance, (i) Gandwana age coal and (ii) Tertiary age coal. The Gandwana age coal is known as developed category coal. Now it can be said that the developed or undeveloped category of coal is to be considered according to the quality of coal and the quantity of carbon contained in the coal on the basis which coal can again be categorized into four parts, for instance Pitts where the contained of carbon is 35 per cent, Lignite is 35-50 per cent, Bituminous is 50-80 per cent, and Anthracite where the quantum of carbon remains 85-95 per cent. It appears from the above that the availability of coal during the age of Gandwana is undoubtedly standard in quality. Here coal was lifted from the rock surface.

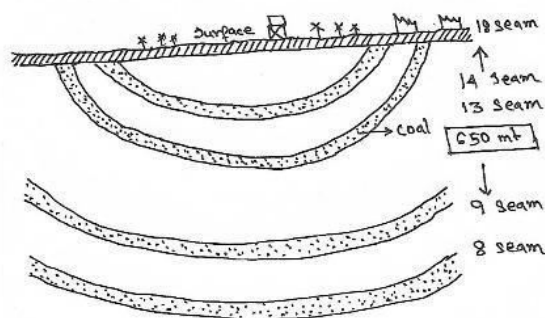
This coal is to be taken as medium category.⁵⁵ After the independence, India's First Five Year Plan (1951-56), the government decided to expand a scientific and systematic method of coal production. This, of course, maintains the efficiency of the sectors. In 1956, the National Coal Development Corporation (NCDC) was established as a government of India undertaking. After that in 1961, according to the government (allocation of business) rules, the coal sector came under the jurisdiction of the Ministry of Coal, Government of India. In 1971, Central Government nationalized the coal industry and from 1st May 1973, it started proper arrangement and planning for lifting coal. For this energy development and programme policy, this is improving the conditions of the existing mines.

Later, many experts on this subject had opined that the nationalization policy has not been able to frame a sound policy in respect to development of this sector. Now, in addition to the failure of nationalization, another moot question is how far are the energy sectors able to meet their production goals in the current century? This has led to a severe crisis in the supply of cooking coal. In respect of non-cooking thermal coal, the gap between demand and supply is high. The situation is grave. Now, what is the way to overcome this challenge? Only through proper planning of import, this challenge (the gap between demand and supply) could be resolved. But

Anish Chottapadhya., *Arthonoitik Bhugol o Sompod Sastrer Porichoy*, (Kolkata: T. D. Publication, 1995), p. 586

⁵⁵ In this context, I would like to state my experience in data and information gathered from a field work conducted at Tata Steel at Jharia Division, Dhanban colliery, Chhattisgarh on 20th April 2018. I interviewed Mr. Sailendra Kumar, the Service Assistant of Jharia Division. Various aspects of the mechanism of coal lifting, the quality of coal located in this region, and how this quality is maintained- is the main theme of discussion. According to him, so far as, Dhanbad colliery is concerned coal is produced from 8 & 9 seam. This type of coal is hard in type and the proportion of stone is estimated to be 17 per cent which decreases the quality of coal. Mr. Kumar pointed out that medium quality of coal (Lignite and Pitts) is the maximum production in the eastern region of India. In fact, weighty coal is taken as medium quality coal. This type of coal cannot be easily converted into quality coal by washing. This is for its excessive weight of stone. In fact, this type of coal is not fit for use in different sectors like industry and thermal powers. It is a major challenges faced by the coal industries. In fact, coal of are lifted from 13 & 14 seams that are taken as appropriate for use in thermal power sector in this Jharia division of colliery. This can be explained with the help of a figure given below:

Figure-2.2: Surface and Seam in Colliery

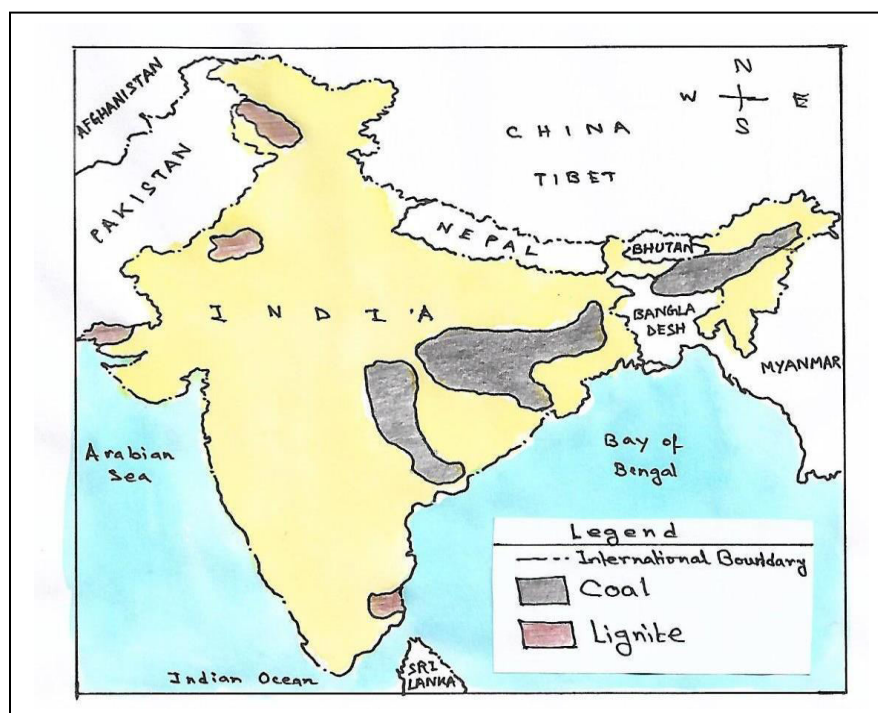


such import dependency in this energy sector is not sound good for developing economy like India. How to mitigate this challenges, and herein lies finding out the potentiality in this energy sector is the prime factor of this study.

Coal Reserves/ Potentiality and the Policies of the government:

Most of the coal fields are located at the eastern and south-central areas of India. All this reserves are in Jharkhand, Odisha, Chhattisgarh, West Bengal, and Madhya Pradesh; these all states are located in the eastern region of India. The lignite type of coal is located in Telangana and Maharashtra which are located in the south-central region of India. In Chhattisgarh, the maximum share of coal reserves were found (21.70 per cent) followed by Odisha (21.03 per cent) as on 31st March 2017.⁵⁶ According to an estimate, as of 2017, coal reserves stood at 315.14 billion tons, greater than the previous year, 6.34 billion tons. In Maharashtra, this increase was 7.15 per cent. Data reveals from the field work that 82 per cent of coal (particularly lignite and pit types of coal) was dispatched to power sector directly. Below, a figure was given which has shown the volume of reserves of coal; particularly lignite and pit are in India as on 31st March 2017:

Figure-2.3: Estimated Potentiality of Coal (Pitts type), and Lignite at the end of the Twelfth Five Year Plan Period (31st March 2017) in India



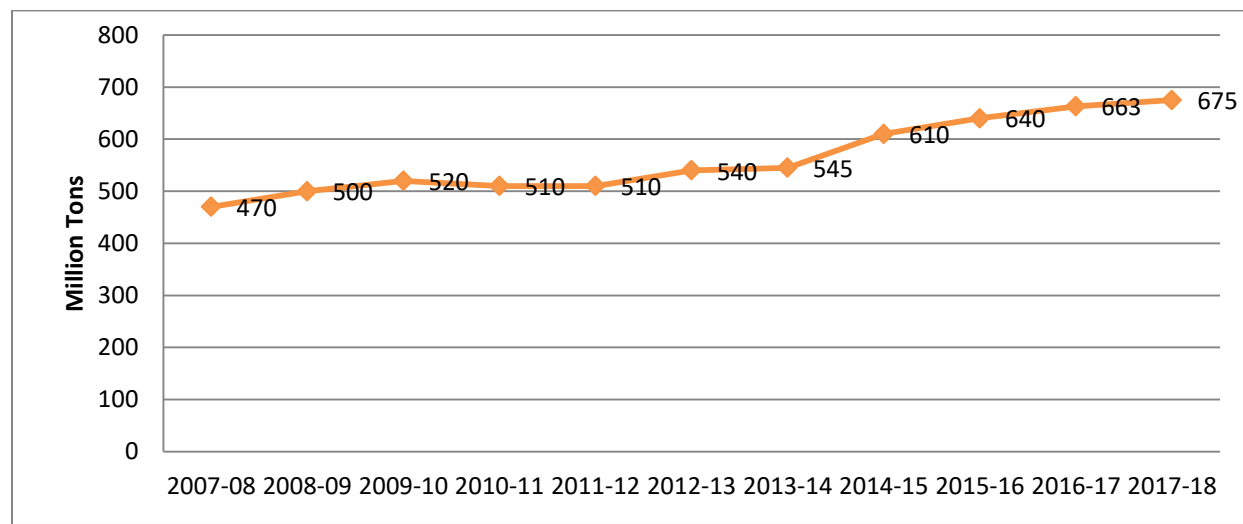
⁵⁶ Indian Minerals Yearbook (Part III: Mineral Reviews), 2017- 56th Edition: Coal & Lignite (Advance Release), Ministry of Mines, Government of India, March 2018, p 7(2).

Source: Munir Alsaad, *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to the Osmania University, Hyderabad, 2014. p. 167. In addition to this, this investigator made some changes with regard to the reserves of the coal and lignite, with a view to give the figure a composite character.

Coal Production and the Policies of the government:

The chart below shows the year wise total coal production in India from 2007-08 to 2017-18:

Chart-2.5: year wise coal production in the year 2007-08 to 2017-18 in Million Tons



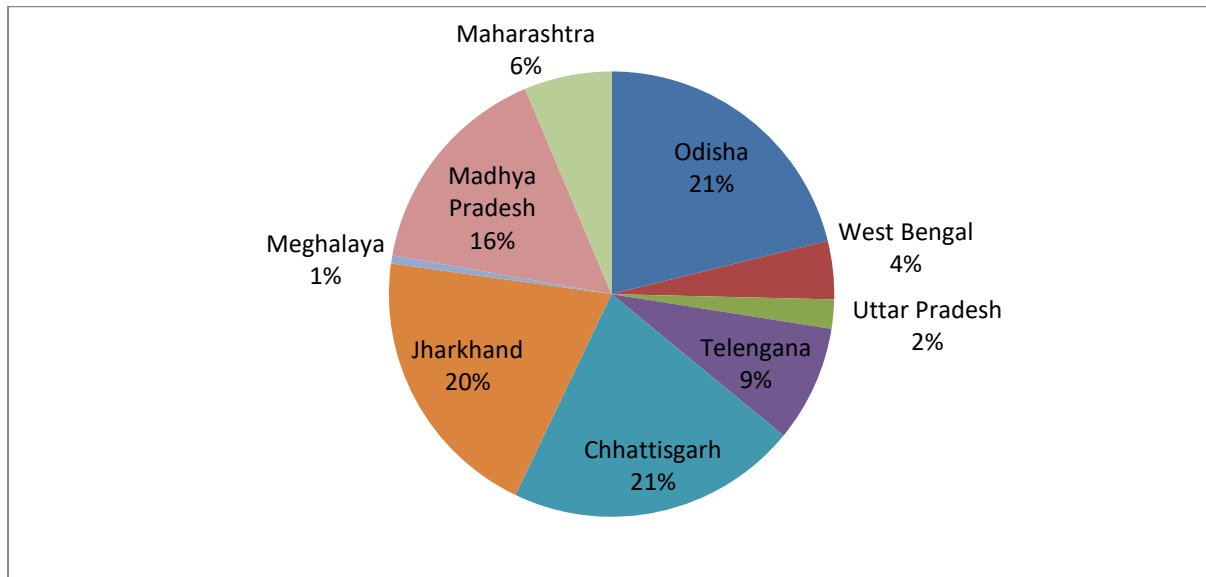
Source: Indian Minerals Yearbook (Part III: Mineral Reviews), 2017- 56th Edition: Coal & Lignite (Advance Release), Ministry of Mines, Government of India, March 2018. P.7(5) and Energy News Monitor, “Coal Scenario in India”, Bol. XIV, Issue. 35, February, 2018. Available at: <http://www.orfonline.org/research/energy-news-monitor-volume-xiv-issue-35/> and Energy Statistics (Twenty Sixth Issues), 2019, Ministry of Statistics and Programme Implementation, Government of India, p. 38, also available at: https://www.thehinducentre.com/resources/article29830150.ece/binary/Energyper_cent20Statisticsper_cent202019-finall.pdf/

It appears from the above chart that in 2007-08, coal production in India was 470 million tons, where as in 2017 to end of the year 2018, production was 675 million tons.⁵⁷ On the other hand, the lignite production was 32.42 million tons in 2008-09 and in the end of 2018; the production of Lignite was 46.26 million tons.

Below the pie-chart presents state wise production of coal with percentage during 2017-18. It must be mention here that Chhattisgarh is the largest coal producer followed by Odisha.

⁵⁷ Energy Statistics (Twenty Sixth Issues), 2019, Ministry of Statistics and Programme Implementation, Government of India, p. 38, also available at: https://www.thehinducentre.com/resources/article29830150.ece/binary/Energyper_cent20Statisticsper_cent202019-finall.pdf/ (Accessed on 26th March 2019).

Chart-2.6: Quantum of Production of Coal in Different States in 2017-18



Source: Indian Minerals Yearbook (Part III: Mineral Reviews), 2017- 56th Edition: Coal & Lignite (Advance Release), Ministry of Mines, Government of India, March 2018. p. 7(6).

The process of coal production is significantly complicated. The reason is obvious. If mechanism of coal lifting is not scientifically accurate, then during the time of lifting, a huge quantum of coal can be wasted. Even a fact reveals from an interview that fire can break out at the time of lifting. Since Chhattisgarh was the biggest coal producing state in India, so, I preferred Dhanbad, Jharia division colliery which is located in the state of Jharkhand. Here I would like to mention a pertinent point that this is the Lignite and Pitts type of colliery and this large colliery covers a large part of the eastern region of India, followed by two neighbouring states, such as, Jharkhand and Chhattisgarh (this statement has mentioned in the following *figure-2.2*). On April 2018, I undertook a fieldwork in Chhattisgarh which is situated in Jharkhand state where 27 collieries are located. Among these, only Tata Steel Company Limited was engaged in the production of coal. I came to know from the data provided by the local officials that all the coal mines are not in a position to produce coal. Hence, I was compelled to confine field study to this particular colliery, Tata Steel Company Limited. Mr. Amitava Mukherjee⁵⁸ opined that in India, now days, coal sector is facing various challenges. But Administrative Officer opined that coal is a prime energy resource for everyday life. For this reason, sector wise coal production is an important

⁵⁸ Mr. Amitava Mukherjee, the Administrative Officer, Tata Steel Company Limited, who is also a retired Cornel of the Army, posted at Arunachal Pradesh state, India. I was interviewed him on April 2018.

issue to consider. Fulfillment of sufficient quantum of coal is undoubtedly essential. But it reveals from the study of the area that coal mines have not been properly functioning to arrive at the target of production. Hence, they failed to fulfill year wise production target.⁵⁹ Although coal sector has no target of production but it is a matter of fact that the company has its own policy which fixes the target and tries to maintain it annually. In this regard, the right of the company is absolute.⁶⁰

It is clear from the above discussion that there is no government permanent policy so far as target of coal production is concerned. Hence, the government can only observe the situation of production of all the coal sectors in India. That is to say, New Delhi needs to more emphasis on the coal production in every year by proper systematically nationalization of the coal sector is concerned. The case study of a small area in the eastern region highlights the Government of India's policy on coal extraction. Now, we may turn to focus on the consumption aspect of coal in India. It relates to the issues like government's policy, technique of coal lifting and its problems, right distribution and its supply related challenges.

Consumption of Coal in India:

In 2007-08, the total consumption of raw coal in India was 502.82 metric tons and it increased to 841.56 metric tons in 2016-17. In 2007-08, the use of coal was 34.65 metric tons. In 2016-17, the

⁵⁹ Mr. N.V. Sairam, the Principal Geologist Officer, Tata Steel Company whom I interviewed in April 2018. In this context, a moot question has been raised, "Tata Steel is a big company, and do you think that this company has been fulfilling the target of production year wise?" On the other hand, another important question has revealed, "Whether the decision taken regarding production has been fulfilled or not?" Following these two questions, Mr. Sairam replied in the negatively opined that TSI is completely 'liberal' so far as coal lifting is concerned. He also expressed his opinion that usually Government of India does not interfere in the affairs of coal production. Regarding fulfillment of target this officer revealed that target fixation usually could not be done by the government. Tata Steel Company fixes the target and makes necessary arrangement for fulfillment of the target of production. Moreover, the government does not formulate any policy for production and supply of coal to the coal industries. Below a table shows the coal production in every year:

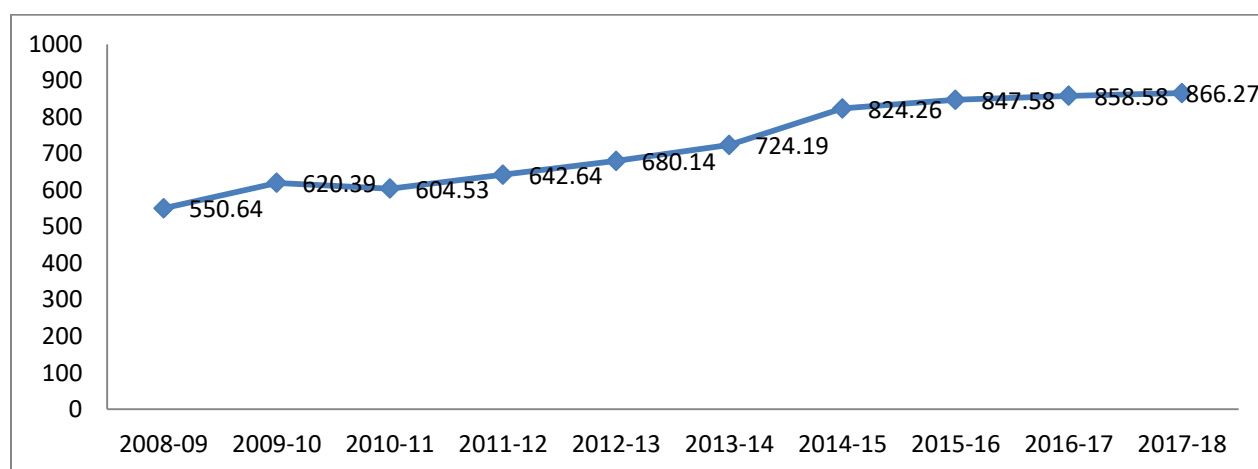
Tata Steel: Coal Production (in Million Tons)

	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17 (April, 2016- January, 2017)
Raw Coal	16.2	15.2	15.7	13.9	16.5	1.31
Clean Coal	10.5	10.4	10.8	10.1	10.9	0.60

⁶⁰ Mr. Sailendra Kumar, the Service Assistant of Jharia Division, Dhanbad, India under TSI; whom I interviewed in April 2018. This expert opined that so far as fixation of target is concerned, the decision of the TSI is final. This is the fixation of 'financial target'. According to him, this target is usually fixed at beginning of the every year. The company leaves no stone unturned to fulfill this target. At Dhanbad, there are five units of collieries and each unit of colliery lifted around 11,500 or 12,000 tons coal per day. But Mr. Kumar is of the opinion that the volume of lifting will not remain the same in each of the year. Particularly, as per the opinion of the respondent, in the end of the year, November to beginning of the next year January-February, which is called 'Udpyan Abhijan' (this term 'Production Campaign' is used by this officer). At that time, it is tried to fulfill the target which is taken by the company yearly.

quantum of used coal was 43.16 metric tons in industrial sectors. Therefore, the annual uses of coal increased to 2.22 per cent. Since India, at present, is one of the smart business strategic powers, the proper use of energy is very vital. Proper mechanism in regard to lifting of coal is essential without which a large quantum of coal is being shattered. For this reason, if this trend continues, India faces a novel challenge so far as fulfillment of its goal in this energy sector is concerned.⁶¹ In this context, in India, raw coal can be used for various purposes, such as, for generation of electricity and in steel industry sector etc. For making electricity, 527.26 metric tons raw coal consumed by the steel and washer industries, cement industries 6.43 metric tons and sponge iron industries 5.68 metric tons coal during the year 2016-17.⁶²

Chart-2.7: Coal Consumption in the year 2008-09 to 2017-18 in metric tons



Source: Energy Statistics (Twenty Sixth Issues), 2019, Ministry of Statistics and Programme Implementation, Government of India, p. 58. Available at: http://www.mospi.gov.in/sites/default/files/publication_reports/Energyper_cent20Statisticsper_cent202019-finall.pdf/ (Accessed on 26th March 2019).

⁶¹ In this context, the statement of N.V.Sairam, a Geologist Officer of Tata Steel, Jharia Division, Dhanbad, Jharkhand, told that all types of coal are not usable, for instance the users like industry, power plant and thermal power station- this sectors usually do not use rough coal. In that case, some quantum of coal can be used for the purpose of fuel while others used for other purposes like, fuel for domestic purposes. In fact, when coal wasted at the time of lifting, only right use of coal prevent shortage of coal.

⁶² Energy Statistics (Twenty Fifth Issues), 2018, Ministry of Statistics and Programme Implementation, Government of India, p. 37. Available at: http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf/ (Accessed on 26th March 2019).

Gap between Coal Production and Consumption, Technical and Analytical views of Production and Distribution:

In 2017-18, when coal production was 675 metric tons, the consumption stood at 866 metric tons, as a result of supply shortages in India. The supply and demand gap was to the tune of 191 metric tons and government was required to import coal. In the same year, the cooking and non-cooking coal import went to 41.64 per cent and 149.31 per cent, combined together 190.95 metric tons.⁶³ Table-2.6 shows year wise raw coal import in India (in metric tons).

Table-2.6: Year wise Coal Import by type from Abroad (million tons)

Year	Cooking	Non-cooking	Total Import
2014-15	43.72	174.07	217.78
2015-16	44.56	159.39	203.95
2016-17	41.64	149.31	190.95
2017-18 (April to September)	22.61	75.05	97.66

Source: Akhilesh Sati., “Power News Commentary”, *Energy News Monitor*, December 2017, Vol. XIV, Issue. 29. Available at: <http://www.orfonline.org/research/energy-news-monitor-volume-xiv-issue-29/>

Hence, import of coal is going on in every year. It hampers the economic growth of India. In order to reduce the import burden, it is necessary to devise right mechanism, government’s policy and proper distribution. Labour and climate issues are the main problems in coal mining. This is the problem highlighted by Mr. Amitava Mukherjee, the Administrative Officer of TSI, Jharia division.⁶⁴ He elaborately explained the problem. Usually, the convey belts field with coal being run to washer where the coal is processed and turn into refine coal. Here a pertinent issue arises. That is to say, the safety of the coal mine- the poisonous gas like, CH₄ (Methane), CO (Carbon Monoxide) remain in large quantum in colliery. Beside this, as pointed out by Mr. Mukherjee that at Dhanbad, there has been 1.5 Million tons raw coal reserves. Among these reserves, only 15 per cent of coal is being washed. This washed coal can be said as ‘clean coal’.

⁶³ Akhilesh Sati., “Power News Commentary”, *Energy News Monitor*, December 2017, Vol. XIV, Issue. 29. Available at: <http://www.orfonline.org/research/energy-news-monitor-volume-xiv-issue-29/> (Accessed on 16th April 2018).

⁶⁴ Mr. Amitava Mukherjee, the Administrative Officer in Jharia Division, Dhanbad, Tata Steel Company Limited, Jharkhand, India whom I interviewed in April 2018 told that mechanism of coal lifting and processing is a problem to be taken into account.

In fact, all types of coal, as per Mr. Mukherjee's statement, are to be taken as medium type of coal.

Mr. Mukherjee, told about the problem of labour, which hampers the process of production at this colliery. Herein lies, the indifferent attitude of the government who usually do not interfere with this labour problem. As a result, the Tata Steel has taken a 'give and take policy' with the government. The Administrative Officer opines that this type of dealing is hindrance to domestic production. In fact, large quantity of coal is lifted in Jharkhand and also in Tamil Nadu and this coal is under the category of lignite (as shown in *figure-2.2*). There are five collieries in Jamadoba and Sijua. The company has access to collieries like 6 & 7 Pits at Jamadoba and Digwadih (which are located in Jamadoba district of Jharkhand). Here, the table given below presents the gap between target taken in planning of coal production and actual production. The data shows in this table format given by the Administrative Officer of TSI, Jharia division, Dhanbad, Jharkhand, India.

Table-2.7: Gap between Target Taken in Planning of Coal Production and Actual Production⁶⁵

Name of Colliery	Target of Production (LT)	Actual Production (LT)
Jamadoba	1.83	2.23
6 & 7 Pits	2.45	2.39
Digwadih	2.29	2.59
Bhelatand A	2.44	2.07
Sijua	3.05	2.50
Total	12.06	11.78

The *table-2.7* indicates data of colliery of Jharia division. There is a need that the government may undertake a study of this colliery and make a policy decision in regard to capital investment in this division of colliery. It is revealed from the study that where potentiality of coal remains, the government should give emphasis upon research for development of this coal sector and try to make up to date of the situation which is very essential.⁶⁶

⁶⁵ Data were collected from Tata Steel Company Limited, Jharia Division, under the state of Jharkhand, India on 18th April 2018.

⁶⁶ The Service Assistant of TSI, Mr. Sailendra Kumar told that Tata Steel is a renowned concern in India. It has five colliery units in Dhanbad. But it is a matter of fact that till date no measure has been taken by the government or the company to carry on study

The issue of distribution of coal is also important to fulfill domestic needs of coal, adequate production is undoubtedly essential. Usually coal, after lifting sent to washers from there to power plants. For instance, Tata Steel Limited produces coal and it is directly sent to Tata Power, namely, Hindulco and Captive Power Plant for utilization of clean coal. Not only this, dry coal product went to nearby bed power plant. This power plant usually generates power. In fact, this coal is to be taken as washers rejected coal.⁶⁷ Another point highlighted by Mr. Mukherjee was that at the time of coal distribution, danger may come from ‘mafia-raj’ which is very difficult to overcome. Both private and public sectors face this problem.

It is understood from the above that there remains a gap between the raw coal (this coal is get directly from seams) and the clean coal (after getting raw coal, it send to the washers sector. Whenever washing is completed, now this coal can be utilized in many aspects. This can be called the clean coal). But after that, the production level is very lower than the target of every year. For that reason, the domestic demand is getting high and increasing day by day. For this, the government is compelled to import coal from outside. As a result, India requires a radical change in the policy of coal sector if it wants to become a secured energy country. It reveals from the study that the government policy so far as coal production and distribution are concerned is entirely negative. In fact, the turn of raw into clean coal requires an effort which is lacking in this coal production sector. As per the interview data which this investigator collected from various sources reveal that climate, efficient man power are essential for adequate coal production. Lacking of any of this may hamper the production and lower the production and the consequent is dependence on import of coal from abroad.

Crude Oil and Natural Gas:

Crude oil was available in delta, marsh land, and sedimentary basin, etc. areas. The term ‘petroleum’ is a Latin term ‘Petra’. Hence, petroleum is derived from two terms, ‘Petra’ that is to say, comprising stone and ‘Olium’. Therefore, the crude oil which is available from stone or mineral based material, called petroleum. In fact, petroleum is a liquid fuel. In modern world, crude oil is the greatest source of energy. In the contemporary era, petroleum is one of the most

in this regard. Mr. Kumar further said that the government has given the company freedom for the production and ensuring the quality of coal. It has made necessary connection with Indian School of Mines at Dhanbad, under the control of IIT Dhanbad for research and development that usually carry on necessary measures for standardization of coal for its efficient use in different sectors of the government.

⁶⁷ This fact has been stated by Mr. Amitava Mukherjee (Head of the Administration, TSI) in April 2018.

vital elements in the world. Now days, petrol price is considered the main capital index in the international business market. This vital element consists of hydrocarbon (90-98 per cent), oxygen, nitrogen, sulfur and ferus (Iron). All these elements are created from fossils. The byproducts of crude oil are naphtha, mom, Vaseline, asphalt, petrol, diesel, kerosene, slippery substance, penicillin and gasoline. Nearer to Margherita, the Makum in Assam where the availability of crude oil was first known in 1867. Afterwards, petroleum industry began its march and after a long period of its venture it began to make its presence felt. In the earlier period, the two companies- Assam Oil Company in northeastern region and Attock Oil Company in western region were the only oil producing company during pre-independence period. But the explorations of these two companies are very minimal. The reason is the sedimentary basins of crude oil and natural gas are not fit for adequate exploration. Before independence, Digboi refinery was the only crude oil infrastructure which uses to supply energy in the populated urban areas in India. Historically, in India petroleum industry was solely controlled by Anglo-American companies. Until 1950, this company maintained their dominance in this respect.

After independence, India felt that for development and for external peace and security issues, the necessity of oil and gas is enormous. As per industrial policy statement, the development of petroleum industry was felt an utmost importance in 1948. Since pre-independence, it is a fact that the necessity of foreign capital and foreign technology assistance in the sphere of petroleum industry remained. Afterwards, petroleum became part of the Indian Administration. Not only that, all the stake holders in this field realized that if India wants to become self-reliant in petroleum, the entire control should be rest in the hands of Indian administration and this proper control was also accepted by the majority of industry owners. In 1956, through Industrial Policy Resolution, the role of public enterprise increased when Oil and Natural Gas Commission (ONGC) was formed. This organization got its full independence for exploration of crude oil and natural gas in Indian Territory and also maritime areas particularly on the external economic zone (EEZ). Then Indian Oil Corporation (IOC) was formed for refining, distribution, and to spread the oil and gas (LPG) to the domestic market or other oil industries like, Bharat Gas, Indane Gas, Reliance, etc.

Until 1955, private oil companies (for instance, Kamarkatty Company Ltd) were only engaged in the exploration of hydrocarbon resources. In Assam, the Assam Oil Company produces oil at

Digboi (which was discovered in 1889). After that period, Oil India Limited (OIL), a 50 per cent of joint venture between government of India and Burmah Oil Company, was engaged in developing two newly discovered large fields, for example, Naharktiya and Moran in Assam. In West Bengal, the Indo-Stanvac Petroleum Project, a joint venture between India and Standard Vaccum Oil Company of the US was engaged in exploration work.

After 1955, India began its investigation in probable region of crude oil and natural gas reserves. It took initiatives for the technique exploration and scientific development. This effort was with the help of public sector undertakings. For this purpose Oil and Natural Gas Directorate (ONGD) was constituted. Afterwards, the ONGD was shifted under the Ministry Of Natural Resources and Scientific Research and then it was attached to the department of the Geological Survey of India. There is lots of collaborative action research and also applied research has been done. It is a fact that Soviet experts helped India in the work of drilling operations taken by Geological and Geophysical Surveys and Drilling Operations on the oil and gas field research. It was a period when Second Five Years Plan (1956-61) was going on. Then experts from the United States, Western Germany, Romania and the Erstwhile USSR visited India for rendering help and cooperation. New Delhi took over multinational control over petroleum companies like, Burmah Shell, ESSO and Caltex in 1974-79. The Oil industries made a joint venture with Burmah Oil Company. This joint venture makes each other into the public sector undertaking in 1981.⁶⁸

After the year of 1991, the liberalization and globalization process has been started. Then petroleum and natural gas sector had got its enormous opportunities from the government and also from other foreign investors. But they faced challenges at the same time. India launched its New Exploration Licensing Policy (NELP) for increase of domestic production of crude oil and natural gas in 1997 and 1998. This policy was successful and New Delhi awarded 110 blocks the 5 bidding rounds under its policy. The sixth rounds of bidding for 55 blocks in the country were also announced. The acquisition of equity oil and gas abroad in a number of countries was also being pursued by both public and private sector undertakings. Now, in order to satisfy the deficit in demand, India began to import oil from abroad by pipelines and ships or road transport. This import was made from Iran, Russia, South-East Asian countries and other Middle Eastern countries, etc. The Liquefied Natural Gas (LNG) was imported from Dahej, Gujarat with the

⁶⁸ R. M. Dwivendi., *Energy Sources and Policies in India*, (New Delhi: New Century Publication, 2011), p. 100.

help of NELP in 2005. During Eleventh Five Years Plan (2007-08 to 2011-12) with the assist of NELP in offshore areas of India many gas reserves were found. During Twelve Five Years Plan (2012-17) the government permitted many domestic and foreign companies to explore crude oil. New Delhi introduced new technology in the field of oil extraction.

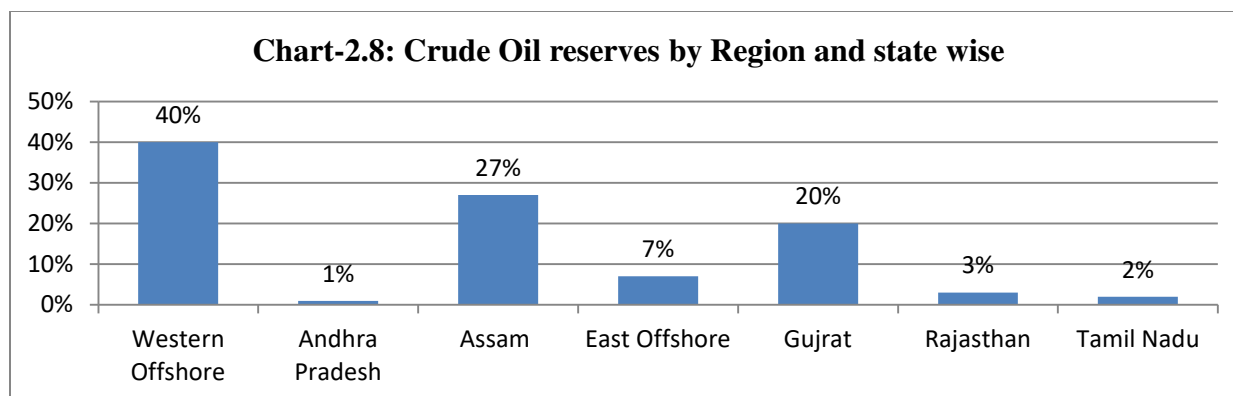
Crude oil and natural gas are available jointly. That is to say, at the time of exploration both these hydrocarbons are mixed. It is for this reason that any decisions of the government in regard to the development of this sector are taken keeping the two hydrocarbons in mind. Now, natural gas receives utmost preference for deference according to the existence of internal element. These internal elements are: carbon content per unit of heat, more gas availability and lower cost of calorific terms, etc. In 2015, India consumed 33 per cent of crude oil and 24 per cent of natural gas. The National Economic Policy, Government of India, has shown that from 2005-06 to 2015-16 the increase in crude oil production is to the extent of 15 per cent whereas the increase in consumption of petroleum products is 62 per cent. Again, it is found that in 2009-12, gas production remained constant, In fact, gas supply from K-G D-6 basin decreased.⁶⁹ To make the matter clear, it would be relevant to discuss about various aspects of crude oil and natural gas reserves, production, the capacity so far as refining of oil and gas is concerned and consumption.

Crude Oil Reserve:

The crude oil reserve in India is 594 million tons in 2018 when in the previous year 2017, the crude oil reserves was 604 million tons.⁷⁰ The chart (diagram) shows below region and state wise crude oil reserves.

⁶⁹ Niti Aayog, Government of India, “Draft National Energy Policy”, June, 2017. p. 27 available at: http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf/ (Accessed on 6th April 2017).

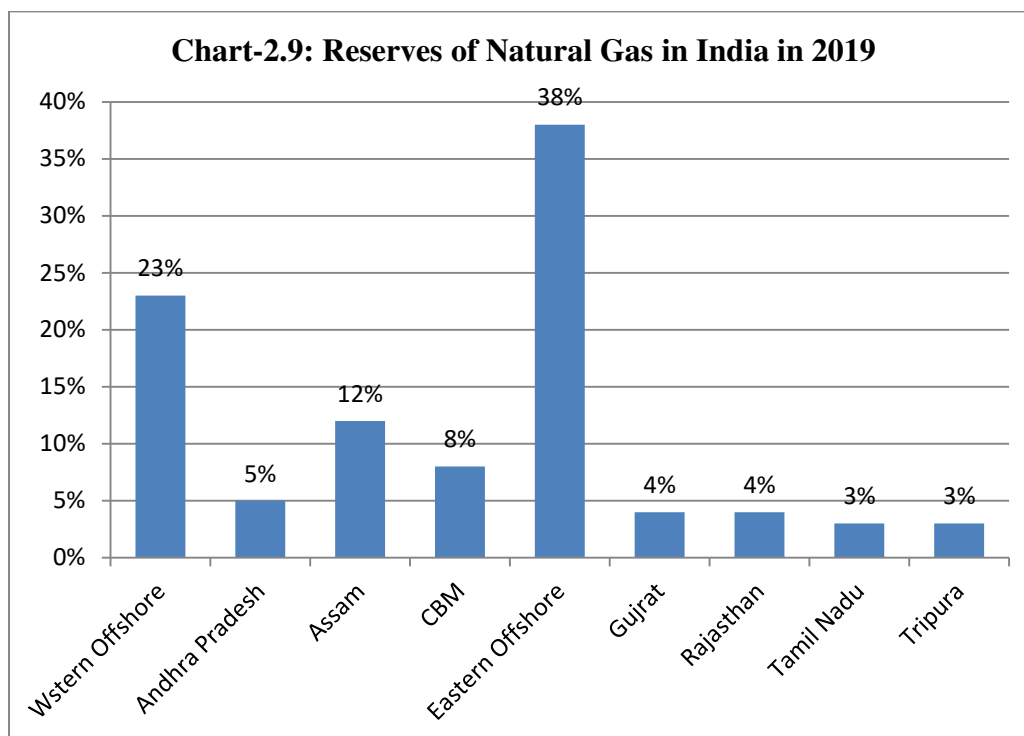
⁷⁰ Energy Statistics (Twenty Sixth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2019, p. 15, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypercent20Statisticspercent202019-final.pdf/> (Accessed on 14th June 2018).



Source: Energy Statistics (Twenty Sixth Issues), 2019, Ministry of Statistics and Programme Implementation, Government of India, p. 15, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypersent20Statisticspercent202019-finall.pdf/>

Natural Gas Reserves:

In 2018, the natural gas reserves in India stood at 1339.57 Billion Cubic Meters (BCM) compared to 1289.70 BCM in 2017. State and region wise gas reserves were shown in below chart.



Source: Energy Statistics (Twenty Sixth Issues), 2019, Ministry of Statistics and Programme Implementation, Government of India, p. 16, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypersent20Statisticspercent202019-finall.pdf/>

Production of Crude Oil-Natural Gas, and Policy related Challenges faced by the Government:

The *table-2.8* below shows the year wise domestic production of oil and gas in India from 2002-03 to 2017-18. The table also shows annual percentage of growth and decline of these two energy resources:

Table-2.8: Year wise Crude Oil and Natural Gas Production in India

Year	Crude Oil Production (MMT)	Percentage Growth / decline**	Natural Gas Production (BCM)	Percentage Growth / decline**
2002-03	33.04	-	31.39	-
2003-04	33.37	1.00	31.96	1.83
2004-05	33.99	1.82	31.77	-0.62
2005-06	32.19	-5.27	32.20	1.38
2006-07	33.99	5.59	31.75	-1.41
2007-08	34.12	0.38	32.42	2.11
2008-09	33.51	-1.79	32.85	1.32
2009-10	33.69	0.55	47.50	44.6
2010-11	37.73	11.94	52.22	9.95
2011-12	38.09	1.08	47.56	-8.92
2012-13	37.86	-0.60	40.68	-14.47
2013-14	37.79	-0.19	35.41	-12.96
2014-15	37.46	-0.87	33.66	-4.94
2015-16	36.94	-1.39	32.25	-4.18
2016-17	36.01	-2.53	31.90	-1.09
2017-18	35.68	-0.21	32.65	3.73

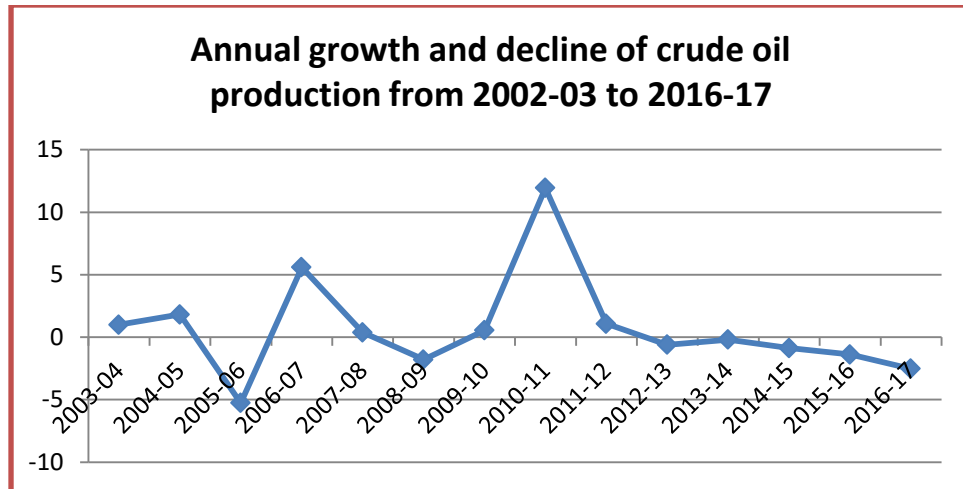
*The data is insufficient as because of the report

** The percentage is calculated based on = last year- first year/ last year x100

Source: Energy Statistics (Twenty Sixth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2019, p. 37, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypercent20Statisticspercent202019-final.pdf/>

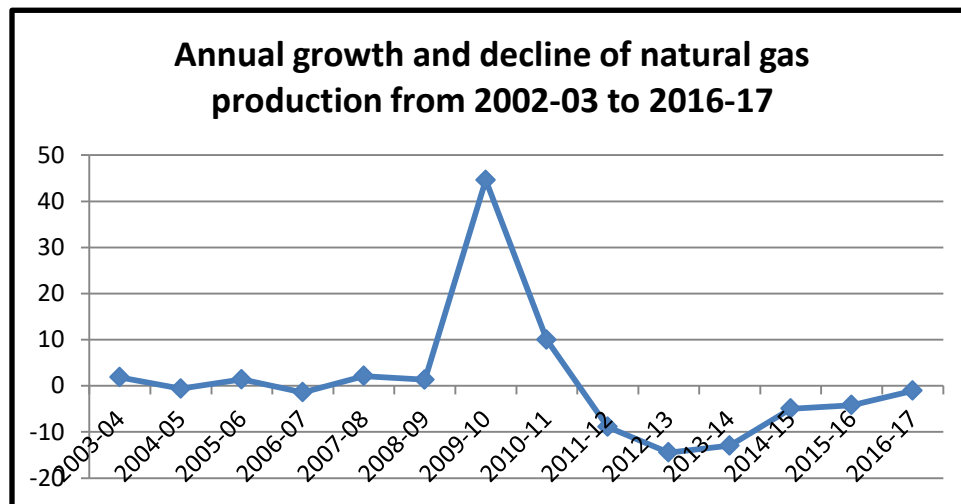
Annual growth and decline of crude oil in India from 2002-03 to 2016-17:

The crude oil productions in India during the above period have witnessed a roller coaster movement. The production reached its peak in 2010-11 with an annual growth rate of 11.94 per cent and this overall increase was due to the increase in Rajasthan oil field and in the subsequent years the annual growth rate started declining. The shortfall in the crude oil production was due to less production in mature and marginal fields of offshore field at Mumbai high and under performance of wells in K-G D-6. See the chart below:



Annual growth and decline of natural gas in India from 2002-03 to 2016-17:

The natural gas productions in India during the above period have witnessed a roller coaster movement. The production reached its peak in 2009-10 with annual growth rate of 44.5 per cent and in 2010-11, the annual growth rate was 9.95 per cent and this overall increase was due to the twelfth five year plan period.

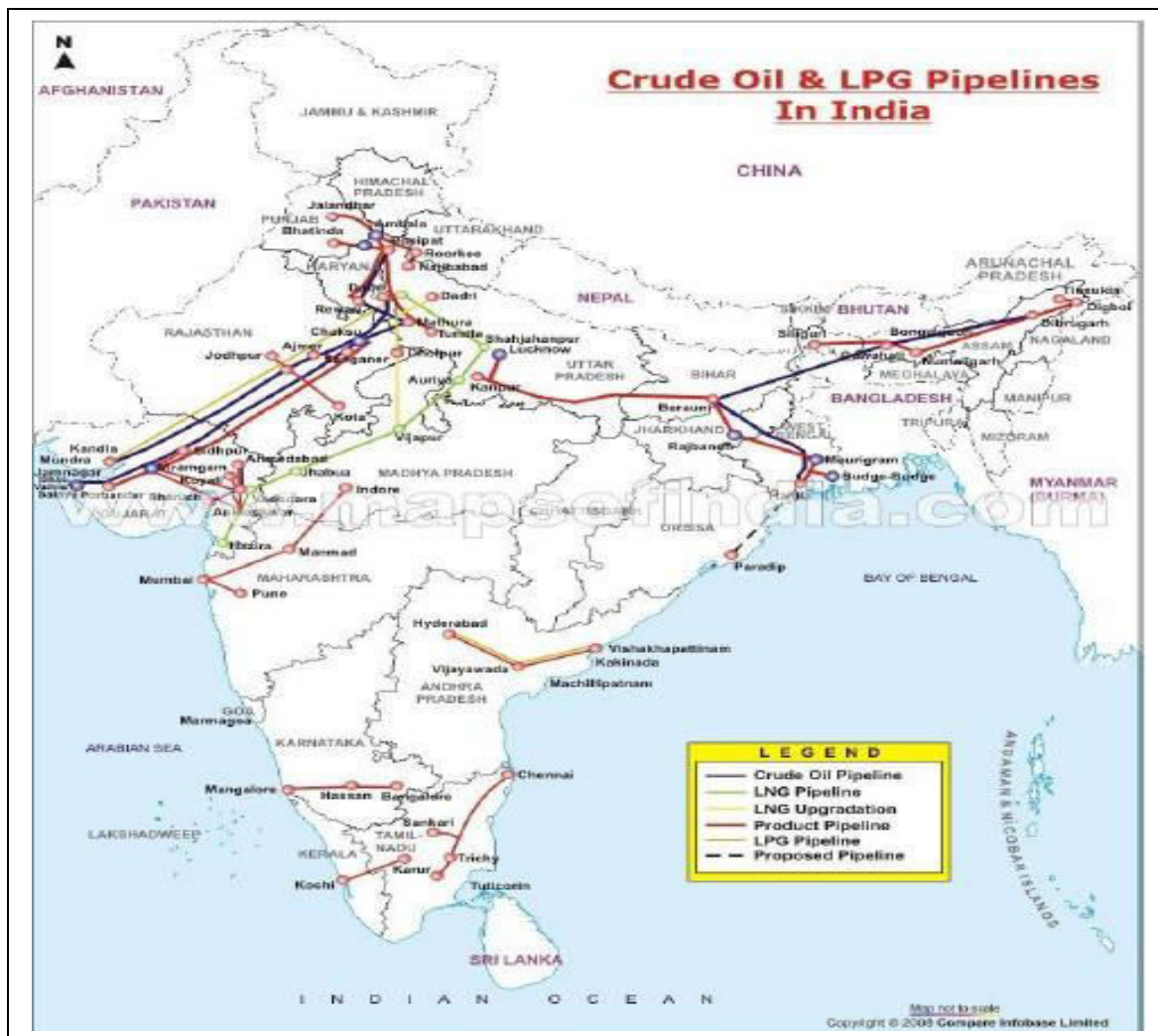


Oil and Natural Gas connecting network in Indian market:

In India, there are many oil transport pipelines network connectivity. It covers 400 miles. All these pipeline networks are mostly remained in northwest coast. It is a fact that the volume of domestic demand has been increasing in such a proportion that the work of gas transmission pipeline network tends to be increased. The connectivity between proper productions with

domestic refinery sector is vigorously essential.⁷¹ In India, there are two companies who have been maintaining monopoly in the sphere of distribution of oil and natural gas. These two companies are: GAIL and Reliance Gas Transportation Infrastructure Limited (RGITL).⁷² The figure-2.4 presented below highlights the crude oil and LPG pipelines picture in India:

Figure-2.4: Pipelines Network of Crude Oil and LPG in India



Source: Munir Alsaad, *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to the Osmania University, Hyderabad, 2014. p. 177.

⁷¹ In this context, I want to state an interview data whom I interviewed on May 2018. Presently, she is in Human Resource Administrator in ONGC, New Delhi. She opined that ONGC's crude oil exploration is connected with exploration. After exploration the crude oil is sold to IOC (Refinery of Indian Oil Corporation). This crude oil is sent through domestic transportation by pipeline. She further stated that oil and gas distribution system is governed by ONGC and ONGC is not entirely liberal in this respect. She has pointed out that the Government's target for production is related to its policy. It appears from the statement that Government (policy maker)-ONGC (producer) - IOC (refinery company) - all these concerns usually work as a team. Whenever any issue of dispute arises, all these concerns sit together and trying to resolve the problem.

⁷² Munir Alsaad, *Energy Security in International Relations (Indian's Energy Security)*, Thesis submitted to the Osmania University, Hyderabad, 2014. p. 176.

Crude Oil and Natural Gas Consumption; Hydrocarbons Price in India:

The demand for LPG and LNG is enormously high because as smart business strategic power, it is used in the houses of developed countries. For instance, it is important to supply electricity. Similarly provides of gas cylinder is the prime responsibility of the government. But it is a matter of fact that under the Ujjwal DISCOM Assurance Yojana (UDAY) scheme many households used kerosene and coal as fuel because India has failed to supply crude oil and gas as per demand of the people. At the end of the Eleventh Five Year Plan and Twelfth Five Year Plan, the demand for crude oil and natural gas were 76.6 per cent and 77.8 per cent respectively.⁷³ See the table below year wise crude oil and natural gas consumption:

Table-2.9: Year wise Consumption of Crude Oil and Natural Gas in India as on 2010-11 to 2017-18

Year	Crude Oil (MMT)	Natural Gas (BCM)
2010-11	196.99	52.02
2011-12	204.12	60.68
2012-13	219.21	53.91
2013-14	222.50	48.99
2014-15	223.24	46.95
2015-16	232.86	47.85
2016-17	245.36	50.78
2017-18	257.85	52.83

*Natural Gas includes Power, Fertilizer, Demand, City Gas, Industrial, Petrochemicals/ Refineries/ Internal Consumption, Sponge Iron/ Steel, Demand (Relatively price Inelastic)

Source: Energy Statistics (Twenty Sixth Issues), Ministry of Statistics and Programme Implementation, Government of India, 2019, p. 59, also available at: <https://www.thehinducentre.com/resources/article29830150.ece/binary/Energypercent20Statisticsper cent202019-final.pdf/>

Import from Abroad: Government's Policy and Infrastructural Challenges:

The domestic supply of energy was not at par with that of domestic consumption and it forces India to look outside markets to supply energy resources for its domestic requirements. *Table-2.10* has given below highlights year wise import of crude oil:

⁷³ The Twelfth Five Year Plan (2012-2017), Planning Commission, Government of India, Volume II, First Published (SAGE Publication) 2013, p. 175.

Table-2.10: Year wise Imports of Crude Oil (MMT) in India as on 2002-03 to 2018-19

Year	Crude Oil (MMT)	Natural Gas (TCM)
2002-03	81.989	63
2003-04	90.434	71
2004-05	95.861	263
2005-06	99.409	263
2006-07	111.502	876
2007-08	121.672	1215
2008-09	132.775	978
2009-10	159.259	1000
2010-11	163.594	1124
2011-12	171.729	1340
2012-13	184.795	1652
2013-14	189.238	1639
2014-15	189.435	2170
2015-16	202.850	2287
2016-17	215.720	2301
2017-18	405.700	2396
2018-19	405.700	2390

Source: Indian Petroleum and Natural Gas Statistics, Ministry of Petroleum and Natural Gas, Government of India, Economic Division, 2010-11, p. 12 and Ministry of Petroleum and Natural Gas, Annual Report: 2016-17, Government of India, p. 16 and CIA World Factbook, INDEX MUNDI, December 2020, available at: <https://www.indexmundi.com/g/g.aspx?v=93&c=in&l=en/>

It is quite natural that as the import of oil from the international market increases, so will the prices of oil in the domestic market. On 30th November 2016, the Organization of Petroleum Exporting Countries (OPEC) decided to cut their oil production by 1.2 Million Barrels/ day. This major was taken in order to lessen the global aspiration and increase oil prices and enhance the world economy. This was one of the prime examples for increasing the price.

But, to avoid import of crude oil, what is urgently necessary is to build infrastructure and technology. There are many instances in support of this contention:

- (i) If drilling is done from Deccan basins, there is every possibility of threat which is technologically in character. In respect of drilling high water depth and sub-basalt sediments are obstacles.
- (ii) In matters of man power planning in this field there is lacking. For this, what is necessary is to strengthen and empower technical and scientific manpower for

better decision making and capacity building in oil sector particularly in respect of E&P companies.

- (iii) Both ONGC and OIL, it is learnt from the high officials of these two organizations that they are going to set up mechanism by which the oil and gas production will be raised. It will definitely remove the present stagnant position of the production which has been going since the last one decade or so.
- (iv) Another notable feature of infrastructure development is to enhance the strategic crude oil storage beyond 5 MMTPA. The Government has decided to give access to private sector undertakings in building and operating strategic storage. It is possible only when the sufficient quantum of crude oil being available for release.
- (v) Another important criterion is adequate marketing facility and distribution channel for the petroleum products.
- (vi) What is urgently necessary is to develop new LNG import and degasification capacity both on the east and west coast on India.
- (vii) The essential factor is to build gas pipeline transportation infrastructure both on the east and the west coast and also in southern and northern parts of the country for supply of gas throughout India.
- (viii) Another measure has been to increase the city gas distribution network in about at least in 300 identified cities in the country.
- (ix) The efficiency of operations of various oil and gas sectors installations are required to be improved. Side by side, the benchmarks for refineries, pipelines process plants, buildings and any other installations are to be modernized.
- (x) Periodical monitoring, constant supervision of LNG imports on long and short term basis are to be reviewed in order to determine the price affordability of the energy.
- (xi) It is very important for every country to have advanced refinery sectors along with oil and gas production or import from abroad. The demand for oil and natural gas has been increasing day by day. The government has taken refining of the natural gas and oil and the capacity for refining is an increasing necessity. It is for this reason that the Government of India has been expanding refineries and trying to modify the old refineries in April 2009. The total refineries were 22

(among them 17 were under the public sector and 2 operated in a Joint Venture of Government and public sector undertakings, 3 refineries were under the control of private sector). It is a fact that if a country desires to develop economically, the fulfillment of domestic demand for refinery is not enough; rather export of petroleum will be increased and if this trend continues uninterrupted, that country may be regarded as an economically strong.⁷⁴

Foreign investment in refinery sector is notable. In 2016-17, the Russian companies Essar's Vadinar Refinery invested around US\$13billion. Again another project, Indo-Bangla pipeline which connected Siliguri and Parbatipur was in progress. The Numaligarh Refinery Limited, it is expected, will supply HSD to Parbatipur through rail-rack. Now, EIL has been providing PMC services to Eastern Railway Refinery in Chittagong. Other Indian oil and gas companies have been installed to provide gas and building gas infrastructure to Bangladesh. New Delhi's strategy on 'Make in India' program was also initiated and it had taken several promotional scheme in the field of oil and gas supply. For instance, Indigenization Groups (INDEG) was formed by Oil and Gas CPSEs. In this line of action, IOCL has succeeded in developing INDMAX technology for production of higher yields of LPG and gasoline from various petroleum fractions. In fact, petroleum and natural gas sector faced critical challenges in the Twelfth Plan Period. The demand for petroleum products have been increasing. But the domestic production to meet this ever increasing demand is limited. Since, oil prices in the international markets are volatile. It is difficult to fix the prices of energy which is generally exorbitant.

Renewable Energy:

Renewable energy is an important source of energy which is used as an alternative source of energy particularly petroleum products. The main sources of renewable energy are solar power, wind power and small hydro power. The Ministry of New and Renewable Energy, government of India, is the largest organization, the research and development wing of this organization

⁷⁴ Dr. S. K. Mathur, (fellow IIM-B, former Programme Director, EGDM, International Business Programme) Institute of Public Enterprise, Osmania University, Hyderabad, India-who came to Jadavpur University and delivered a lecture in a seminar on "International Relations: Global Business and Smart Strategies" on 8th February, 2019 stated that "Switzerland is the largest oil imported in the world. But since refineries there are enough, in this country petroleum product is exported to other countries. As a result the economic condition of Switzerland is successively firm in largest degree". Eventually I got the opportunity to participate in the said seminar.

supervises the entire spectrum of renewable energy like, Intellectual Property Protection, promotion of the sources of renewable energy and coordination among various concerns engaged in the development of this vital energy source in India. It is a matter of fact that India stands in the second position in the utilization of bio-gas. Various comprehensive programs have been taken for the development and utilization of renewable energy sources. Among these comprehensive programs, the most important was the improvement of the technologies and devices of this energy source. Among them the most important project are bio gas plant, solar water heaters, improved wood stoves, solar cookers, solar lanterns, pumps, street light, wind electric generators, bio gasifiers, water pumping wind mills and small hydro electric generators, hydrogen fuel cells and bio-fuels, etc.

In India, there are enough potential of wind, solar, biomasses, small hydro and biogas cogeneration of renewable energy. It has the potentiality of 1001132 MW as on 31st March 2017. According to the wind and solar power installed capacities, India stands in the positions of fourth and fifth.⁷⁵ In the total renewable energy, India stands fifth globally as on 31st March 2018. At the phase of environmental pollution control and climate change where global warming is at the door, the production of energy from thermal, nuclear and oil and natural gas is much risky environmentally. For this reason, India made a commitment at the 'Paris Accord' conference where nationally determined contributions are major criterion for a 'pollution free world'. Within the coming 2030, the said conference envisaged that every country should take necessary measures to install 40 per cent power capacity in the renewable energy sector. It is also hoped that the target capacity of the renewable energy may be increased when energy security storage will be made.

Summing up:

In this Chapter, an attempt has been made to highlight the various aspects of energy security particularly electricity, coal, crude oil, natural gas and renewable energy. These five sectors of energy production and distribution are constantly engaged in production and distribution of energies in their respective sector. The basic question was addressed in this chapter was on the strategies adopted by India in meeting its growing energy requirements. The sector wise

⁷⁵ Ibid

production, distribution and consumption were clearly elaborated. Successive plans were made by the government of India to increase the domestic production of both renewable and non-renewable energies. Independent Ministries like, like, the Ministry of Power, the Ministry of Coal, the Ministry of Petroleum and Natural Gas and the Ministry of New and Renewable Energy under the government of India was set up to look the overall production, distribution of energy resources. However, despite several policies and plans by the government of India, the domestic consumption is always on the higher side than the supply. India's rising growing economy also necessitated the increases in the import of crude oil and natural gas. India mostly imports energy resources from the Middle East, the Russia, Iran and Saudi Arabia are the leading exporters to India. However given the instability in the Middle East region, the USA sanction on Iran (which further restricts energy export to India), India is looking for the new sources of energy supply in the Eurasian region. Due to subsequent discoveries of new reserves in the Caspian Sea Basin, the world powers have started investing in the region for oil and gas exploration, exploitation and transportation. India is also trying to have its share in this energy rich region. It is necessary to understand the energy potentiality of the Caspian Sea region. The energy potentiality of the Caspian Sea basin was discussed in detail in the subsequent chapter.

Energy Potentiality of the Caspian Sea Basin

As my research focuses Turkmenistan, then before going to evaluate Turkmenistan's energy related policy and their challenges; it's very essential to point out here that the Caspian Sea basin's geography, political environment, energy potentiality and economic challenges highlighted properly. Without highlighting this matter of the Caspian Sea basin, then Turkmenistan's geology and economic-political-international issues and challenges cannot be materialized adequately. Turkmenistan is one of the largest energy producing countries in Central Asian region as well as in the world. A vast quantum of natural gas and also such quantum of crude oil are stored in its territory and its water boundary. This country is located in the south Caspian Sea basin. Now, the basic question is which is the Caspian Sea? And where the sea is located? Before entering my focus on Turkmenistan and its energy related foreign policy, it is a matter of fact that its need to elaborate on the Caspian Sea basin's geography and legal aspect. Then I can highlight the theme of Turkmenistan, and its bilateral relations with India, and their connectivity issues, trade-related aspect, and energy security context, etc.

The Caspian Sea is the one of the largest water body in the world. It is a landlocked lake. Caspian Sea stretches about between 47⁰E to 55⁰ East longitudes and 37⁰N to 47⁰ North latitudes.¹ There is a continental type at the bottom of the North Caspian Sea, which is a crustal structure. The bottom of the southern part has sub-oceanic type basalt. The sedimentary layer in the south is large and the thick stores keep it covered. This crucial structure of the Caspian region has led the Geologists to develop ideas that this is the remnant of the geologically ancient sea. Experts opined that this region has in existence of 150 million years back.² In all sides, the Caspian Sea is surrounded by basins. Many rivers have fallen in the Caspian Sea region. Not only that, this Caspian Sea basin has been found to have unlimited reserves of mineral oil and natural gas. Besides energy resources, the other source of livelihood is fishing which the people have been practicing since long time back. Because of the importance of fishing in the livelihood of the people, the surrounding area of the Caspian basin turned into a fishing industry. However,

¹Area Study Centre (Central Asia), University of Peshawar, Six Monthly Journal of Research Winter 1980. In this research journal published a paper by Miss Taj Mehar Samma entitled "The Caspian Sea", p. 65.

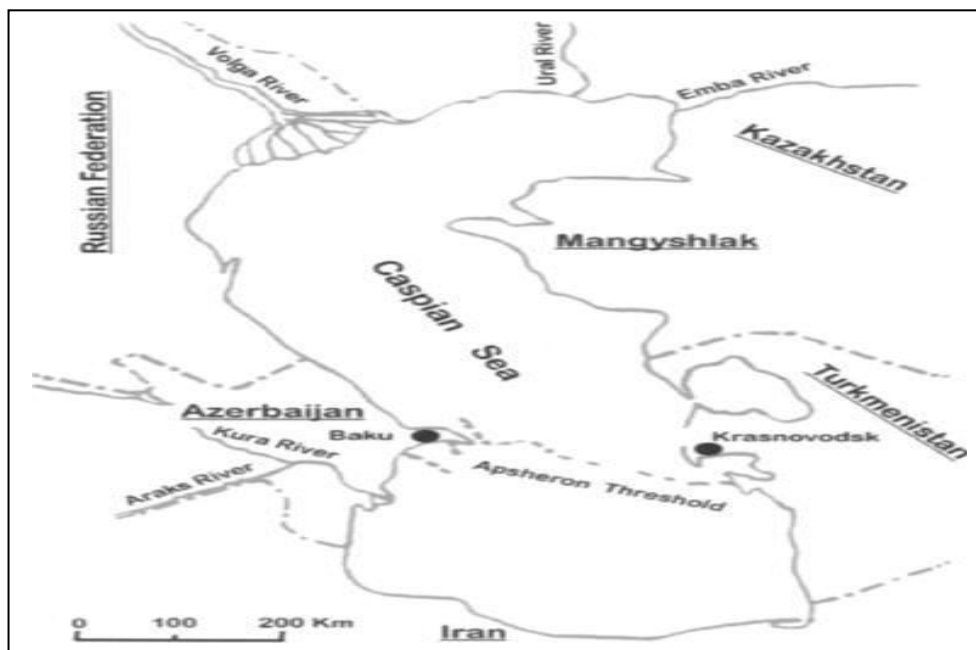
² Ibid., p. 68.

with the finding of the reserves of mineral resources and the significance it holds in the smart business economy, the fishing industry takes a backseat. The region is strategically important to the world due to its huge potential for natural resources such as crude oil and natural gas, etc. Hence, it is an area which plays a prime role not only to the states located in this area but it attracts the attention of the neighboring countries and also great powers, like, the USA and the Russia.

Caspian Sea Basin's Geographical Factor:

The rivers which fall in the Caspian basins are Volga, Ural, Emba, Kura, Samur, Sulak, Terek and Atrek as well as Sefidrud.³ At present (after the fall of the USSR), the Caspian region formed five independent states, such as, the Russia, Kazakhstan, Azerbaijan, Iran and Turkmenistan. The *figure-3.0* depicts the location of the Caspian Sea and its territorial states.

Figure -3.0: Caspian Sea and its Territorial States



Source: L. Buryakorsky, George V. Chilinger and Fred Aminzadeh (ed.s.), *Petroleum Geology of the South Caspian Basin*, (USA: Gulf Professional Publishing, 2001).

The Caspian Sea is one of the largest salt lakes of the world. This lake is 1174 kilometer length from north to south, average width is 326 kilometer² and the total area is 375 kilometer². In the middle part of Caspian Sea, the depth of water is 788 meter, in the southern part; the depth of

³ N. N.Vohra., *Culture, Society and Politics in Central Asia and India*, (Delhi: Shipra Publications, 1999), p. 255.

water is 1025 meter. This landlocked lake has no outlet. The surface level of water is not always constant, fluctuates frequently. The total area of Free Standing Unit (FSU) portion of the Caspian Sea is 322 kilometer². It includes the shelf zone. If the depth of the Caspian basin is taken, the area will be 240 kilometer². Approximately, more than 45 per cent of the total off-shore area remains in water, the depth are less than 50 meter. About two-thirds of the Caspian Sea has water depth less than 200 meter.⁴

The Caspian Sea basin is a part of eastern region of the Pre-Tethys Sea. This sea continues to develop during the early the Paleogene time with the Alpine-Himalayan mountain organic movements. The area of the Caspian Sea includes three major geotectonic elements, such as, pre-Caspian region of the Russian platform that is located to the northern part. The northern Caspian has an area of 30 thousand miles² (about 80 thousand kilometer²). This is the shallowest portion of the sea. The average depth is 13-20 feet. Near the boundary of the middle Caspian, the maximum depth is 66 feet.⁵ Secondly, the middle Caspian basin which is located in between Azerbaijan included the middle of the Caspian Sea. The Mangyshlak bank separates the north Caspian from the middle Caspian basin. The area of the middle Caspian is 53 thousand miles² (about 138 thousand kilometer²). It is an asymmetrical depression; slopes abruptly towards the west and gently towards the east. It is divided into the Derbent basin, the shelf and continental slope. Shelf is the shallowest portion up to 330-460 feet.⁶ It extends along both shores, with the western most slopes wrinkled by submerged landslips and canyons. Thirdly, the Seythian-Turanin-Epi-Hercynclinal zone situated at southern part of the Caspian Sea basin. In the south, the basin of the middle Caspian is alienated from the basin of the south Caspian by the Apsheron bank. This bank is laying a number of shoals and islands. The south Caspian covers about one third of the area by the sea. It has narrow shelf along the western and southern (Iranian) shores, and has a wider shelf along the eastern shore. The bottom of the depression is a flat plain except a series of submerged ridges to the north. The maximum depth is 3,360 feet.⁷

These three distinct sub-basins (northern, middle and southern) are related to these major structural elements. The South Caspian basin has a number of deep-rooted structures for

⁴ L. Buryakorsky, George V. Chilinger and Fred Aminzadeh (ed.s.), *Petroleum Geology of the South Caspian Basin*, (USA: Gulf Professional Publishing, 2001), p. 13.

⁵ Area Study Centre (Central Asia), University of Peshawar, Six Monthly Journal of Research Winter 1980. In this research journal published a paper by Miss Taj Mehar Samma entitled "The Caspian Sea", p. 68.

⁶ Ibid., p. 69.

⁷ Ibid

exploration of natural gas and crude oil. This scientific ground is to be the leading research for the natural science and social science scholars to make an in-depth study of analysis about the dynamics of exploration of natural gas and crude oil in this southern Caspian Sea basin. The location of the Caspian Sea basin is shown in *figure-3.1*:

Figure-3.1: Structure of the Caspian Sea basin



Source: US Energy Information Administration, “Overview of Oil and Natural Gas in the Caspian Sea”, August 2013.

Security Concern to this region and various Challenges:

The exploration of the energy resources in the Caspian Sea region has been carried out in off-shore areas of Iran, Azerbaijan, Turkmenistan, Kazakhstan and Federal Russia. The geological and geophysical study has pointed out that 40 anti-clinical structures remained within the western part of the south Caspian basin.⁸ Most of these parts have the prospects for crude oil and natural gas. The possibilities of these two energies exploration remained a possibility in many areas of the Caspian Sea basin. In this area geologist tried to explore the possibilities of exploration since long back and it continues in more than 10 structures.

But a few challenges are required to be removed for hydrocarbon exploration of the Caspian Sea basin. The obstacles are as follows:

- Uncertainty about the status of the Caspian Sea basins
- Conflict between the regional powers in the basin area.
- The western influence in the Caspian Sea region.
- Another problem which confronts the region is the relation of the region with Turkic and Islamic states.
- Environmental issues.

There are many national and international seminars, conferences, workshops, and webinars to overcome this conflict and make this region as a zone free from all inconveniences. However, the coastal states have decided to determine the status of their region which is as follows:

- i. Each state would have its own defined territorial waters.
- ii. The territorial zones among the five countries are not well demarcated for which disputes arises over territorial and fishing zones having a common platform.
- iii. The sea area is to be regarded as a 'border lake'.⁹

Before discussing the territorial boundaries of each state's in the Caspian Sea, the political definition of this sea is very much important. The Central Asia even after the disintegration of

⁸ Stephen Mangino & Keith Priestley., "The crustal structure of the southern Caspian region", *Geophysical Journal*, Vol. 133, No. 3, 1998, p. 632. This article is available at: <http://adsabs.harvard.edu/full/1998GeoJI.133..630M/> (Accessed on 25th October 2019).

⁹ Area Study Centre (Central Asia), University of Peshawar, Six Monthly Journal of Research Winter 1980. In this research journal published a paper by Miss Taj Mehar Samma entitled "The Caspian Sea", p. 67.

the USSR is of vital interest for the Russia. Russia was of the view that the Central Asian states' sea area is not an open sea. It is an enclosed body of water. As per the United Nations Convention on the 'Law of the Sea', signed in 1982, the rights of the coastal states can only be based on an international agreement. According to the government of Russia, 20 miles of territorial of water and another 20 miles in which there have been the prospect of natural resources would come under the purview of the USSR. After fall of the Soviet Union, the remaining central part becomes a common property of all the Caspian states, namely, Russia, Azerbaijan, Iran, Turkmenistan and Kazakhstan.

In fact, Azerbaijan and Kazakhstan have the largest potentiality and share of exploration rights in the Caspian Sea basin. Azerbaijan considers 'the Caspian' as a 'border lake'. Azerbaijan offers another idea on the line of an 'open sea'. According to it, each state having 12 miles of territorial water limit and an additional economic zone of 200 nautical miles may be taken as an option for the states of the Caspian Sea region. But this alternative solution is not regarded as a second solution because the maximum width of the Caspian Sea does not exceed the stated nautical miles.¹⁰

Objectives:

When the Central Asian States (CAS) disintegrated from the Soviet Union, they had tried to commence reforming their economies. Soon, with its large potentiality of energy resources, this region's states quickly attracted the attention of the whole world especially the great powers. Some numbers of the Central Asian states like, Uzbekistan and Tajikistan are not called the Caspian Sea basin's states. But geopolitically they also are getting very popular because of their energy resources like natural gas and coal. Many experts of natural science and social science research called this states as the offshore states. But Uzbekistan is not the adjacent state of the Caspian Sea basin, but geopolitically not far from this seashore and its very vital for huge its energies. Now, the moot question remains how to explore energies after the disintegration from the Russia. The fact is that since the Caspian states remained in the Commonwealth of Independent States (CIS), tried to maintain and sustain amicable, political and economic relations with the Russian Federation.

¹⁰ N. N,Vohra., *Culture, Society and Politics in Central Asia and India*, (Delhi: Shipra Publications, 1999), pp. 256-257.

Potentialities of Energy Resources in Caspian Sea Basin:

The Caspian Sea basin has huge reserves of energy resources. It comprises of crude oil, natural gas, coal and hydroelectricity. In fact, if the energy of crude oil, natural gas, coal and hydroelectricity taken together made enormous demand among the exporting countries like China, Europe and the USA. These countries are at loggerheads over the issue of export of the potential resources of this Caspian Sea basin. It has great importance to the world from the economic point of view. Another state in the region, Uzbekistan has also huge reserves of natural gas. It is a fact that natural gas production at Uzbekistan stands among the ten top natural gas producing countries. The availability of the most portion of the natural gas remains in the inland sea of the Caspian region. The position of this hydrocarbon energy and its sources of location are deepest characteristic which have established the most important political significance in the world. This enough energy power has made link with the Middle Asian countries. This has fulfilled the economic and political intersect of the Caspian Sea states.

According to British Petroleum Statistical Review of World Energy, 67th Edition, June 2018, proven oil and gas resources in the Caspian Sea region is shown below in *table-3.0*:

Table-3.0: Resources of the Caspian Region

States	At the end of 2018 total proved reserves of Oil (Billion Barrels)	At the end of 2018 total proved reserves of Natural Gas (Trillion Cubic Meters)
Azerbaijan	1.3	7.0
Iran	33.2	157.2
Kazakhstan	1.1	30.0
Russian Federation	35.0	106.2
<u>Turkmenistan</u>	<u>19.5</u>	<u>0.6</u>
Total	90.1	136.8

Source: BP Statistical Review of World Energy 68th Edition, June 2019, p. 12.

According to British Petroleum Statistical Review, the Caspian Sea region has total proven oil of 136.8 BB and 90.1 TCM of natural gas. Therefore, the proven oil resources of the Caspian Sea

are estimated to be about one-fourth of the Middle East.¹¹ It is much higher than the estimated reserves of 50 BB of the United States.¹² The above statistics of the British Petroleum stated that the proven natural gas reserves of the Caspian region was quoted at 3183-3184 TCF (Trillion Cubic Feet) as compared to North and South and Central America reserve of about 2500 TCF.¹³

It is revealed from the data given above that Caspian reserves was about 88 per cent, a high potentiality of energy production in three countries, for instance, Azerbaijan, Kazakhstan and Turkmenistan. At present, there are five Caspian littoral countries. The said countries possession in percentages of gas and oil reserves is as follows: Kazakhstan 30.8 per cent, Turkmenistan 16.8 per cent, Iran 18.7 per cent, Azerbaijan 15.2 per cent and Russian Federation 18.5 per cent respectively.¹⁴ But it is a matter of fact that Uzbekistan cannot be taken as a littoral state of the Caspian Sea, but it has been included in the region. In fact, in this part of the Caspian basin the portion of the Russia and Iran are comparatively less, despite their internal territory produced sufficient quantum of energy in different parts of their territories. Not only that, the geographical distribution of natural gas and the situation relating to this will remain the same. Herein lies a dichotomy of uneven distribution of energy resources which have contributed to the rise of occasional conflicting situations in the Caspian region. It is gathered from the report of various studies that the Caspian Sea region states are not engaged in an effort to explore energies together.¹⁵ As far as energy development is concerned in the region, there is no joint venture by the Caspian Sea states together. The states in this region have decided to act unilaterally and they are extracting the energy on their own. Now, if one has to find out the potentiality of energy development in this region the implications relating to energy exploration in these five states: Russia, Azerbaijan, Kazakhstan, Turkmenistan, and Iran are required to be investigated. A table

¹¹ Mustafa Balat., "The Position of the Oil in the Middle East: Potential Trends, Future Perspectives, Market and Trade", *Energy Sources*, Part A: Recovery, Utilization, and Environmental Effects, Vol. 28, Issue. 9, 21st September 2006, PP. 821-828. Available at: <http://doi.org/10.1080/009083190951384/> (Accessed on 19th October 2019).

¹² Ibid., p. 186

Trillion > Billion > Million. Hence, Million = 10⁶ Billion, Billion = 10⁹ Million and Trillion = 10¹² Million. Therefore, it needed multiply by 1000 to becoming next digit.

¹³ BP Statistical Review of World Energy 68th Edition, June 2019, p. 12.

¹⁴ Kamyar Mehdiyoun, "International Law and the Dispute Over Ownership of Oil and Gas Resources in the Caspian Sea", *American Journal Of International Law*, Vol. 94, Issue. 1, January 2000, pp. 179-189 (Available at: <https://doi.org/10.2307/2555242/>) (Accessed on 19th October 2019).

Proven reserves in the Caspian Basin are 15.31 billion barrels of oil, or 2.7 per cent of world reserves. It is also estimated to contain some 230-360 trillion cubic feet of gas, or 7 per cent of world reserves. Estimates of possible petroleum reserves vary from as few as 20 billion to as many as 200 billion barrels of oil. See "The changing face of energy geopolitics", *OECD Observer*, 22nd June 1999, at 48, available in LEXIS, News Library, and Curnow's File.

¹⁵ Ibid.

showing year wise production of oil and natural gas in five littoral Caspian states is shown below:

Table-3.1: Year wise Crude Oil (Billion Barrels) and Natural Gas (Trillion Cubic Meters) production

Year	Azerbaijan		Iran		Kazakhstan		Russia		Turkmenistan	
	Crude Oil	Natural Gas	Crude Oil	Natural Gas	Crude Oil	Natural Gas	Crude Oil	Natural Gas	Crude Oil	Natural Gas
2009	7	30	136	992	30	85	60	1680	0.6	84
2010	7	30	138	1046	30	85	60	1680	0.6	265
2011	7	30	137	1046	30	85	60	1680	0.6	265
2012	7	30	151	1168	30	85	60	1680	0.6	265
2013	7	35	155	1187	30	85	80	1688	0.6	265
2014	7	35	157	1193	30	85	80	1688	0.6	265
2015	7	35	158	1201	30	85	80	1688	0.6	265
2016	7	35	158	1201	30	85	80	1688	0.6	265
2017	7	35	158	1183	30	85	80	1688	0.6	265
2018	7	35	157	1191	30	85	80	1688	0.6	265
2019	7	35	156	1194	30	85	80	1688	0.6	265

Source: World International Energy Statistics, EIA

According to the Wood Mackenzie 2018 report¹⁶ on Caspian Sea region and World International Energy Statistics year wise report, the reserves of crude oil in Azerbaijan is greater than Kazakhstan. It appears from the year wise data presented in *table-2.2* that crude oil production in Kazakhstan is larger by 23 billion barrels more than Azerbaijan. Again, according to the level of proved natural gas reserves in 2018 in Kazakhstan is greater than Turkmenistan, 29.4 trillion cubic meters large in quantum. But it reveals from year wise data that Turkmenistan recorded 180 trillion cubic meter natural gas production, large in quantum, than that of Kazakhstan. Different reports in the world on the energy based in the Caspian Sea region highlighted different data on the energy base in this region. As a result, it has been a subject of controversy among the scholars over the volume of energy reserves in the Caspian Sea region. As for example, BP Statistical review of 2018-19 recorded those 90.1 billion barrels of crude oil reserves, among

¹⁶ Wood Mackenzie report, 2018 had given by the Administrative-Statistical Officer, ONGC Videsh Limited, New Delhi, India on May 2018.

which proved oil reserves was to the extent of 58-64 billion barrels. Except this, there remained 32-26 billion barrels of possible reserves in this area.¹⁷ Not only that, the Oil & Gas Journal, brought out by Petroleum Industry Publication in every year, reported that 8 Trillion Barrels crude oil reserves remained in this region; of which 5.42 TB crude oil belonged to Kazakhstan in the year 2019, in Azerbaijan 0.55 TB and in 1.12 TB crude oil in Turkmenistan.¹⁸ Regarding the volume of reserves, various journals reported different data. The reason for this different of opinion esteemed from the following facts:

- (i) The valid reasons for these controversies arise because no definite data is available as to the reserves in the Caspian Sea region is being published by the countries concerned. The obvious reason was the states concern has been maintaining a monopoly status so far as their production status was concerned.
- (ii) Since there had been territorial water boundary disputes in the Caspian Sea among the five states, they could not be able to cooperate among them in respect of exploration of energy.
- (iii) Any foreign companies, media, tourism or entry of scholars on energy were not easily allowed to work on their energy aspect, or they did not allow VISA to foreigners for this obvious reason.

For this reason, data in regard to either energy exploration or reserves were not made available rightly year wise. For this, in a very few reports like the BP Statistics, Wood Mackenzie, etc. the quantity of energy production and exploration were hardly available.¹⁹ In this region, the five countries maintained separate strategy for exploration on energy. Regarding onshore and offshore production in the Caspian Sea basin there exist different laws of the five states. The Public Sector Undertaking of each state engaged in exploration of energy. Hence, the volume of exploration of these undertaking remained secret, not published for others almost all the times. For that reason, the companies concerned had to adopt monopoly system or close market policy. After 2010, the countries like Russia, Kazakhstan and Azerbaijan, etc, for providing partial attitude on their smart business policy; some foreign companies obtained shareholding of some

¹⁷ This data is available at: <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/oil.html/> (Accessed on 19th October 2019).

¹⁸ Trillion > Billion > Million. Hence, Million = 10^6 Billion, Billion = 10^9 Million and Trillion = 10^{12} Million. Therefore, it needed multiply by 1000 to becoming next digit.

¹⁹ ONGC Videsh Limited and late Professor Hari Vasudevan expressed the above view on May 2018 and February 2018.

blocks for exploration. Among them the companies involved are, such as, PETRONAS (Malaysia), Dragon Oil (UAE and UK), ARETI International (Russia). Maersk and Wintershall, ONGC Mital (Indian company), CPNC (China) etc.

It is noteworthy that the Caspian Sea region states' connectivity from the point of view of their strategic stands with the outside world during the period from 2018-20. During this time, various pipeline projects have been taken, among them the noted pipelines are as follows:

- i. BTA (Baku-Tbilisi-Ceyhan)
- ii. CPC (Caspian Pipeline Consortium)
- iii. UAS (Uzen-Atyrau-Samara)
- iv. Kazakhstan-China Oil Pipeline
- v. Druzhba Pipeline
- vi. ESPO (Eastern Siberia Pacific Ocean)
- vii. Baltic Pipeline System²⁰

The Caspian Sea region can be divided into two corridors. The pipelines belong to corridors of the Caspian Sea region have made connectivity with the other corridors of the world. The corridors are:

- (i) **Northern and Central Corridor:** this corridor is located between Russia and Kazakhstan. West Siberian energy resource falls under this corridor. The energy export capacity of this corridor is 33 BCFD (Billion Cubic Feet per Day) during the year, 2018-19.
- (ii) **Southern Corridor:** Turkmenistan, Azerbaijan and Iran come under this corridor. It is the part of south and middle of the Caspian Sea basin. The energy export capacity of this corridor is 7 BCFD during the year, 2018-19.

In this chapter, emphasis has been given upon on the southern corridor of the Caspian Sea region because the study mainly focuses on this area. There are three projects remained in the gas export infrastructure.

Such as:

²⁰ Wood Mackenzie report, 2018 had given by the Administrative-Statistical Officer, ONGC Videsh Limited, New Delhi, India on May 2018.

- a. Turk Stream
- b. Blue Stream
- c. TANAP and TAP

Various gas export pipeline have been connected with the above mentioned three projects. The names of this pipeline projects with their present status are given below in the *table-3.2*:

Table-3.2: Gas Pipelines and their Present Status

TANAP and TAP	Trans-Caspian Pipeline	Turkmenistan-Afghanistan-Pakistan-India (TAPI) Pipeline	Turkmen-China Gas Pipeline
One of the most important southern gas pipelines. The construction of this pipeline began in 2018 and likely to be completed by the end of 2020. TANAP means Trans-Anatolian pipeline in Turkey and TAP means Trans-Adriatic pipeline in Greece-Albania-Italy. ²¹	This project hangs in the balance for territorial water boundary dispute among the five littoral states of the Caspian Sea. ²²	For lack of adequate financial support, the implementation of this project remained stalled. Besides the security of this project is at stake. ²³	This gas pipeline was completed in 2009.

The Caspian Sea Region is riddled with many challenges, some of which cannot be immediately resolved. The most important challenge has been the stagnant position of production of crude oil and natural gas in the region. This hampers the progress of the economy of the Caspian region. The most important concern is to determine the legal status of these five littoral states, to develop modern infrastructure and to invite the interested international companies for exploration of oil

²¹ This data is available at: www.bankwatch.org/projetcs/southern-gas-corridor-euro-caspian-mega-pipeline/ (Accessed on 19th October 2019).

²² Wood Mackenzie report, 2018 had given by the Administrative-Statistical Officer, ONGC Videsh Limited, New Delhi, India on May 2018.

²³ Ibid

and natural gas from this region. Despite being the one of the richest region in crude oil and natural gas, the exploration and use of these resources has not reached its pick due to lack of efficient management and intervention from the governments of the region. The proper utilization of the energy resources will not only help in enhancing the economies of these states but it will also help in meeting the increasing demands of energy resources and thereby stabilizing the energy prices. Therefore, the foremost importance is to remove the internal squabble of the Caspian littoral states and engage in initiating in adequate steps so that the production of energy in this area can be accelerated.

Legal Status and an Evaluation of the CASPIAN:

The legal status of the Caspian Sea region states is a major challenge in the exploration and exploitation of the natural gas and crude oil in the region because they failed to reach a consensus on their conflicting legal rights. There are many factors behind this. For example, when the Caspian Sea was shared by only two states, namely, the former Soviet Union and Iran, the status was different. But after the disintegration of the Soviet Union, the Caspian Sea belongs to five sovereign and independent states namely, Russia, Iran, Azerbaijan, Kazakhstan and Turkmenistan. Therefore, two out of five are Central Asian states. The increase in the number of states from two to five has got a new dimension to the legal position of the Caspian states. Another pertinent point that cannot be ignored is the interests of these five sovereign states were similar though, they are different on many other issues. Since the disintegration from the Soviet Union, the five littoral states are confronted with boundary disputes which were not well demarcated. These states got their own policy to implement their energy exploration policy that faces challenge and it could not be easily overcome.

The Caspian Sea states were separate from each other so they were not forced to abide by any international treaty. Each state follows its own policy for implementation of development projects. The USSR was of the view that the Caspian might stick to juridical regime of this sea states. In spite of their independent status, the USSR was of the view that is the Caspian states

should follow the policy of their development following the treaty of the Persian treaty of 26th February 1921.²⁴

It states that each state can follow the judicial rules of their agreement which are included in the said agreement. Similarly, the subsequent treaty between the former USSR and Iran of 25th March 1940²⁵ was also relevant for determining legal position of the Caspian Sea. Under the 1912 agreement between the USSR and Iran, both countries would be able to conduct their trade in five Caspian Sea states to explore and export crude oil and natural gas. By this treaty, both the countries tried to make influence on these Central Asian states which was prejudicial to the sovereignty of these states.

Russia and Iran, however, disagreed in this regard. This means that the Caspian Sea states will be able to use both seabed and groundwater equally. It may be pertinent to point out that Iran argued that Caspian Sea should be divided into five equal zones. It meant that the Iran would be entitled to one-fifth that is, 20 per cent of the energy resources of the Caspian basin. Azerbaijan and Central Asian States disagreed to this position for legal right of the Caspian.²⁶

In fact, this dispute remained. Different proposals were mooted over the last decade for the settlement of this dispute but could not be overcome. Russia made a proposal which stated that for legal status of this region ‘condominium principle’ be adopted. Azerbaijan put forward a different proposal which said ‘Lake Variant’ of the division of Caspian. In January 1997, a media report mentions that Turkmenistan had claimed sovereignty over the area of the Caspian Sea. Turkmenistan and Azerbaijan agreed that the Caspian Sea can be divided into national

²⁴ According to this treaty between Iran and New Soviet regime, the later discarded the tsarist concessions held in Iran (Article-I). According to Article-III of the treaty Iran agreed to return the Russian base on the Iranian Island of Ashuradeh in the Caspian Sea and acceded the Russian installation have the port of Bandar-e-Anzali to Iran. A significant change took place in this treaty. That is to say, Iran’s rights in the Caspian Sea was established in Article-XI which derogated Article-VIII of the Turkmanchai Treaty, which had taken away from Iran the arm vessel in the Caspian Sea, it added “the two high contracting parties shall enjoy equal rights of free navigation on the sea, under their own flags from the date of signing of the treaty”.

Akiner, S., *The Caspian: Politics, Energy and Security*, (USA and Canada: Routledge Curzon, 2004), p. 18

²⁵ Agreement on Trade and Navigation between Iran and the USSR, 25th March 1940. This agreement was the result of prolonged talks and arguments between the two contracting countries at the beginning of the Second World War. This treaty was precipitated by the Nazi-Soviet Pact, August 1939. As per the content of the treaty Germany became Iran’s number one business partner. In this treaty, the urgent and pressing need for Soviet territory to be used as a transit route between the two countries. As per Article-XII of this agreement, the advantages of merchant vessels of each country in crossing the Caspian Sea and enjoying in the assistance of the other party where necessary. The treaty also mentioned that the coastal trade was reserved for the national vessels of each of the contracting parties.

Ibid

²⁶ This legal status of the Caspian Sea basin related article has given from the BBC News site. This article is also available at: <https://www.bbc.com/news/world-45162282/> (Accessed on 19th October 2019).

sectors.²⁷ Here, two of the oil fields were developed by Azerbaijan, namely, Azeri and Chirag. These same two oil fields are popularly called in Turkmenistan as Khazar and Osman respectively.

The conflict over Azeri and Chirag/ Khazar- Osman was still alive. In July 1997, President Aliyev of Azerbaijan visited to Russia, SOCAR (Azeri State Oil Company) and the Russian oil company majors MUA and Rosneft signed an agreement in Moscow for the development of the Kyapaz resources. But it did not yield any result. Later on the Caspian Summit held in August 2018 was the last step in resolving the dispute.²⁸ In fact, the dispute between these five littoral states is a prolonged issue for determination of the legal status of the sea. It is a matter of fact that the finalization of a comprehensive agreement is still in dim. Hence, Iran, along the southern coastline, still owns the southern region in an uncertain position. The conference is an important step towards regional cooperation. The summit highlighted a number of important issues, including author Stanislav Prichin, an associate at Chatham Academy, who argued that issues related to dispute resolution needed to be resolved, which would take several years to resolve. In fact, the Academy Associate has rightly pointed out that “the most promising trend is a dialogue between Iran and Azerbaijan. The countries are on the way to activating cooperation, including in the energy sector”.²⁹ In the Diplomat magazine, the author said that the Iranian President Hassan Rouhani visited Baku in November 2017. The visit was important because of the preliminary agreement reached on joint ventures in the oil and gas sector. But still the dispute could not be resolved. New general energy projects in the region could only be implemented when Western technology was available. But some of geological difficulties and political challenges were also found in the region. Hence, the US sanctions on Iran became a serious challenge in

²⁷ Nirmala Joshi., *Central Asia: The Great Game Relayed, an Indian Perspective*, (Delhi: New Century Publications, 2003), p. 172.

²⁸ Agreement on Trade and Navigation between Iran and the USSR, 25th March, 1940. This agreement was the result of prolonged talks and arguments between the two contracting countries at the beginning of the Second World War. This treaty was precipitated by the Nazi-Soviet Pact, August 1939. As per the content of the treaty Germany became Iran’s number one business partner. In this treaty, the urgent and pressing need for Soviet territory to be used as a transit route between the two countries. As per Article-XII of this agreement, the advantages of merchant vessels of each country in crossing the Caspian Sea and enjoying in the assistance of the other party where necessary. The treaty also mentioned that the coastal trade was reserved for the national vessels of each of the contracting parties.

²⁹ Stanislav Prichin, PhD, is an Academy Associate at Chatham House, “What Comes after the Caspian Sea Deal? Successful realization of the opportunities opened by the deal will depend on political will among the Caspian littoral states”, *The Diplomat*, 5th December 2018 Available at: <https://thediplomat.com/2018/12/what-comes-after-the-caspian-sea-deal/> (Accessed on 21st October 2019).

international affairs and also for the Azerbaijan-Iranian cooperation. It is stated that SOCAR, has informally suspended the implementation of its agreements with Iran.³⁰

A third oil field known as Kyapaz in Azerbaijan and Serder in Turkmenistan emerged as a matter of conflict between the two countries- Turkmenistan and Azerbaijan. The dispute over the legal status of the Caspian intensified when the government of Turkmenistan blamed both the Azerbaijan and Russia for the deals over the claimed territory (that is Serder). This development makes the Russian government aggravated. So, the controversy continued. Russia made an allegation that Azerbaijan had taken a unilateral decision for the rights of the littoral states. Turkmenistan faces a great challenge for issuing an international tender in September 1997 for the development of Kyapaz-Serder field or block but did not get any constructive result. Now, Azerbaijan warned Turkmenistan saying that any imposition of sanctions against companies operating in Azerbaijan ‘if they take part in any non-Azerbaijani tender to explore or develop disputed oil and gas field to which Azerbaijan lays claim’. In June 1998, the US oil company MOBIL was given the contract to develop the Serder block deposit but failed to go ahead with the work. A statement of 26th June 1998 stated that the company had received a warning from Azeri officials that the work could not be carried out because the oil field was in a disputed area.³¹ As a result, the project was withdrawn from the official. Azerbaijan was now in a fix regarding the case of Azeri-Chirag field project which was non-negotiable. Hence, it prepared to reach a settlement, along the lines of a joint venture over the Kaipaz-Serder field. On 23rd August 1999 the then President of Azerbaijan made an announcement to the effect that a joint Azerbaijan-Turkmen company would be preferred. This company could be given contact for exploration of Kyapaz. In this case, the project would be equally favorable for both Azerbaijan and Turkmenistan, claimed the President.³² But Turkmenistan discarded the Azerbaijani tender. The content of the announcement was not in favor of Turkmenistan because the Kyapaz offshore block was very much significant for it. Its importance stems from the claim of the state within its territorial body. The Azerbaijan-Turkmenistan dispute could be resolved if both the parties in the dispute made efforts to specify the issues involved. In fact, the Turkmen government faces financial challenges coupled with unsettled borders with Azerbaijan. Hence, Turkmenistan, as

³⁰ Ibid

³¹ Data available at: <https://www.bbc.com/news/world-europe-54314341/> (Accessed on 19th October 2019).

³⁴ Matthew Kupfer, “Azerbaijan-Turkmenistan: Energy Cooperation or Competition?” *Eurasianet*, 8th August 2017, available at: <https://eurasianet.org/azerbaijan-turkmenistan-energy-cooperation-or-competition/> (Accessed on 19th October 2019).

stated by Camilla Hagelund, Principal Analyst of Europe-Central Asia, that “while Turkmenistan would very likely have to forego some of its territorial claims in a deal with Azerbaijan, it would open the Serder-Kyapaz oil and gas field to renewed consideration. The field would be technically challenging and expensive to develop, but its large reserves could be the future commercial spot which would offer easier export logistics than a gas heavy project in the Caspian”.³³ In fact, the current status of the Azerbaijan-Turkmenistan can be explained in the way that to mitigate the Azerbaijan-Turkmenistan border dispute a resolution was taken between both the countries to improve the prospects for the trans-Caspian export of Turkmen hydrocarbon to the West. The export route will be through trans-Caspian gas pipeline.³⁴ However, this issue has always remained on paper. On the other hand, the Turkmen government has given high priority to the construction of the Turkmenistan Gas Pipeline (TGP) and is very likely to compromise with Baku. It is fact that without a convention on the Caspian Sea, the project risks further objections from Iran and Russia. This contradictory claim by Azerbaijan and Turkmenistan makes a smooth exploration and transportation of hydrocarbon impossible. Sometimes convention is required for temporarily solution of such challenges. In fact, there is an agreement and the contracting parties are bound to abide by that agreement. But in case of convention there is no such obligation. For this reason, Camilla Hagelund has rightly said that “existing and plant southern gas corridor infrastructure cannot accommodate significant volume of Turkmengaz without further capital intensive expansion. Moreover, it is still unclear whether the demand for gas in Europe warrants significant import from Turkmenistan.”³⁵ Azerbaijan-Turkmenistan faced another dispute in recent times, that is, to explore energy in disputed waters which provoked Iran to make militarization of the dispute. However, “under current conditions, our Interested Tensions Model focuses very low risks of militarized conflict between the Caspian States” stated the authoress Camilla Hagelund. The Azerbaijan-Turkmenistan relations have become complicated. Baku project attempts for a joint exploration of the controversial Serder-Kyapaz oil field, but Ashgabat systematically declines. “Such stubbornness adversely affects not only bilateral relation but also the political environment for the implementation of the trans-

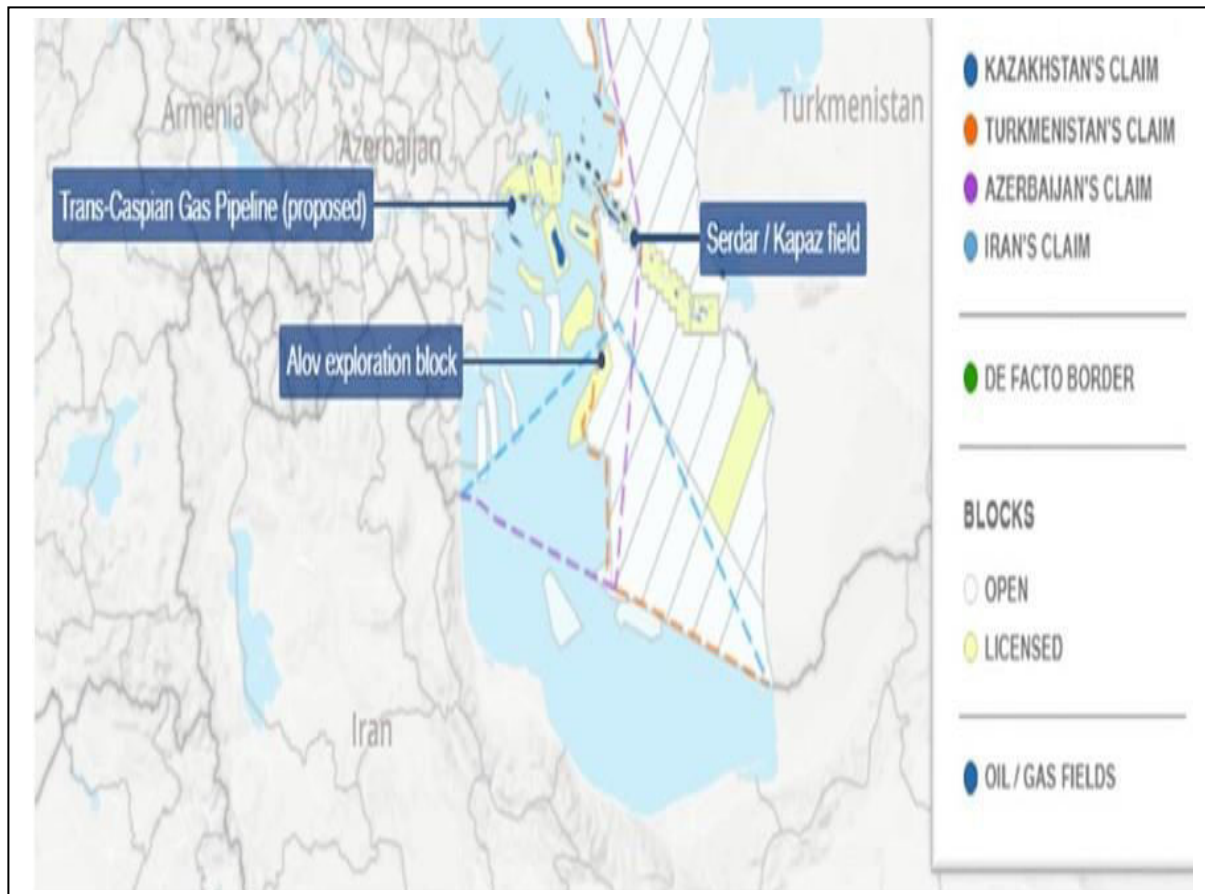
³³ C. Hagelund., “Will The Caspian Sea Convention Unleash Oil And Gas Exploration Opportunities?” *Maplecroft*, March, 2018

³⁴ Daniel, D, Stein, “Trans-Caspian Pipeline-Still a Pipeline Dream?” *Atlantic Council*, 20th August 2020 available at: <https://www.atlanticcouncil.org/blogs/energysource/trans-caspian-pipeline-still-a-pipe-dream/> (Accessed on 28th September 2020).

³⁵ Camilla Hagelund, “Maplecroft Risk Briefing: Will convention on Caspian unlock oil and gas exploration scope?” *BNU: Intellinews*, 16th March 2018, also available at: <https://www.intellinews.com/maplecroft-risk-briefing-will-convention-on-caspian-unlock-oil-and-gas-exploration-scope-138444/?source=kazakhstan/> (Accessed on 19th October 2019).

Caspian project. In this regard, it is also interesting how the trans-Caspian project approval procedures will be implemented in practice. It's not clear whether Russia and Iran would use the Protocol and try to increase the cost of the project or delay its construction due to environmental requirements” stated Stanislav Pritchkin in an article “What comes after the Caspian Sea deal?”³⁶ The trans-Caspian project, Serdar-Kyapaz oil field and Alov exploration block (a controversial block) have been shown in *figure-3.2*:

Figure-3.2: Border Issues among the Caspian Sea states



Source: C, Hagelund., “Will The Caspian Sea Convention Unleash Oil And Gas Exploration Opportunities?” *Maplecroft*, March 2018

³⁶ Stanislav Pritchkin, PhD, is an Academy Associate at Chatham House, “What Comes after the Caspian Sea Deal? Successful realization of the opportunities opened by the deal will depend on political will among the Caspian littoral states”, *The Diplomat*, December 05, 2018. Available at: <https://thediplomat.com/2018/12/what-comes-after-the-caspian-sea-deal/> (Accessed on 5th May 2019).

It is clear from the above map that the states: Azerbaijan, Turkmenistan and Iran are at loggerheads with each other over the claim of their jurisdiction of the sea line exploring crude oil and natural gas.

Again, a dispute has arisen, which was between Iran and Turkmenistan. But this dispute was averted. In summer 1997, Turkmenistan had invited tenders for eleven blocks in its national sector in the Caspian Sea. This was an area which was located in the 'border waters' of the two countries. Iran objected. Then a bilateral negotiation took place between Iran and Turkmenistan which compelled Turkmenistan withdrew three of the eleven blocks from the tender 10th October 1997. The two countries decided to operate jointly in the 'non-clarified' areas until such time as the legal status of the Caspian Sea was to be decided. In contrast to Turkmenistan, Iran is less concerned about the immediate monetary upsides of delineating borders in the Caspian Sea. A priority area for one state is not the priority area of another. That is to say the dispute between Turkmenistan and Iran which relates to Iranian upstream sector. As a result of low priority by Iran in this sector Iran is compelled to lose most by accepting the median line approach- which would give the country at best 13 per cent of the Caspian, significantly less than the 20 per cent it claims. The country has little incentive to make concessions. Hence, Turkmenistan-Iran present legal status regarding the claim of the energy resources is still remained unsolved.

Another important dispute is the oil and gas route of the Caspian energy resources. In fact, uneven distribution of the lake's hydrocarbon wealth lies at the root of the problems. But Russia and Kazakhstan are jointly trying to develop exploration fields in the Caspian Sea region. These bilateral deals were later consolidated in a tri-lateral agreement between Russia, Kazakhstan and Azerbaijan. This de facto legal arrangement has facilitated the successful development of oil and gas resources in the Caspian northern section.³⁷

³⁷Data available at:

https://azertag.az/en/xeber/KAZAKH_PARLIAMENT_RATIFIES_TRILATERAL_AGREEMENT_BETWEEN_KAZAKHSTAN_RUSSIA_AND_AZERBAIJAN_ON_CASPIAN_STATUS_547516?_cf_chl_jschl_tk_=d1e323e60d34b0437daf2a827f2f2ab7098a28c7-1602830243-0-AZ54VzIDVnzVUpK-91UHku5unjT1HZkd2pI51wqr_cOnY3pYafwN_2rc9eo8dpl2Gu8ECoeZ0vsVa0zHfgmHH1efwMGFU51cy7QeO4IMu7SmhADbLTHz8DNKYjWyt7v41INViYdzXEyE_eZRV065WY4iK6NapsuZcCCFYI_1ZS0wvxhGSMK9zEqHc6OemAUycabpuu2R_XJ5_B8TP2D_T6Gr_VlfOvcTZW7hpWmpxZ2kBX6dB3-XgzG9q-kDEsjOFnIyaBCJIWd8DO9X1bH0lqnXVIBpUiDoYQWv0Prqz9AF-XX5ErfMEuWHsPlsIbO7_VIIMRNpMbu2r4ywBFocKYwDIRO7c7bTxF_m7IW3m6qO4RRFUglaYEGPkbzB-C_K2yJYEUN9sUYrTY7NzPDZefrDPHDDv7auLuLsSrFSFHH0jUSZ61IP7uBqhrEPevxg/ (Accessed on 16th August 2020).

The Russian Foreign Minister Sergei Lavrov stated on the legal status on Caspian in 2018 that “we consider it very unlikely that full border demarcation is on the cards. Moreover, even if progress can be achieved, the TCGP and Serder-Kyapaz faced significant challenges. Any short term opportunities from a deal between Azerbaijan and Turkmenistan would be countered by a long term freeze on the remaining blocks under dispute as Iran remains isolated in a high-stakes game”.³⁸ On 12th August 2018, a summit was held in Akhtau, Kazakhstan, in which the Presidents of the riparian states met to resolve the legal status of the Caspian Sea in order to improve security and enhance the share of untapped resources in the Caspian Sea bed. During this summit, the leaders gave the impression of having kin interest in resolving the international status of the sea and expressed concerns about external security threats to the region.³⁹

The issues confronting the Caspian Sea states, namely, Iran, Azerbaijan, Turkmenistan, Russia and Kazakhstan are vital so far as the production of energies like, crude oil and natural gas are concerned. The study of the dispute reveals that these states, after disintegration of the Soviet Union, suffer from their own problems particularly relating to their territorial claim of their areas which the Russia did not pay any heed to resolve till date. The Russia as well as the USA is less interested in the disputes other than their own interest of export of crude oil and natural gas from these countries. In fact, may be, the great powers may not intervene in their internal affairs but it cannot be denied that the Russia and the USA have been interfering in the internal affairs of the Asian and the Middle East states when their own interest are at risk. Hence, a political will on the part of these two great powers are urgently necessary to mitigate the pending challenges of these Caspian states in order to make them prosperous economically.

Summing Up:

The Caspian region is an ‘S’ shaped body of water. This sea is the largest inland sea in the world. But a controversy has arisen: whether Caspian is a ‘Sea’ or a ‘Lake’. Which is correct, regarding this various opinion persist. But from the historical point of view it can be explained easily. In 1813, the famous Russian Lawyer Feodor Martens gave an explanation regarding the status of this region “legal status of the sea surrounded by territories of a single state and not having any connection to the ocean is completely different rather than one of the open seas. The above

³⁸ Ibid.

³⁹ Data available at: <https://www.theguardian.com/world/2018/aug/12/landmark-caspian-sea-deal-signed-among-five-coastal-nations/> (Accessed on 2nd June 2019).

mentioned is considered close sea and falls under the full sovereignty of coastal states. Based on this conclusion the Caspian Sea, although it belongs to both the Russia and Persia, shall be counted as Russian Sea”.⁴⁰

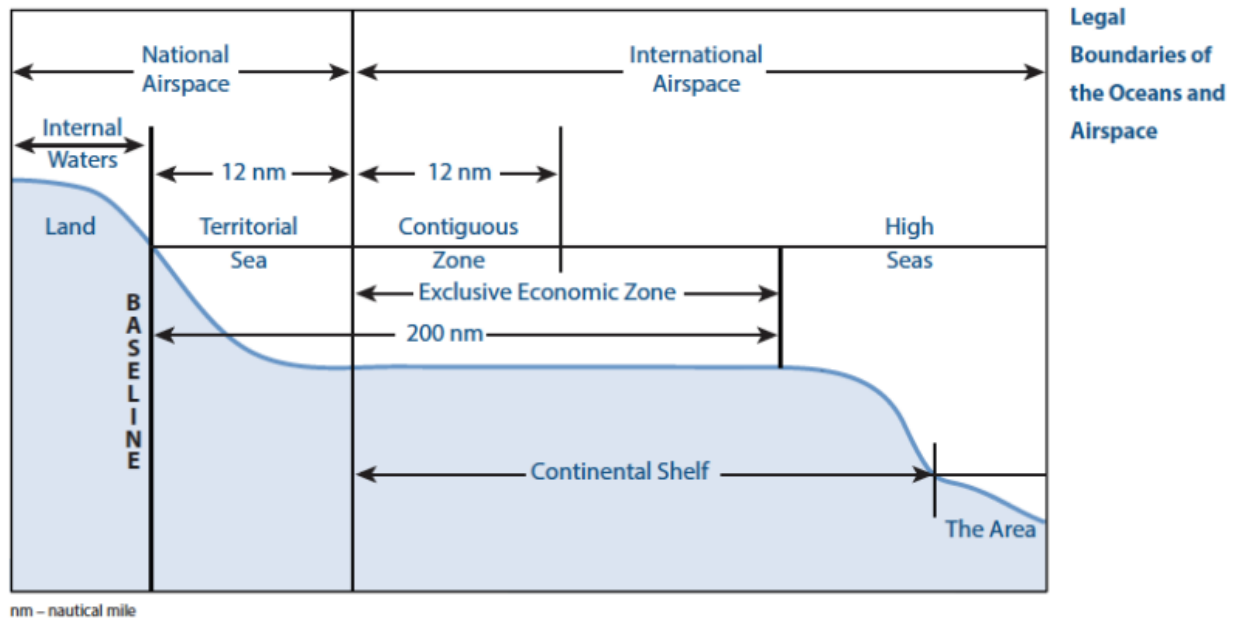
According to the treaty of 1921, the Caspian Sea is a disputed area. Hence, since long past efforts were taken to give this area a legal status. But according to the experts of geography, Caspian was called as ‘lake’ but this view was not admitted by the political-scientists. Even the effort of Kazakhstan to remove the contradiction between ‘Sea’ and ‘Lake’ in determining the status of the Caspian Sea is not above doubt. Generally, an accurate knowledge about ‘Sea’ and ‘Lake’ is essential. “Sea is the salt water covering the earth or a large body of salt water which is partially enclosed by land. On the other hand, lake is an expanse of relatively still fresh or salt water of considerable size, localized in a basin entirely surrounded by land an unconnected to the sea except by rivers or streams related to adjective lacustrine. Lakes are inland and are not part of the ocean.”⁴¹

In 1982, the United Nations Convention on the Law of the Sea (UNCLOS) gave a different explanation about the legal status of Caspian Sea. According to the relevant provisions of the UNCLOS, each littoral state would have a territorial sea with the breadth not exceeding 12 miles, an Exclusive Economic Zone (EEZ) not exceeding 200 miles and a continental shelf. Therefore, it is to be taken into account that the maximum width of the Caspian Sea is 200 miles, not exceeding this range. Article-15 of UNCLOS mandates that the territorial sea of states with opposite of adjacent coast much not extent ‘beyond the median line, every point of which is equidistant from the nearest points on the base lines from which the breadth of the territorial seas of each of (two states is measured)’. A figure has shown below for explanation properly.

⁴⁰ United Nations Convention on the Law of the Sea, “Chapter-II, Maritime Zones”, *Law of The Sea: A Policy Maker*, 16th October 2020, (Available at: <https://sites.tufts.edu/lawofthesea/files/2017/07/LawoftheSeaPrimer.pdf/> and <https://sites.tufts.edu/lawofthesea/chapter-two/>) (Accessed on 10th December 2020).

⁴¹ Colibrilaw: Legal Status of Caspian Sea, p. 7.

Figure-3.3: Schematic of Maritime Zones



Source: <https://sites.tufts.edu/lawofthesea/chapter-two/>

It appears from all information available about the legal status of the Caspian Sea is that it is a lake but it is a matter of fact that this statement were adopted in the absence of international convention. In fact, Caspian Sea is such a lake which performs the prime role of control of biological and natural resources. For instance, the United States and Canada have taken the Great Lake by dividing it among them. But an article published in the New York Times stated that “it’s a Sea! Or it’s a Lake! No, it’s a pool of oil- reveals one of the major issues behind the fuss over the Caspian Sea’s legal regime”. According to many people who analyzed this legal aspect of Caspian have said that it is a ‘close sea’ but the fact is that still there has been no consensus about the status of Caspian Sea.⁴²

The Caspian Sea is an enriched natural resource area, 436 kilometer², surface area (on the north 200 meter depth, in the middle 700 meter depth and in the southern parts it ranges 1000 meter depth) - among it there has been 50 billion barrels of oil from which 15.31 million barrel are supplied to the world (2.7 per cent of world supplies). Natural gas proved reserves is 230-260 trillion cubic feet (7 per cent energies likely to be supply the global market and 80 per cent of the

⁴² F. R. O, Shafiyev., “The Lagal Regime of the Caspian Sea: views of the Littoral States”, *Policy Papers*, Volume 7, Issue 6, September 5, 2015 available at: <http://www.researchgate.net/publication/277668840/> (Accessed on 10th December 2020).

world sturgeon).⁴³ Now, the Caspian Sea is the largest natural resource. This resource is vital and scattered among the five littoral states. The littoral states are divided about their territorial position. Hence, legal contradiction arises out of the claim of oil and gas fields. Not only that the big powers like, the Russia, the USA and China are engaged in directly influencing in this area. Here a pertinent point is that in north Caspian region the hydrocarbon resource is very little in comparison to the three littoral states like: Azerbaijan, Turkmenistan and Iran. As a result, Russia, a great power in the area always tries to dominate the other three countries particularly in regard to making export policy. Not only that, Russia has been trying to impose control over transportation of these energies to other countries. Because comparison between the southern and northern basin reveals 20 billion barrels of proven oil and 70-100 billion barrels of possible oil reserves. As a result, Russia and China always try to control Turkmenistan, Azerbaijan and Kazakhstan in respect of their supply of energy. On the other hand, United States has been controlling Iran's export and import policy in this respect. Hence, Russia's concern is centered on controlling the competition for petroleum to the west. This statement was put forward by Timothy L. Thomas.⁴⁴ As a result, great game is played on the basis of energy resource in this area. Still now, peaceful settlement for adoption of a right policy has not yet been taken. Therefore, the trend of CIS is very difficult to measure. Big power rivalry over the policy of energy in the Caspian region has generated competition which cannot be easily solved. After the fall of the USSR, the internal stability and financial problems of these newly independent sovereign states are very weak. NATO (North Atlantic Treaty Organization), EU (European Union), China, North and South Corridor, etc, all these international organizations are responsible for political instability and financial chaos in the Caspian region. But some littoral states adjacent to the Caspian basin have their own export policy for which neighboring countries are in a position to import energy. As a result, at the international level more responsibility is essential. In fact, in areas like gas field, block and oil fields are centers of controversy among two or three countries. In this controversial area, great powers are not taking any major role in mitigating the dispute. It is essential to remove all this disputes in the presence of all concern countries. Because, energy is such a matter as well as context, the successive improvement may

⁴³ Colibrilaw: Legal Status of Caspian Sea, p. 7

⁴⁴ Timothy L. Thomas, "Russian National Interest and the Caspian Sea", *Taylor and Francis*, Volume-IV, Number-4, December 1999- February 2000, pp. 75-96.

be possible. Similarly, if not problem solved, and continue exist; it may lead to the possibility of great World War.

In this chapter, attempts have been made to highlight the legal status of the Caspian Sea basin as well as the bases of energy resources in this area. The analysis has been made with the help of data, in order to highlight the present position of the Caspian Sea. This analysis of the Caspian Sea region, its export policy may open the door of possibilities for India. Hence, India's interests of the Caspian Sea basin should be based on the current geopolitical situation existing in the Caspian Sea region, its historical background. On the basis of this study it can be safely said that since the Caspian Sea is a landlocked or closed sea area, an efficient strategy should be made to find connectivity in this area. Efforts have been made to highlight this aspect in the next chapter. In fact, in India can explore the areas of connectivity particularly North-South Transport Corridor is very important in this respect. However, ship, rail and road may be used for a good connectivity and the urgent need of the hour is to establish direct connectivity geographically which will be caused effective and help energy import from the Caspian region to fulfill the deficit India's energy demand.

India's Energy Security Strategy in the Caspian Sea Basin

India emerged as a major power to play one of the finest roles as a neighboring country in Middle East Asia from the early 1990s, as a separate geographical and political domain. Since ancient times, in Central Asia, India and its adjoining colonial colonies have been closely associated with the cultural, political and economic spheres. There are 7 billion people and its 4,003,451 kilometer² areas in census of 2019 in Central Asia (the countries are: Kazakhstan Kyrgyzstan Tajikistan Turkmenistan Uzbekistan)¹ are a matter of keen interest to the policymakers, strategic communities and academic experts, research organizations, and various NGOs, etc. Also the common people of this area are always concerned and these people are part and parcel of this area. With the establishment of the Union of Soviet Socialist Republics (USSR), the rising regional powers got sovereignty and with the other Asian states, particularly those who are the partners of the Silk Route, for instance, India with these newly independent states acted as a forerunner of connectivity and taking initiative for firm of historical, civilization and cultural link, etc. India's interest in Central Asian states began to show. It began to spread as the first step in establishing strategic and economic relations and with it, a cultural exchange on state relations between India and Central Asia took on a new agenda.

The two areas like, Central Asia and South Asia are geographically extensively landlocked. Not only that, but because of the geographical connection; both Central and South Asia have significant historical links. But the Caspian Sea basin which is located in the middle part of Central Asia and its adjoining countries is especially rich in energy reserves, like, crude oil, natural gas, coal, nuclear products, and coal etc. In this present scenario, from a geographical and political point of view, all the Central Asian states have played a crucial role in global politics for their energy supplies to the world market. For this reason, the strategic importance of these states is significantly high. The five littoral states like, Azerbaijan, Iran, Turkmenistan, Kazakhstan,

¹ This data is available at:

https://www.google.com/search?rlz=1C2CHBF_enIN913IN913&sxsrf=ALeKk00uZqfpJxEDN_CEISdVh706Yc_Xtw%3A1609691157608&source=hp&ei=FfDxX4HRI5WGmgfEqgSoDw&q=how+much+areas+in+Central+Asia%3F&oq=how+much+areas+in+Central+Asia%3F&gs_lcp=CgZwc3ktYWlQAZIICCEQFhAdEB46BwguECcQkwI6CgguEMcBEK8BECc6BAgjECc6CAgAELEDEMkDOgIADoFCC4QsQM6BQgAELEDOgsILhCxAxDHARCjAjoNCC4QxwEQrweQJxCTAjoICAAQsQMgE6DggUELEDEMkBEK8BEMkDOgIILjoFCAAQyQM6CwguELEDEMkDEJMCogcIABDJAxAKOgQIABAKOgcIABDJAxANogQIABANogYIABAWEB46COgAEMkDEBYQHIDECEfj8UGDtUmgAcAB4AIABpwOIAZc4kgEKM4xLjI2LjluMZgBAKABAaoBB2d3cy13aXo&scient=psy-ab&ved=0ahUKEwjBr5TtloDuAhVFg-YKHUQVCfUQ4dUDCAc&uact=5/ (Accessed on 3rd January 2019).

and Federal Russia of the Caspian Sea basin should be considered from one of the prime paradigm for its huge energy reserve. At present, all the energy deficit countries of the world are looking forward to this particular region for achieving its huge energy demand.

India is not an exception. But this interest of India is governed by a number of factors. Experts believe that states can play a crucial role in the international arena due to the presence of its huge potentiality. India is considered a strategic partner, and one of the rising smart business strategic-economic powers in the world.² This country is one of the major human potential investors and technological leader in the domain of the areas of Central Asia. Its adjoining emerging independent states can also be taken as great players. But, at present, India and its Central Asian states are at the face of world-wide and regional challenges in regard to making and maintaining connectivity. For instance, sustainable development, need for a knowledge-based economy, resource exploitation, capacity building, regional integration, connectivity and communication issues, and security concerns, etc are the main factors of these challenges. These barriers and challenges require a cooperative-connectivity approach and share response to tide over the entanglement of India-Central Asia relationship.

India established its relations with the Central Asian states like, Kazakhstan, Uzbekistan on a bilateral basis after 1992.³ In this sphere, India's network of links is derived from the period that evolved during the existence of the USSR and is based on either the technology or the production and distribution units that prevailed there. But it can be safely said that as a whole, the cultural and political factors of India influenced Central Asian states strategically and geopolitically. In fact, the bilateral relationship between India and the states of the Commonwealth of Independent States (CIS) overlap in various ways in such a setup. In this chapter, an attempt has been made to

² The author has interviewed Dr. Arup Bhattacharya, one of the Assistant Professors of the Department of International Relations of Jadavpur University, Kolkata, West Bengal, India, on 2nd February 2019. According to the professor, most of the countries in the world are following this 'Smart Business Strategic Partner' policy. Not only that, but every state is bound by MoU or other trade agreements with each other every year. The government administration and also the non-governmental organizations are establishing links equally. All these treaties are directly related to trade and commerce, foreign investment, research and development, and the establishment of road-rail-air-waterway-pipeline connections. According to the detailed remarks of the professor, no other country now serves such a keen mindset for the purpose of strengthening the two countries militarily by the expansion of hard power i.e. by military treaty or agreement. However, the cultural integration of two or more countries at present can also be given priority which can be referred to as a 'soft strategic partner'. Therefore, when one country connects with another through the exchange of trade, energy, and information technology, that is, the things that directly connect us to one of the necessities of life and the things that unite us to live a healthy life in the future. This is called as a 'smart business strategic interest'. That is, the two countries are directly involved in the social welfare work of both. From this, it can be firmly stated that the system of exchange of energy is one of the social welfare activities - which protects the security of the people lives in a country.

³ Moonis Ahmar., "India and its Role in the New Central Asia, Pakistan Institute of International Affairs", *JSTOR*, Vol. 45, No. 3, July 1992, pp. 57-61. This article is also available at: <https://www.jstor.org/stable/41393383/> (Accessed on 2nd February 2018).

demarcate the areas where India has shown its keen interest to connect strategically and link physically with the Central Asia States (CAS) since the disintegration from Soviet Union 1992. Not only that, the highlights will be on how India, not rapidly but leisurely has been trying to establish its relation with this area. The irreversible pattern has evolved and shown the power to remain significant. This chapter provides a detailed analysis of the challenges that India has sought to maintain and the challenges it has faced in exploring the significant opportunities that have hitherto been institutionally unexpected. It is relevant here to highlight unexpected opportunities; for instance, a dynamic connectivity theoretical approach to participating in multilateral initiatives involving an Indian component.

The International North-South Transport Corridor, Energy policy towards the Caspian Sea basin, Swap Dealing system from this region, road-rail-port connectivity, great powers rivalry towards this region, inaccessibility towards this region for its geographical barriers, and terrorism activity etc are the prime determining factors in India's energy security strategy.⁴ All these factors are to be analyzed in this chapter with the help of charts, diagrams, figures, tables and data reveals from various formal or informal interviews with the high officials connected with this paradigm. India's strategic relations with the Caspian Sea region has been analyzed by phasing out the period into two stages: from 1992-2012: traditional-soft power phase, and 2012-till date: smart business economic-strategic phase.

The first phase, the traditional phase, is meant for the period when the only cultural link with the Caspian Sea region was the determining factor of a relationship between India and Central Asia and deals with a cultural link with the interest in economic affairs like an export-import of textile, spice. The second phase relates to a smart business strategic relationship where economic trade and energy security context will come as a crucial factor determining India relationship towards Central Asia as well as the Caspian Sea basin. As my research work and various case-study is directly linked with the Caspian Sea basin, particularly on Turkmenistan's energy potentiality, for instance, the relations and connectivity between India and the Caspian Sea basin's states (Azerbaijan, Iran, Turkmenistan, Kazakhstan, and Federal Russia) are trying to discuss vividly than Central Asia.

⁴ R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s.), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 12.

India relationship towards the Caspian Sea region's states: vital Parameters 1992-2012:

From 1992-2012, during these twenty years, India and CAS's strategic relationship had been distorted at an unexceptional pace. Before 1992, when Central Asia was under the control of Soviet Union, India was not able to confirm the significant of this particular region, except the Middle Asia where some exception remained for historical reasons. It is noteworthy that not only India, but other global powers also confine about the knowledge of this region for its horrible political atmosphere or formidable terrorist attack. Vis-à-vis India had no direct link with Central Asian region particularly with the Caspian Sea region's states. In fact, the Caspian Sea region's states were an attractive place for Islamic ideological stand. Following this, India was influenced by the cultural tradition of Central Asia. For instance, teaching of Central Asian type Hindi at the school level; and an oriental Central Asian linguistic-cultural and natural science related studies at the Aligarh Muslim University, Jamia Millia University, as well as in Area Studies Centers in Kashmir, Jawaharlal Nehru University and Mumbai University, etc. All these institutions determined the cultural link of India with Central Asia which could be taken as a strategic position which India adopted to broader its relationship towards Central Asia as well as the Caspian Sea region's states.

After the period of 1992, the significance of Central Asia to India began to take into account when various Silk Road initiatives were projected to the Central Asian States. In fact, the Silk Road made connectivity with Central Asia and South Asia which are mutually related. Silk Road system also caught the attention of the Federal Russia and China. For instance, the UNESCO (United Nations Educational, Scientific Cultural Organization) took this Silk Road topic sincerely and made a historical link of the civilization on Central Asia with South Asia. In 1992, five new independent states of Central Asia (Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, and Kirgizstan) where other three states are also included in the Caspian Sea basin (Iran, Azerbaijan and Federal Russia) has appeared with force to the great powers and also other developing states for its large energy potentiality. The bilateral relations of India with CAS started when the Indian embassies began functioning in these states. At the first stage, the relations were limited to only cultural affairs. These relations prevailed during 1992-2002. But during 2002-2012, India's relations with CAS began to spread in the trade and economic paradigm. During this period, the trade between India and the CAS extended but commodity

like, textile and spice imports and exports have gradually increased. After a decade, India's strategic interests towards this region's states had gradually become widespread. Now, the pertinent question relates to, why India did not take any interest in matters of connectivity of trade-commerce and business with these energy reserves countries like Kazakhstan, Turkmenistan and Uzbekistan at the initial stage?

India requires twenty years (1992-2012) to establish geopolitical and strategic relations with the Caspian Sea basin's states. The reason is obvious; this newly independent states' infrastructural position was very elastic. The terrorist attack on 9/11 in 2001, the big powers particularly the USA's frequent surgical strikes made the security of these states vulnerable. The newly independent states of Central Asia along with two states: Iran and Azerbaijan: of the Caspian Sea basin felt that their vulnerable position also to provide security in case of energy resources. The security of these resources was crucial to them. These all energy resource states (Azerbaijan, Turkmenistan, Iran, Kazakhstan, and Uzbekistan, etc) hoped that the export policies of these companies should be emphasized to enhance the economic stability of their countries. The energy export policy of the Caspian Sea region is largely influenced by the strategic position of North Russia, China, and the United States to the world market. In fact, these big powers adopted a policy which was always controlled by their own interest. These newly independent energy-rich countries are always controlled by big powers strategic policy for their economic trade relations. This will create various connectivity related challenges to connect world-wide to the countries of the Caspian Sea region.

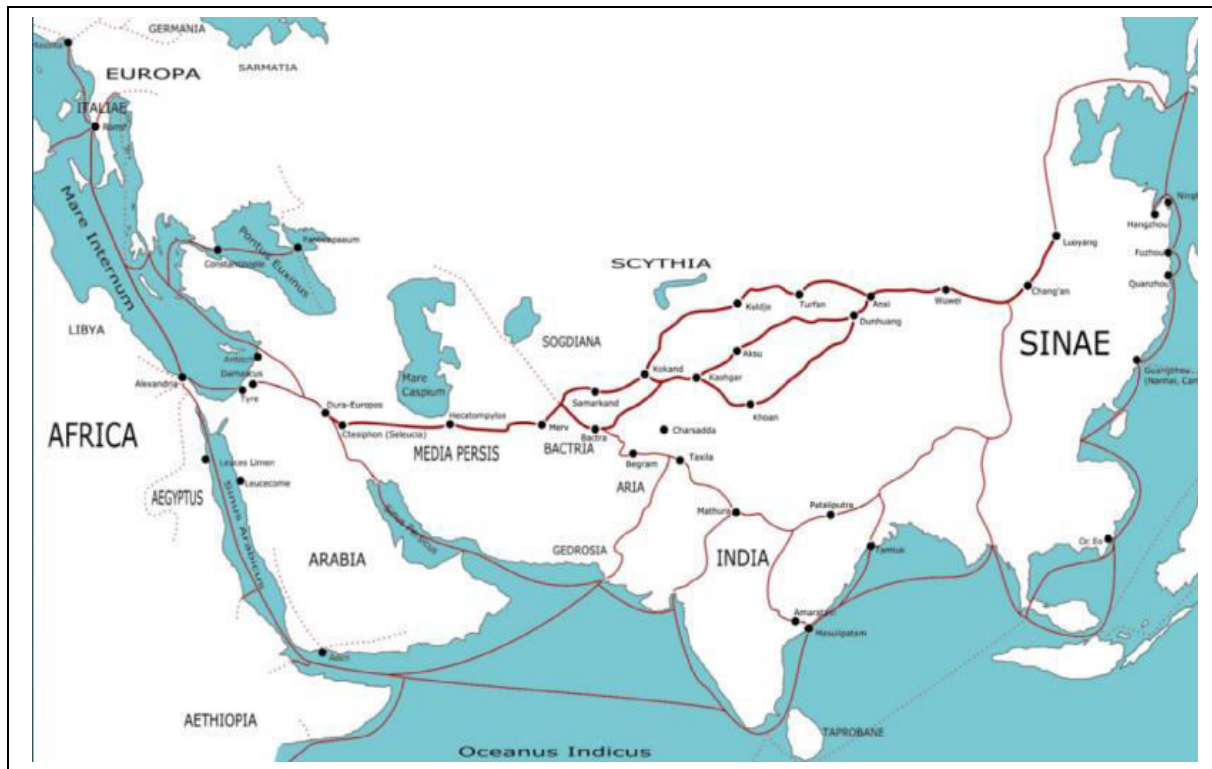
The territorial boundaries of the Caspian Sea region and Central Asia are always connected to each other. As a result, these states could not be able individually to make business relations with abroad. India is not an exception in this regard. To spread the trade corridor, this landlocked region has to depend on proper connectivity, adequate foreign policy and multilateral agreements. For this reason, these states felt the need to sit together at a joint table in 2008 to formulate trade policy. This fact which led by late Professor Hari Vasudevan to conclude in his article "India-Central Asia and International Milieu: Prospect for Economic Engagement" where he cited 'Recovery'. Professor emphasized that this model is crucial for the expansion of India's 'Connect Central Asia policy'.

The background analysis is essential without which the context under which India developed its relation with Central Asia 2012-18 could not be understood. One of the primary reasons for this has been the slow progress of India's venture for strategic interest in this region. For the sake of this study, particularly case study, the focus all the issues in question could not be highlighted.

In 2000-2012, the economic relation of India with Central Asia depended on various factors. Some of which are highlighted earlier. After 2000 onward, India's energy consumption increased rapidly. The energy producing companies in India could not be able to supply the increased demand for energy. Various case studies in regard to this were undertaken. It is proved that India was one of the energy deficit countries in the world. The result was the high officials of the Indian foreign department stressed upon the need for import of energy but initially particularly during the beginning of the twentieth century, India did not pay any heed to this. Hence, they connected the issue of import of energy to South East Asia and West Asian countries. India is always trying to develop relations with South East Asia particularly the members' states of ASEAN. It made a link with ASEAN for making its presence felt in Summit Level Partner in 2002. In 2004, India- Japan 'Joint Study Group', QUAD of G-4 (Germany, Japan, Brazil and India), besides the Taskent Agreement 1966 and Treaty of Friendship in 1971 with the Soviet Union bilaterally; with the help of all these treaties and agreements, India tried to stress upon energy import for its social and economic gain. India participated in the East Asia Summit (EAS) in 2005. For import adequate energy from abroad, it is very important to stress the border and maritime security strong. As India is surrounded by three great oceans like, Bay-of-Bengal in the eastern region, the Indian Ocean in the southern region and the Arab Sea is located at the western part of Indian Territory. For this reason, India needs adopt a strong maritime security policy for importing the sufficient quantum of energy from abroad and preventing terrorism also border trafficking. As a result, India felt it an urgent need to maintain and sustain maritime security in the Indian Ocean and Arab Sea; because, these two water body linked with the two huge energy reserves territory like, South East Asia and the Caspian Sea basin states. But India is trying to communicate with Central Asia digitally and it was successful but India's physical connectivity

with Central Asia is very sluggish, lasting until the twentieth century.⁵ Here a figure has shown the oceanic connectivity with India:

Figure-4.0: India's Connectivity route through Ocean



Source: Ayjaz Wani., “India and China in Central Asia: Understanding the new rivalry in the heart of Eurasia”, *Observer Research Foundation*, February 2020, p. 235. This article is also available at: https://www.orfonline.org/research/india-and-china-in-central-asia-understanding-the-new-rivalry-in-the-heart-of-eurasia-61473/#_edn34/ (Accessed on 18th April 2020).

At the beginning of twentieth century India's business relation with Asiatic Russia, Central Asia and Peoples Republic of China (PRC) was small in volume.⁶ Among these, the most important economic connection was related to pharmaceuticals products, gems, and jewelry. The USA and India was the most vital trading partner of Central Asia, China, and Russia. Again for making connectivity with Central Asia India's road was wide. But access to these territories was very limited between the United States and South Asian countries. Now, India's connectivity to

⁵ Meena Singh Roy., “India's Interest in Central Asia”, *IDSa*, this article is also available at: <https://www.idsa-india.org/an-mar-9.01.html/> (Accessed on 16th April 2018).

‘Communication’ and ‘Connectivity’ are looking much similar but not same in meaning. Communication can be build through telephonic medium, or digitally programme; but for connectivity between two or more countries, there need to directly communicate by physically to build up its relations.

⁶ Ayjaz Wani., “India and China in Central Asia: Understanding the new rivalry in the heart of Eurasia”, *Observer Research Foundation*, February 2020, p. 235. This article is also available at: https://www.orfonline.org/research/india-and-china-in-central-asia-understanding-the-new-rivalry-in-the-heart-of-eurasia-61473/#_edn34/ (Accessed on 24th October 2020).

Central Asia has been through Iran and Pakistan, because of its large mountain barriers. But the ‘trade corridor’ through which the entry was possible requires improvement.⁷ For this, improving the port and the joint dialogue of diplomats and businessmen was very important for Central Asia. But for India, the entry in this region was very slow and challenging. The development till 2000-2008 was not distinct. However, India’s entry into the Caspian Sea region is most important because the Caspian Sea region is an energy rich region. Not only is that like a soft power state of India mostly an energy deficit state, the import of energy is very necessary. Since India is a secular state and it is closely integrated with Indian enterprises and with EURO-US enterprises and easy fluency in English are also advantageous. Again, the UGC (University Grants Commission) had taken many area studies programme on Central Asia- the establishment of MAKAIAS (Moulana Abul Kalam Azad Institute of Asian Studies), and Russian language department, etc. All these projects are internal strategic ladder of India which distinctly showed the most interest of India towards Central Asia, particularly made an impact on the countries like the Caspian Sea region.

Now, the ‘recovery’ stage can be highlighted here. Late Professor Hari Vasudevan, in his article ‘India-Central Asia an International Millieu: Prospects for Economic Engagement’, had used the ‘recovery’ term many times in his article. The reason for use of this term has been vividly explained by him. According to him, before 2000, Central Asia region was called ‘period of dislocation and depression’. For this reason, India was not in a position to overcome structural adjustment and develop economic relation with Central Asia. Because, the newly independent states required the necessity of an organization like, World Trade Organization (WTO) and their approval. Though, in this area the notable major trade partners were European Union and USA. Under this situation the Central Asian states needed much time to develop for making business. According to the statement by this expert, the problem was the travelers who came in this area like, Soviet State Enterprises and how to handle them. In the Central Asia region, the Soviet owned airline like, Aeroflot had monopoly which normally was handled by local travelers. In 1990-2000, during this long ten years no public sector company was able to specific connection with this region. In fact, no major Soviet Foreign Trade Organizations, based in this region came forward for economic relations with India. Not only that newly independent five states’ public

⁷ Alina Mustra., “Development of Trade and Transit Corridors: The Role of Private and Public Sectors”, *World Bank*. This article is also available at: <https://www.unescap.org/sites/default/files/tforum12-s2-mustra.pdf> (Accessed on 4th October 2019).

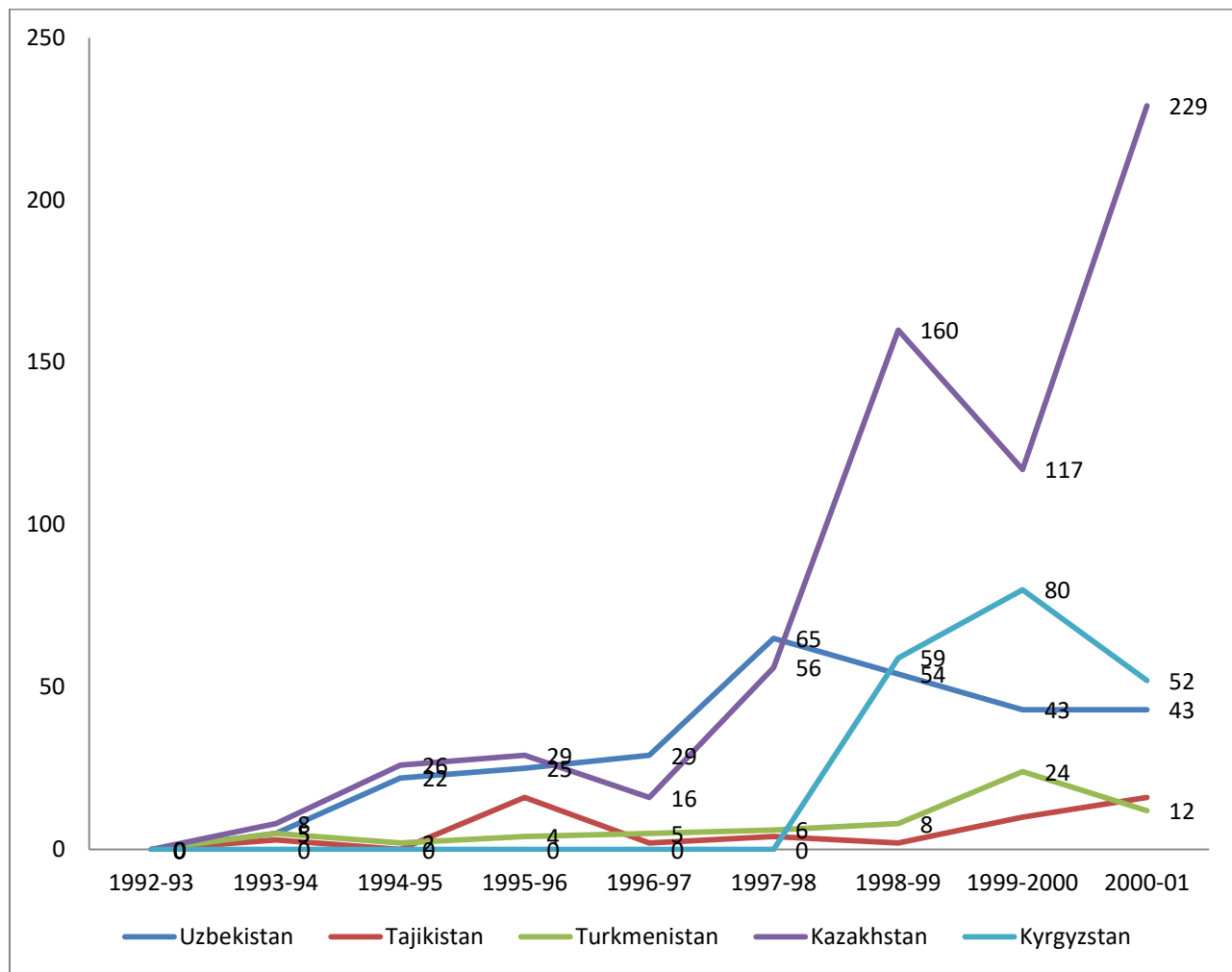
sectors did not make any deal with the public sectors of India. For this reason, no economic relations with this region could be possible. On the other hand, in case of private sectors, all multinational business concerns connection with former Soviet Union had been handled through the medium of FTOs based in Moscow and through local branches in Moscow of Indian concerns. No local network was there through which Indian Business Company could make an entry. In 1991, through the following lines economic relations with Central Asia were established, for instance:

- (i) Government of India set up diplomatic missions and provided information to new entrants in the region;
- (ii) Companies based in Moscow scouted for opportunities in the region (primarily in Kazakhstan, where close interaction with Russian Federation was possible). Thermax of Pune is a major example.
- (iii) Companies in India which had Moscow bases organized a distinct and separate initiative to deal with Central Asian states. By the end of the 1990s in case of Indian pharmaceutical exports Cadilla had two distinct sides to its operations, as did Ranbaxy.
- (iv) International traders of Indian origin, with solid Indian connections started operations in the region. A major instance was Proamod Agarwal, who began business in Bombay in 1975 in a family-firm which dealt with textile exports to the USSR, handled company business in Hong-Kong and founded Texuna International Limited to trade commodities like, cement, cotton, grain, etc. throughout Asia. He entered the Soviet market during *Perestroika*. After the period of disintegration, he opened his first Central Asian States branch in Tashkent in 1992, and following setting up of a Moscow office in 1993, developed branches in Almaty, Ashagabat, Baku and Odessa, with a turn over reaching US\$200 million by 1995.⁸

It is clear from the above statement that after 1990, Indian private business enterprises with the help of Russia began to make their entry in Central Asia very slowly to see their business interest there. Now, a line chart given below highlights the trend of economic strategic relations between Central Asia and India.

⁸ This statement had given by Late Professor Hari Vasudevan in his article on “India-Central Asia an International Millieu: Prospects for Economic Engagement”.

Chart-4.0: India's Trade with Central Asia (US\$ Millions)

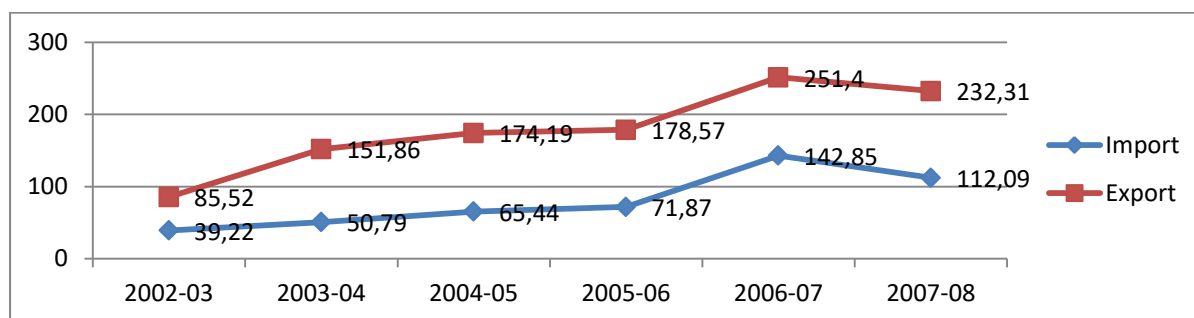


Source: Statistics of the Foreign Trade of India by Countries and Commodities (export-Import) (Director General of Commercial Intelligence and Statistics, Ministry of Commerce, Government of India), Annual Figures as published in March. Gross CIS statistics is available at this chart. Data also collected from R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 12.

The 2000-08 year is the recovery stage for India's diplomacy. During this stage, newly independent Central Asian states played a crucial role in the field of energy resource. It took place after 2000. Again, after 1990, India had shown a trajectory of growth. As a result, the fast and foremost step in regard to the formulation of foreign policy towards Central Asia was based on geo-economics calculations. On the other side, the newly independent Central Asian states felt that they needed a workforce to invest. For these two reasons, Kazakhstan and Russia started lifting of energy from the northern Caspian Sea basin by adopting an open door policy. As a result, India had faced two opportunities in parallel. During this time India stressed on privatization and its capital investment in this energy rich area, and on the other hand, enough

number of Indian labors went to these energy rich countries to eke out their livelihood.⁹ Kazakhstan and Uzbekistan are regarded as income of donor because from these countries the investment of companies began in the Caspian Sea basin. During this time the India and Central Asia economic strategic relation increased. The reason is obvious. India's focus on Central Asia began to increase slowly. India felt her as a soft power state. As early I had tried to mention that before the year of 2000, India connects with Central Asia for historical and cultural purpose. There were no direct energy import-export links between them. Secondly, to remove energy deficiency and fulfill the growing demand of energy, India is trying to develop its energy import route from Central Asian States and the adjoining states of the Caspian Sea basin like, Azerbaijan, Iran, Turkmenistan, Kazakhstan, and Russia. From the twentieth century, India's strategic interest towards this region has been significantly increasing. India's goods export to the Central Asian states is gradually higher than import. Below, a line-chart (diagram) has highlighted the progress report of trade relations between India and Central Asia during 2002-08.

Chart-4.1: Imports and Exports from India to Central Asian states 2002-08 (US\$ Millions)



Source: Bhatia, R and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s.), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 13.

A new orientation for Iran to add to India's interest in the Caspian Sea region:

In my research work, my case-study is on Turkmenistan. So, I have tried to emphasize about Turkmenistan's foreign policy in the next chapters. Now, Turkmenistan is located at the southern part of this Caspian Sea basin. As per Turkmenistan is concerned, India needs to connect with this country via land and sea route. Turkmenistan can be connected with India through Pakistan, Afghanistan and or Iran. But there are many political hindrances between India and Pakistan. For

⁹ "Arabian Nights are over: Gulf no longer the Dream land for Indians", *The Economic Times*, NRI, and 7th June 2018. This article also available at: <https://economictimes.indiatimes.com/nri/arabian-nights-are-over-gulf-no-longer-the-dream-land-for-indians/articleshow/64493367.cms?from=mdr/> (Accessed on 8th September 2019).

that reason, New Delhi is trying to avoid the simple land route connectivity via Pakistan which connects the Caspian Sea basin. On the other hand, the energy interest in the Caspian Sea basin, particularly in the southern basin is vital for India's experts as southern basin is very close to Indian Territory. Its energy potentiality is significantly much higher than other region. Before discussion about Turkmenistan's connectivity with India; India needs to connect with Iran by making its well bilateral relations, like, land-rail-port access agreements, private investments, and energy import policy is concerned. Because Iran is also an energy resource country of the southern Caspian Sea basin and it is the gateway of the Caspian Sea basin's states. This geographical location of Iran is undoubtedly great from a strategic point of view. Iraq-Iran relations, Saudi Arabia-Iraq and Iran relations will also be taken into consideration when India determines its strategic position as this strategy sometimes fluctuates. Iran is poised to emerge as an energy behemoth in the post-sanctions era. India is the world's second largest consumer of energy resources after China.¹⁰

Indian state-owned Mangalore Refinery and Petro-chemicals Limited (henceforth the MRPL) has been purchasing Iranian Oil and sending it by cargoes to India. India's energy strategic investment with Iran is not new. Iran approached the Indian Oil Company/ industry for collaboration for export of oil during 1950-60s.¹¹ But for several technical and political reasons, India failed to utilize the opportunity of crude oil export from Iran to India.¹² But it is a matter of

¹⁰ According to the 69th Annual Edition of BP Statistical review, "India's Second Biggest Driver of the Global Energy Consumption in 2019", *The Economic Times (Industry)*, 17th June 2020. This article also available at: <https://economictimes.indiatimes.com/industry/energy/oil-gas/india-2nd-biggest-driver-of-global-energy-consumption-in-2019-bp-statistical-review/articleshow/76425453.cms?from=mdr/> (Accessed on 24th October 2020).

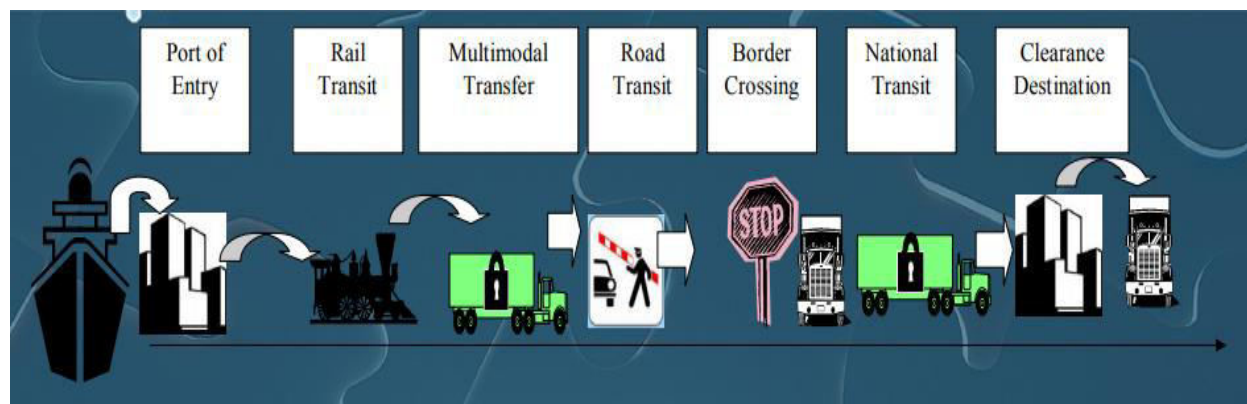
China was by far the biggest driver of energy, accounting for more than three quarters of net global growth. India and Indonesia were the next largest contributors to growth, But the growth in 2019 was slower than 2018. World primary energy consumption rose to 583.90 Exa-Joules (EJ). India's consumption rose 2.3 per cent to 34.06 EJ. The growth was lower than 5.2 per cent in 2018. In absolute terms, India's energy consumption was only behind that of China (141.70 EJ) and US (94.65 EJ). The energy consumption is made up of oil, natural gas, coal, electricity and renewable. Global oil consumption grew by 0.9 million barrels per day (bpd), or 0.9 per cent, slightly lower than the 10-year average of 1.3 per cent per annum. India posted the third biggest rise in oil consumption in the world at 159,000 bpd, just behind 681,000 bpd of China and 183,000 bpd of Iran. World coal consumption fell 0.6 per cent. "Growth in India, usually a key driver of coal consumption, was only 0.3 per cent (0.1 EJ) - it's lowest since 2001," BP said. Hydroelectricity consumption rose by 0.8 per cent. The ten years average of 1.9 per cent per annum. The 69th annual edition of the BP Statistical Review of World Energy has released these all data for India's energy consumption. According to the BP year's edition which collects and analyses energy data for 2019 that highlights the global energy trends emerging prior to the current COVID-19 pandemic.

¹¹ Bilal Abdi, "Indian Oil ends Term-Contract with Iran for Import of Crude Oil", *Etenergyworld*, 20th May 2019. This article also available at: <https://energy.economictimes.indiatimes.com/news/oil-and-gas/indian-oil-ends-term-contract-with-iran-for-import-of-crude-oil/69377250/> (Accessed on 24th October 2020).

¹² Ibid., Indian Oil Corporation (IOC), the country's largest fuel retailer and the largest importer of Iranian crude, had not signed the usual yearly term contract with sanctions-hit Iran for import of crude oil this fiscal, Sanjiv Singh, Chairman and Chief Executive Officer (CEO) of the company said in an interaction with the media. Indian External Affairs minister late Sushma Swaraj opined in a meeting that Iranian counterpart Javad Zarif had said that the country will take a call on importing Iranian

fact that Oil and Natural Gas Commission (ONGC) took part in offshore exploration. For this purpose, the National Iranian Oil Company (NIOC) connected with ONGC Videsh for exploration, and connectivity with share blocks from the energy producing countries. Now below a figure has shown for understand the connectivity system between demand and supplier countries.

Figure-4.1: The Connectivity System of Energy Imports



Source: Ayjaz Wani., “India and China in Central Asia: Understanding the new rivalry in the heart of Eurasia”, *Observer Research Foundation*, February 2020, p. 235. This article is also available at: https://www.orfonline.org/research/india-and-china-in-central-asia-understanding-the-new-rivalry-in-the-heart-of-eurasia-61473/#_edn34/ (Accessed on 24th October 2020).

Three Indian companies shared exploration, for instance, ONGC Videsh Limited (OVL), Indian Oil Corporation Limited (IOCL) and Oil India Limited (OIL). These three companies were engaged in making fertile of the Farzad-B gas field (located at Farsi block). Hence, this joint venture took place in 2008.

Not only in the case of exploration or production, with the help of Iran, but India also began to transport oil from Iran. For proper shipment of oil and gas production to India, Iran has offered to ship LNG to India through Oman via Arab Sea. It appears from this that it is the first time since 1979 that Iran has offered PSCs; earlier, only to buy back arrangements with NIOC, with 15 per cent fixed returns, were allowed. Presumably, this policy change was done in view of India’s decreasing energy imports in the face of western sanctions. Even the sanctions were over; Iran reassures India about the development of rights for the Farzad-B gas field and has not put

crude post the on-going general elections. According to AK Sharma, Director-Finance at IOC, the company has entered into an optional deal to import 2 million barrels of Saudi crude from July to December 2019. This is over and above its term-contract with Saudi Arabia. India’s imports from Saudi Arabia last financial year increased 12 per cent to 40.33 Million Tons (MT), making it the second-largest crude oil supplier to India.

the block for auction.¹³ It can be said that the five states in the Caspian Sea region within their water boundary engaged in exploration in the block of each state. There has been the provision that all these blocks are entitled to shift their drilling programme to the main state or can give clearance to the shareholder for the state-aided company. In fact, this clearance is for a definite period and is bound by the agreement. Since Iran is not in a position to offer foreign companies for drilling in its land for the US embargo from 2015, but India has got exploration permission from Kazakhstan and has been trying to get permission from Turkmenistan.¹⁴ But Indian delegation visited Iran in July 2015. The Iranian diplomats opined that they were mulling a new PSC for the field. The delegation came to know that this could be a mixture of production sharing and service contract. The said delegation tried to negotiate to the authorities about the system of renewing the unsuccessful LNG purchase deal of 2005. The Indian Ministry of Petroleum and Natural Gas also advocated for the Indian consortium to his visit to Iran on 9th-10th April 2016.¹⁵ The produced gas would be liquefied and would be transferred to India either via Pakistan or a sub-sea pipeline. Nevertheless, Iran has to get over with its rising gas demands before being able to become a potential exporter. In 2004, PLL signed this agreement for twenty-five years through which 7.5 MMTPA FOB of energy imported to India. As a result of these, after 2004 onwards LNG price decreased from US\$12 to US\$5 per month. 'The members can

¹³ Arnab Dasgupta., "Emerging Strategic Equations in West Asia: Impact on India's Energy Security", *Journal of International Relations*, Volume 4, Issue 1, ISSN 2348-7496, June, 2017, p. 18.

¹⁴ For this above statement, an interview was conducted regarding India's participation as a share holder for exploration process in Iran. The Strategist-Analyst Officer In-charge of EC Cell, ONGC Videsh Limited, New Delhi on 2nd May 2018 was interviewed by the researcher. This high official reacted sharply about the role of Iran. He opined that although Iran is the get way of the Caspian Sea basin, but like as share-holder of other countries of the Central Asia, the importance of Iran is very much vital. From 1st January 2015, the US embargo on Iran remained- it continued till May 2018 (till the date of interview). During this embargo, no foreign investors could be able to enter into an agreement with Iran for exploration of crude oil and natural gas. Only Iran's domestic company that is, Iran Petroleum Contract (IPC) can lifting its energy resources from their territory or water body of onshore and offshore areas. In fact, Iran was handicapped particularly for the US sanction and no foreign capital could enter into Iran's territory. As a result, Iran had no positive role in the block-share in the offshore and onshore basin of the Caspian Sea. This higher official rightly pointed out that Iran's policy does not match with the energy strategy of India. This expert opined that Iran is a highly politically unstable country. Hence, any energy related contracts with this country do not bear any value for which capital investment in this region is a risk and the amount invested could not be returned adequately. According to him, since Iran does not have any sovereign back up, for that reason, OVL has no share/ownership in Iran's territory. The most significant reason for this has been that the bank finance or capital investment is not available in this connection. Hence, cargo and pipeline development for crude oil and natural gas supply in this area is a major challenge. Only the Chinese Schedule Bank provided bank finance capital for development of pipeline in Iran. According to Mr. Haldar, the most of the amount of bank finance come by money investment and rotation which eventually turns into black-capital. Therefore, government's rules cannot be maintained if any venture of work in this regard is intended to be taken by India. The 'Farzad-B natural gas field' taken by Iran-India jointly is now in dark. Hence, so far as block share is concerned Iran still remains unstable. This instability of Iran in this matter has been supported by the honorable Indian Ambassador Ashok Sajjanhar, President of the Institute of Global Studies and former Ambassador of India to Kazakhstan, in a formal discussion on 29th April 2018. The Indian diplomat opined that due to this unstable condition, Iran-Pakistan-India gas pipeline (IPI) project has failed to materialize. Therefore, various high officials of the ONGC Videsh Limited connected with exploration of crude oil in Central Asia are of the similar view.

¹⁵ V. Needhi., "Indian Hopes to Sign Farzad-B Gas Field Deal with Iran Next Month", *Reuters*, 22nd March 2016, available at: <http://in.reuters.com/article/india-iran-gas-deal-idINKCN0WO1YV/> (Accessed on 14th October 2020).

also opt for cargo swaps before that, the domestic gas sector in India needs to be reformed urgently' stated by Professor Dasgupta.¹⁶

Iran has given an offer to shipment of crude cargo to India free of cost; Iraq, Iran, and Kuwait agreed to make contacts with India on extended credit conditions up to 90 days. Since India has a wide market for energy, energy exporter countries are interested to enter into the Indian market. This is, no doubt, a positive sign for India. Moreover, the impact of Iranian sanctions would vouch for the importance of West Asia and also Central Asian countries particularly so far as energy supply of Caspian Sea region to India is concerned.¹⁷ But there are various challenges to connect India with Iran, e.g. the US embargo on Iran and big powers rivalry, etc. Hence, the hegemony attitude of the US on Iranian foreign policy was targeted because Iran was the most enriched uranium producing country. In 1979, when the Iranian revolution took place, the US suspended all nuclear programme with Iran. On the other hand, Russia, China and the Nuclear Arms bazaar of Abdul Qadeer Khan helped Iran in the production of nuclear energy. It appears from this that big powers' rivalry of nuclear proliferation was always prevalent in Iran. Not only super powers, but also the buffer state of Iran also takes various initiatives to ensure their energy security; such as, Pakistan's initiatives over Iran to provide P-1 and P-2 centrifuges which were used to enrich the uranium. China assisted Iran with two subcritical reactors and electromagnetic isotope separation technology for the Esfahan Nuclear Technology Center (ENTEC).¹⁸

From this case study, it appears that Iran is a state which is geopolitically most vital for the global powers and also to the Caspian Sea basin. Sometimes US imbroglio on Iran's energy supply made ill that affect on Iran's energy export policy to abroad. The USA's intervention towards Iran is obviously a challenge for India. For securing itself, India had done several agreements with Iran, such as, 'modified code 3.1', 'Sadabad Declaration', 'Paris Agreement' and EU-3 (Britain, France, and Germany). The EU-3 (China, Russia, and the US), later 'P-5+1' organizations were made but the result was not supportive for Iran's export policy. Now, the moot question is: Is Iran the Lynchpin for India in Central Asia?

¹⁶ Arnab Dasgupta., "Emerging Strategic Equations in West Asia: Impact on India's Energy Security", *Journal of International Relations*, Volume 4, Issue 1, ISSN 2348-7496, June, 2017, p. 18.

¹⁷ Arnab Dasgupta., *op. cit* June, 2017, p. 18.

¹⁸ Pavneet Singh., *International Relations: for Civil Service Examination*, (Chennai: McGraw Hill Education Private Limited, 2018) p. H-56.

Regarding to this answer, it can be positively thought that because, Iran-India relations always play a friendship role in international politics. According to the Kautilya's Arthasashtra, Iran can be cited the 'vijijisu's friend'. Pakistan's position is right in the middle of India and Iran. The United States always tried to dominate Iran's foreign policy for its large quantum of energy resources. But Iran always behaves a friendly attitude towards India. During the embargo, Iran had sent its several cargos from Chabahar port to Mumbai port, India and its stable law and order system facilitated a secured trade. The former US President Donald Trump also put his positive attitude towards India-Iran relationship in 2019. Not only that, the whole International North-South Transport Corridor (INSTC) project has started from Iran's Chabahar port which connects the world into the Caspian Sea region vis-à-vis Central Asia. India also invests lots of capital to this project. China and Pakistan always display their negative tactics towards India, so India should think separately to associate itself with the states of the Caspian Sea basin. So, it is quite impossible to ignore Iran. On the other hand, India-Iran-Turkmenistan signed a Memorandum of Understanding (MoU) for rail-road connectivity in 1995. India invested in the construction of Zaranj-Delgram Highway which connects the International North-South Transport Corridor. With the help of this project India directly has got entry via Iran to Afghanistan and Central Asia. Again, there has been a CASA-1000 project (Central Asia and South Asia) which connected for the work of electricity transmission. This project was potential for Kyrgyzstan and Tajikistan from where it extended to Afghanistan and Pakistan by 2018.¹⁹ The project of Central Asia and South Asia is still remained out of the reach of India. The Caspian legal status is a matter of great dispute, particularly so far as Azerbaijan and Turkmenistan are concerned. Iran has declared that it has not yet settled the border disputes remaining with Azerbaijan and Turkmenistan. Iran refuses to accept 'median line approach'. It would be in a disadvantaged position other than other littoral states from the point of view of its offshore acreages, getting only 11-13 per cent of the total area. In fact, Iran is guided by its own interest so far as its commercial and strategic matters are concerned. It has decided to promote regional pipelines through its own territory, rather than across the Caspian Sea. Despite this, it can be said that India's bilateral relations with Iran are relevant and valuable which makes India's energy interest in the Caspian Sea region successful. The meaning of Lynchpin is 'a pin passed through the end of an axle to keep a wheel in position'. That is, the relationship between Iran and India is complementary. Only if the

¹⁹ This data is available at: <http://www.casa-1000.org/> (Accessed on 15th September 2019).

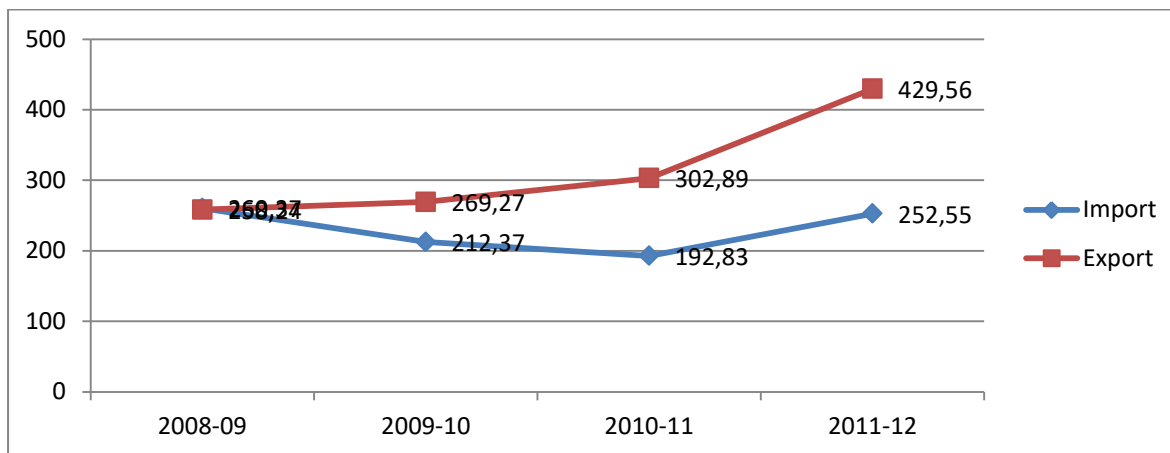
diplomacy of both the countries coincides will India be able to enter Central Asia. For that reason, it can be safely said that Iran obviously Lynchpin for India and Central Asia.

But in the year 2007 and 2008, the India's approach to Central Asia was very steady but the core of the discussion. Late Professor Hari Vasudevan, in his article, 'India-Central Asia and International Millieu: Prospects for Economic Engagement' mention that 2007-08 could be called an unprecedented chapter for India's entry in Central Asia. According to his statement, this period called 'Meltdown' process which could be carried out by two methods:

- (i) The challenges of Kazakhstan in regard to foreign investment is clear and
- (ii) In this vast energy reserves region, there has been an acute obstacle of the source of employment, which aggravated after the exit of Russia and took a havoc position after 2007.

For these two reasons, the economy on Central Asian states particularly to the Caspian Sea region was extremely affected. Moreover, investment from Kazakh Banking Sector decreased in 2007-08. As a result, the economical graph line of Kyrgyzstan, Uzbekistan, Kazakhstan, and Turkmenistan was downward. Fall in investment and employment opportunities in almost all countries of the region affected. During this period, 2008-12, the importance of Central Asian states became very much prevalent in India because, since 2008, product-labor export from India in this region increased greatly. Increasing export automatically enhanced gradual import. Before meltdown in the Caspian Sea region's economy, India's energy interest in the Caspian Sea region showed sound development. As a result, the participation of Indian trading company, community investment, and energy-producing companies' investment in Central Asia had begun to increase. The following chart (diagram) has shown the import-export report of India to Central Asia.

Chart-4.2: Imports and Exports from India to Central Asian states 2008-12



Source: R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 16.

Therefore, despite the sluggish in the trade and commercial interest to Central Asian states before 2008, after 2008 in South Asia, the most important state in India achieved a well impression in the global business and politics. Hence, though the meltdown system was against Central Asia, India's interest towards this region did not affect this meltdown rather it acted in favor of India. Therefore, it is clear from the export chart given above, India has been growing rapidly particularly during the post-crisis period. In fact, the foreign policy, bilateral and multilateral economic diplomacy of India showed that India's nature of the investment, export, and import after economic liberalization- all these were in a favorable situation.²⁰

It appears from this that after the global economic crisis in 2008; India stressed upon economic multilateral relations, resulting in the increase geopolitical interest in the Caspian Sea region. In fact, India's geopolitical interest in the Caspian Sea region emerges as energy interest towards the Caspian Sea basin. Hence, it is pertinent to thrash out geopolitical interest before analyzing energy interest in the Caspian Sea region.

A new Orientation of India's Geo-strategic Interest (ONGC Videsh Limited) in the Caspian Sea basin from 2012 to 2019, Great Game politics:

After the end of the Cold War, India opted for a liberalized an open economic policy and began its trade with USSR. Since India needed more resources for its domestic consumption, it was

²⁰ 2011-12 GDP report, BBC Monitoring House, Patiala, New Delhi, India.

compelled to increase the import of energy. Consequently, India began to import oil from Africa, South East Asia, and newly independent Central Asian states. India as a smart business emerging power in South Asia utilized its friendship with Russia for framing its Foreign Economic Policy. The obvious reason was that India's oil diplomacy and its energy security policy needed supportive factor which Russia provided. That is to say, in the spheres of India's energy interest in Central Asia, India's position in North-South Corridor, preventing terrorist activity in the region and India's energy import method by adopting swap deal- these entire needed supportive factor which Russia extended. India took the 'Caspian Energy Strategy' which had five features, which are as follows:

- (i) Investment in downstream refineries;
- (ii) Long term LNG contracts;
- (iii) Acquisitions of overseas oil assets;
- (iv) Establishing pipeline infrastructure and
- (v) Acquiring foreign exploration and production contracts.

It can be pointed out that from 2011-12 to 2018-19 the assured reserves of energy exploration increased sufficiently. Now, it is relevant to state that the real interest of India towards the Caspian Sea region can be understood in terms of economic diplomacy. In fact, as per economic diplomacy, if one tries to judge lawfully, certain objectives are essential which are as follows:

- (i) To develop new filters.
- (ii) To identify internal and external threats and how to remove them in order to ensure economic and energy security in the earliest stages.
- (iii) To monitor in a better way and analyze the fundamental causes of the financial crisis.
- (iv) To improve and develop new methods for understanding the current financial crisis.
- (v) To improve the method of system analysis and monitor economic security.

Before the discussion on geopolitical interest in the Caspian Sea region, it would be relevant to reveal the historical relations among the five states of the Central Asia region vis-à-vis India. It is a fact that the history of the civilization of Central Asia is interrelated with India. Not only is that South Asia, particularly, India's primitive mythological evidence closely related to Central Asia. In the historical perspective, the two regions: South Asia and Central Asia: from the primitive era

are related in the spheres of culture, politics, and economy. One of the strongest links between India and Central Asia was Silk Route from ancient time in terms of business or people to people contact.

At present, many Indian experts and scholars has interested to the Caspian Sea region for its huge energy potentiality. As India is a one of the energy deficit countries in the world. So, its energy demand is significantly high in every year. For that reason, the 'Connect Central Asia' policy is very most vital for India's economic-social development. The experts like, B.B.Kumar²¹, Dr. Bhagaban Bahera²², Indranil Banerjee²³, Professor Nirmala Joshi²⁴, Professor Ramakant Dwivendi, Mavlanov Ibragim²⁵ and Mr. J.N. Dixit²⁶ are the famous scholars, who serves themselves in the India-Central Asia's research.

It appears from the study of various academicians, diplomats, Ministry of External Affairs and various documents of the governments that from the beginning of the twenty-first century, India's geopolitical interest towards the Caspian Sea region is seen. From 1991-2011 the facts presented earlier revealed two points. First, India was culturally related to Central Asia and secondly, after 2000, India-Iran energy relations made an influence on the Caspian Sea basin and other countries as well. Therefore, besides the cultural relations, the economic interest so far as energy concerned is growing high. These interests were related not only to public sector undertakings and among high officials, after 2012 various NGOs and private sectors participation received attention. India adopted a new initiative in 2012 which called 'Connect

²¹ India and Central Asia have a long tradition of socio-cultural, political and economic contact since the remote past. The two regions have common and contiguous borders, climate community, similar geographical features and geo-cultural affinity.

²² He is an expert in the Central Asian studies and India-China relationship.

²³ His famous book is 'India and Central Asia' in his book he opined, "India's contacts with Central Asian Republics (CARs) have developed at various levels. Some of the largest oil explorations, they drilling and pipeline projects of recent times have been signed-in this region: if these contacts prove lucrative, India could bid for bigger energy projects".

²⁴ Presently, Indian interest is substantial and is in the sphere of strategic, security, political and economic security. Any competitions amongst major powers for control and influence in India's extended neighborhood have a bearing on its policy and diplomacy in the region. If the competitive element in Central Asia becomes a dominant tendency, India would have to take hard decisions.

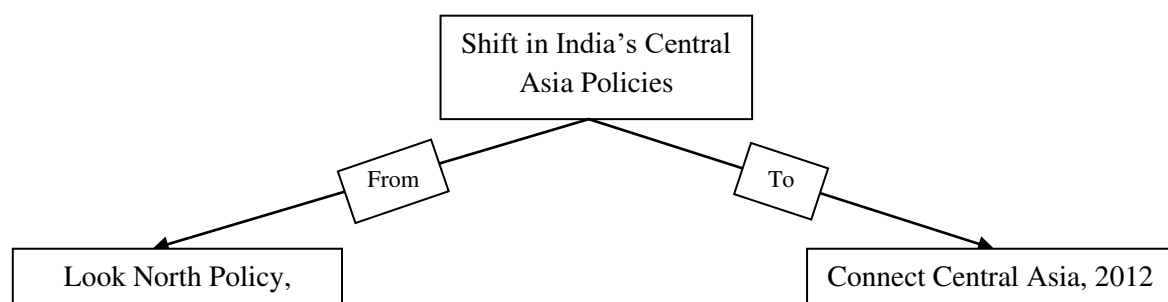
²⁵ Mavlanov Ibragim, in his article on 'India's Geopolitical Interests in Central Asia and Economic Diplomacy', stated that "on a daily basis, as Indian analysts recognize, India's economic power is perhaps significant in creating in Central Asia a region of economic security. India's economic growth shows that India is not only a reliable business partner but one of the most experienced countries in the Asian region that can use its economic potential to promote the economic development of the Central Asian region while ensuring economic security and stability. Thus, these factors play a crucial role in shaping India's economic policy towards Central Asia.

²⁶ Some general assessments and recommendations about structuring India's relations with Central Asian countries, that is to say, India must be more active in associating with new economic cooperation and regional security arrangements which are being initiated by Central Asian republics.

Central Asia policy’.²⁷ That highlighted in Paramjit. S. Sahai’s article, ‘India’s New Policy Thrust in Central Asia’. It appears from all these policies and engagements India’s interests in Central Asia are of great importance from two points of view: the first, the economic trade relations and secondly, energy interest.

Central Asia, particularly, the Caspian Sea region states are the high energy potential areas. For that reason, there is no power vacuum in this region. Great powers rivalry, territorial disputes between the littoral states, water boundary disputes amongst subordinate countries like, Turkmenistan, Azerbaijan, Iran and Kazakhstan is always fighting with each other for offshore and onshore block exploration. That is why there is a power imbalance in the region as power struggles continue. India’s major step towards Central Asia is unstable in situation, such as, Taliban’s intrusion in Afghanistan and captured the state power, the civil war in Tajikistan, the military intervention of India in Kashmir for Pakistan’s intrusion in Kashmir (India), the hijacking of 814-IC plane of India in 1999, the 9/11 event in 2001 provoked the United States to invade Afghanistan in 2001 and Iraq in 2003 and the spread of the US airbases and military logistics in this region in 1995. In this time, India’s strategic importance to the region was nil.

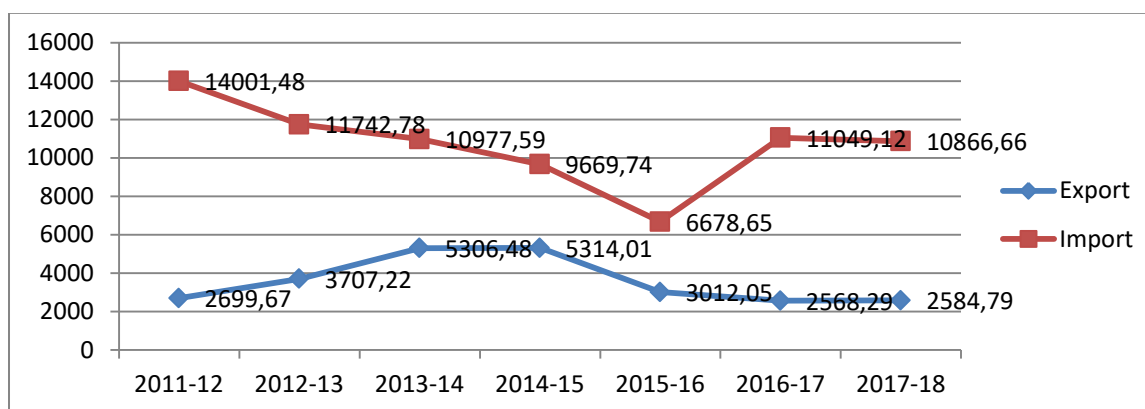
India took the ‘Track-II initiative in 2012’. Its main focus is on energy security towards the Caspian Sea region. Below a chart was given in which successive strategic interest of India towards Central Asia is highlighted:



A line-chart is given below to focus on India’s economic and trade relations during 2011-12 to 2017-18 the partial part of the Caspian Sea region (Iran, Turkmenistan, and Kazakhstan):

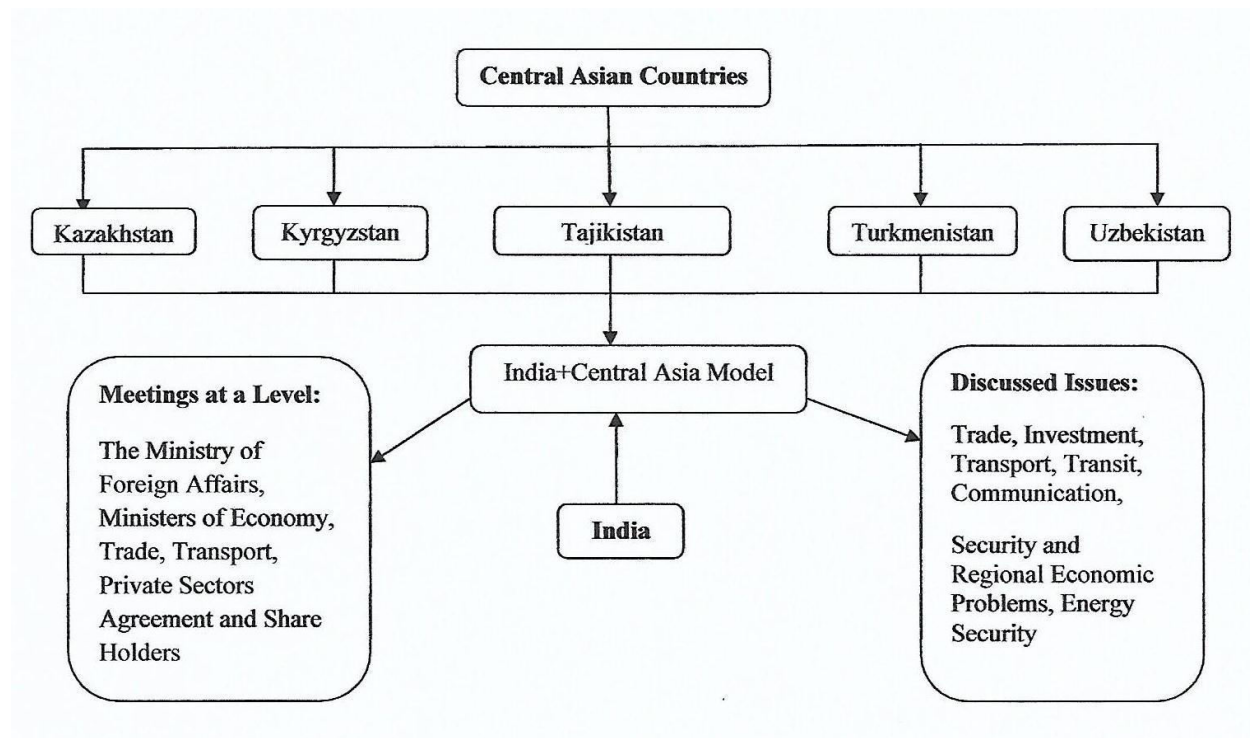
²⁷ This approach was first taken by E. Ahamed, Minister of State for External Affairs. At the first India-Central Asia dialogue at Bishkek in Kyrgyzstan, this policy which had a definite framework, such as, ‘proactive political, economy, and people to people engagement with Central Asian countries, both individually and collectively’.

Chart-4.3: India's Trade Interest (Export and Import) during 2011-12 to 2017-18 values in US\$ Million



Source: Export-Import Data Bank, Department of Commerce, Government of India. Available at: <http://commerce-app.gov.in/eidb/ecstcnt.asp/> (Accessed on 1st May 2018).

The above chart has showed India's trade with Central Asia's country. The data presented year-wise indicated India's trade relations in the region and its rate of growth which undoubtedly was high in comparison to the earlier rate of growth. But it is a fact that India's trade and energy interest in the Caspian region were guided by various supportive and non-supportive factors. The entire focus of Indian diplomacy with the countries of the Conference on Interaction and Confidence-Building Measures in Asia or CICA was on the development of energy security and transport corridor. An analysis of official documents and statistics candidly made it clear that Indian diplomacy towards Central Asia is primarily targeted on trade and investment. The obvious reasons are: upward natural resources of the Caspian Sea basin, the increasing involvement in global and regional geopolitics, etc. After 2012, India's strategic interest towards Central Asia took a new trend. It started institutionalization of regional economic diplomacy of India with Central Asia. Potential Trends in Expanding India's Economic Cooperation with Central Asia to Strengthen Bilateral and Multilateral relations to build a Full-Scale Institutional model, that is, 'India + Central Asia' model. Below, this 'India + Central Asia' model has given highlight with a diagram:

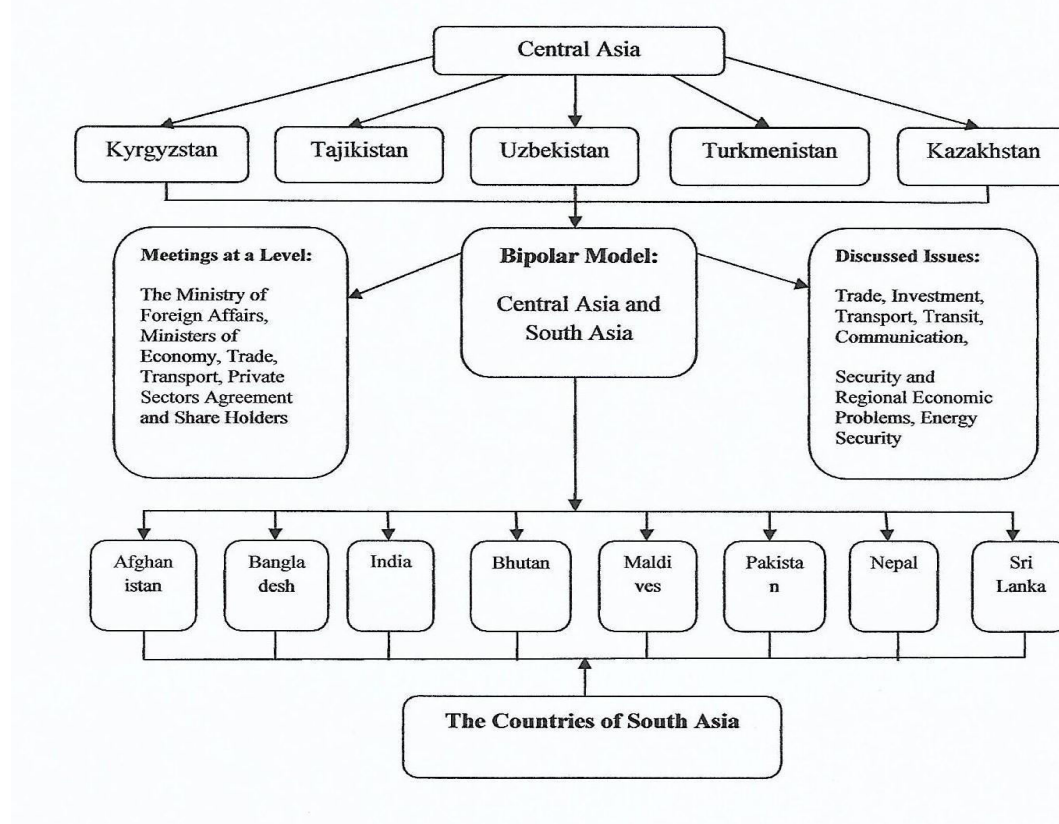


Source: R. Bhatia, and Meruyert Abusseitora, Laura Yerekeshcheva, Athar Zafar (ed.s.), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 35.

India's economic diplomacy in Central Asia is based on promising economic, investment and trading market. After 2015, the Central Asia region is an important factor and India has been giving much emphasis on this region. It has obvious reason since India is an energy deficit country; it has been trying heart and soul to connect with the Caspian Sea basin through direct connectivity. Central Asian countries are also interested to make relations with India for its business-like its contact with the world market. It is a matter of connectivity with India as well as the world so far as energy import is concerned. India also intends to make contact with south Asia and India is a prime partner of south Asian countries.²⁸ The possibility of development of gas pipelines and exploration of huge reserves of mineral resources processing and transport to markets have been increasing. The technologically advanced countries of Central Asia will allow India to quickly develop a system of cooperation in all paradigms.

²⁸ The following statement has rightly pointed out by the First Secretary of the embassy of Turkmenistan, New Delhi, India, on May 2018. The diplomat agreed that India and Central Asia's relationship is in the offing. Even Turkmenistan, in order to hold on Indian market, they (Turkmenistan's government) have been trying.

The 'bipolar model of interregional economic cooperation Central Asia and South Asia' would serve the interest of the Caspian Sea region. A 'bipolar model' and trade relations diagram between Central Asia and South Asia shows below:



Source: R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 36.

The main non-supporting factors of India's interest in the Caspian Sea region are the energy interests and the connectivity challenges. Other challenges also appeared, for instance, geopolitical-strategic barriers, unreliability of corridor supply chain increased by inadequate design of transit arrangements for goods and vehicles, multiple clearances and control and not only at the border: the same procedure can be repeated up to seven times on certain corridors; no continuity across and even within borders; typically much time is spent to initiate transit operations; fragmented market structure of core services (truckers and brokers) and little incentive for quality services: monopolies, entry barriers, regulated freight operations; and infrastructure quality no longer the major cause of unreliability, etc.

After independence, India's Foreign Economic Policy (IFEP) had passed four phases, which are shown below:

- (i) **Phase-I (1947-67):** Period limited global experience, India's engagement with the US and USSR, the target was to get support for import substitution.
- (ii) **Phase-II (1967-74):** India deepens ties with Russia. India engages itself with Russia economically.
- (iii) **Phase-III (1975-90):** Realization of the weakness of import substitution. The urge of global engagement.
- (iv) **Phase-IV (1990- till now):** India begins globalization, and embedded liberalism.

It appears from the four phases of IFEP that India began its policy to link with Federal Russia for its economic import. Therefore, it is clear that India stressed upon energy import excessively after independence and maintained its relations with Russia. The main sources of energy import are coal, crude oil, natural gas, and uranium, etc. In fact, the sources of all these energies are mainly in the countries of the Caspian Sea region. The main sources of the energies like, oil, uranium, coal, gas, and electricity/ hydropower are in Iran, Kazakhstan, Federal Russia, Turkmenistan, Kyrgyzstan, and Tajikistan. All these countries have been playing a key role in India's energy import sector.

For energy import from abroad, Oil and Natural Gas Commission Videsh Limited played a crucial role in India. This company had tried hard to boost up energy security and for this reason, government was given permission to purchase assets from abroad in order to undertake oil exploration and block share. In the meantime, Sudan, Vietnam, Sakhalin began to produce oil prominently from 2018. India, herd-pressed by domestic demands of energy, was compelled to adopt an aggressive policy backed by political executives and domestic bureaucracy, began to secure energy from India. The authorized and paid-up share capital of OVL as on September 2016 stood at 1.5 million in Indian money value. The primary business of the company is to prospect for oil and gas acreages abroad, which include acquisition of oil and gas fields in foreign countries as well as research, exploration, and sell the capital of energies. Not only personal investment, sometimes OVL merges with companies abroad for work, such as, OVL

create a joint venture with Russian Oil Company, Rosneft Oil Company.²⁹ OVL did not import or export energies like, crude oil or natural gas from foreign countries.³⁰ This statement had strongly supported by the Strategist-Analyst In-charge of EC Cell, ONGC Videsh Limited, New Delhi, India. This high official stated that the company did not import any type of energy either from the Caspian Sea region or South Asia or West Asia.³¹ It is clear from this statement that import is a term which bears a different meaning. Here the meaning is ‘going and buying crude oil’. Import usually had done by downstream companies, for instance, Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL). The high official of OVL opined, *“We (OVL) buy the assets, we put the field, we buy the ownership of the field. So, we go to someplace, buy the field, and then put money in the drilling of oil and gas and whatever the oil and gas we have got. We do equity investment or ownership investment”*.³² Recently, OVL has got ownership in Russia, Kazakhstan’s Satpayev oil Field. If oil and gas are available from this field in future, OVL becomes the owner as Indian oil drilling company. Now, OVL is in a position to compete with China in bidding internationally. It is a matter of fact, As an Indian oil company, OVL has been trying to build bilateral relations with the country before acquiring share of partnership or ownership of energy blocks. India signed an agreement with China, in which both sides decided to avoid competition with each other instead of cooperating in the acquisition of foreign oil resources in 2006. The diplomatic propaganda has been extended to all oil-producing countries in India. The high official of the OVL pointed out that, due to limited resources and international cooperation and transaction, the OVL faces loss in bidding to others. Other than that it had gained tremendous success. Below, it has tried to show the India’s energy engagement in the overseas assets or projects in the Caspian Sea basin³³:

²⁹ OVL and additional 11 per cent equity on 28th October 2016 from Rosneft Oil Company, in JSC Vankorneft, a company organized under the law of Russian Federation who is the owner of Vankor Field and North Vankor license. Rosneft, the National Oil Company of Russia continues to hold majority (50.01 per cent) shares of Venkorneft while the balance 23.9 per cent equity was held by the Indian consortium of Indian Oil PSUs comprising Oil India Limited, Indian Oil Corporation Limited, and Bharat Petro Resources Limited. According to the Financial Year of 2017-18 (OVL) report, ONGC did not refuse any block till 30th November 2018.

³⁰ Ministry of Petroleum and Natural Gas, Government of India, Annual Report, 2019-20, Chapter-VI (International Cooperation and Engagement), pp. 80-84. This data is available at: <http://petroleum.nic.in/documents/reports/annual-reports/> (Accessed on 4th January 2021).

³¹ This statement has delivered by Mr. Dulal Halder, a Strategist-Analyst Officer, EC Cell, OVL, and New Delhi by a formal interview on May 2018.

³² Ibid.

³³ Ministry of Petroleum and Natural Gas, Government of India, Annual Report, 2019-20, Chapter-VI (International Cooperation and Engagement), pp. 80-84. This data is available at: <http://petroleum.nic.in/documents/reports/annual-reports/> (Accessed on 4th January 2021).

- (i) In Azerbaijan, OVL's share in the ACG Block, BTC pipeline, and it holds 2.31 per cent, 2.36 per cent of assets.
- (ii) In Iran, OVL's share in the Farsi Farzad Block; and it holds 40 per cent of overseas assets.
- (iii) In Kazakhstan, OVL's share in the Satpayev Block, where it holds 25 per cent of assets.
- (iv) In Russia, India's energy producing or sharing companies like, ONGC Videsh Limited holds the 20 per cent assets of the Sakhalin-1 block, ONGC Videsh Vankorneft Pte Ltd and Vankor India Ltd holds the 25 per cent and 23.9 per cent assets of the Vankorneft block, again ONGC Videsh individually holds the Imperial Energy blocks with its 100 per cent of assets; and finally, Taas India Pte Ltd share Taas Yuryakh blocks with its 29.90 per cent of assets, etc.

The activities ONGC Videsh Ltd have enhanced the energy security of the country. Now, India has tried to engage with direct connectivity to abroad. For that reason, India's strategic interest has tried to enhance the 'Tri-Asian Grid' projects. Now, the locations of this 'Tri-Asian Grid' are given below:

- (i) Myanmar-China pipeline and Russia-Kazakhstan-Iran pipeline;
- (ii) Sakhalin-Korea-China pipeline and Uzbekistan-Turkmenistan-Azerbaijan pipeline; and
- (iii) Turkmenistan-Afghanistan-Pakistan-India pipeline.³⁴

India for connecting 'Tri-Asian Grid' has emphasized upon bilateral relations with Russia. But there are various multilateral or global politics involved towards India's connectivity over these regions. These challenges have analyzed below in various sub-points.

Great Game rivalry: But there are many non-supportive factors which challenge India's energy security context. India has also attempted to advance Iran-India relations in order to reach the Caspian Sea region. But Iran has some political hindrance that already mentioned in this chapter. On the other hand, China has been obstructing sufficiently for India's 'Connect Central Asia policy' (CCAP). Another factor is the Iran-Russia relationship that has complicated to develop a

³⁴ Ibid., p. 36.

relationship with India. Experts believe that it is an additional hazard. It is a fact that Russia and Iran hold half the world's known gas reserves.³⁵ These two countries have been at loggerheads and are regarded as a strategic competitor with each other. It has had considerable influence in the Caspian Sea region. However, maritime conditions in the Caspian Sea region remain unresolved. An agreement reached in 2018 between Iran and Russia and other regional states to open north-south energy and trade route between the South Asian market and Europe proves that Moscow has changed its strategic position. That is why the INSTC project has been successful which connects Iran and Russia in a single corridor.

But, the Caspian Sea basin is one of the largest energy resource fields in the world. For that reason, all the superpowers are trying to put up their hegemony to that region. All the big powers have been trying to control its policy towards this Caspian basin's adjacent states. Big powers like, the USA has tried to control the Caspian's energy resources and politics through Iran. Simultaneously, Russia has tried to control the Caspian basin's energy resources and Central Asia's policy according to its past influence. On the other hand, there is another powerful republican country like China has emerged with its dual strategic interests towards this Caspian Sea basin.³⁶ From the very beginning of its relations with China, China has adopted a resource-centric policy towards Central Asia. Therefore, the US intervention, the 'separatism, and extremism' policy of China towards Central Asia and the effort of Russia to dominate Caspian resources are indicative of this Great Game. Side by side, the widespread of Russian dominance could not be replaced by Chinese influence.³⁷ It is only for this reason that Russia always cooperate with China to get a hold on the Caspian region's power vacuum. For that reason, the Caspian Sea region has become a place of big powers rivalry where Russia, China, European

³⁵ The HYDROCARBONTECHNOLOGY reports analyze that nearly 80 per cent of the world's total proven natural gas reserves are located in ten countries. Russia tops the list, holding about a quarter of world's total gas reserves, followed by Iran and Qatar in the Middle East. This data is revealed from an article on "The World's Biggest Natural Gas Reserves". This data is also available at:

<https://www.hydrocarbons-technology.com/features/feature-the-worlds-biggest-natural-gas-reserves/#:~:text=Russia%20tops%20the%20list%2C%20holding,world's%20biggest%20proven%20gas%20reserves./>

(Accessed on 4th January 2021).

³⁶ China put its strategic interest in dual basis. Firstly, this republican state is trying to enlarge its boundary by applying aggressive method, and secondly, it tries to connect itself with the Caspian Sea basin's states with its pipeline and route connectivity, like, CNPC project and expansion of Silk Route towards this region.

³⁷ A long term gas supply deal was signed between Russia and China in 2014. On the other hand, another aspect which can be relevant to mention here has been that the XAR, a multi-ethnic region having not only the Uyghur but also fifty-five other ethnic groups- also posed a threat to China. Uyghur militancy in China is a form of Islamic extremism. Now, China thinks that an unstable Central Asia poses a cause for a stir in the Uyghur militancy. It will destabilize China. Under these circumstances China, in order to solve all these problems neutrally, China was in favor of bringing Shanghai Corporation Organization states under one umbrella.

countries, and the USA has tried to put their hegemony for their own interest; vis-à-vis, the adjacent states in the Caspian Sea basin like, Azerbaijan, Iran, Turkmenistan, Kazakhstan, and Russia, always make a water boundary dispute for their onshore drilling.

Chinese Intervention towards Central Asia: China has developed close relations with Inter-State Intelligence (ISI) of Pakistan and through the ISI has made indirect contact with the Taliban. This indirect approach to get in touch with the Taliban provides China a security guarantee of its investments in Afghanistan and it acts as a tool to prevent Taliban to play mischief in Xinjiang. Central Asia has emerged as an area of the new great game politics. It reveals from the policy of the US towards Central Asia that the US never thinks that Central Asia is not the zone of influence of Russia but it remains behind the scene. The US has admitted that Russia has ambitions in Central Asia. Similarly, China has openly announced that Central Asia is a special paradigm of Russia's strategic and economic influence. Side by side, Russia has made engagement and tries to introduce its rule on energy security and economic interest. In this sphere, if, 'Central Asia is the backyard of Russia, the Chinese have started to redraw the fences in the backyard'.³⁸

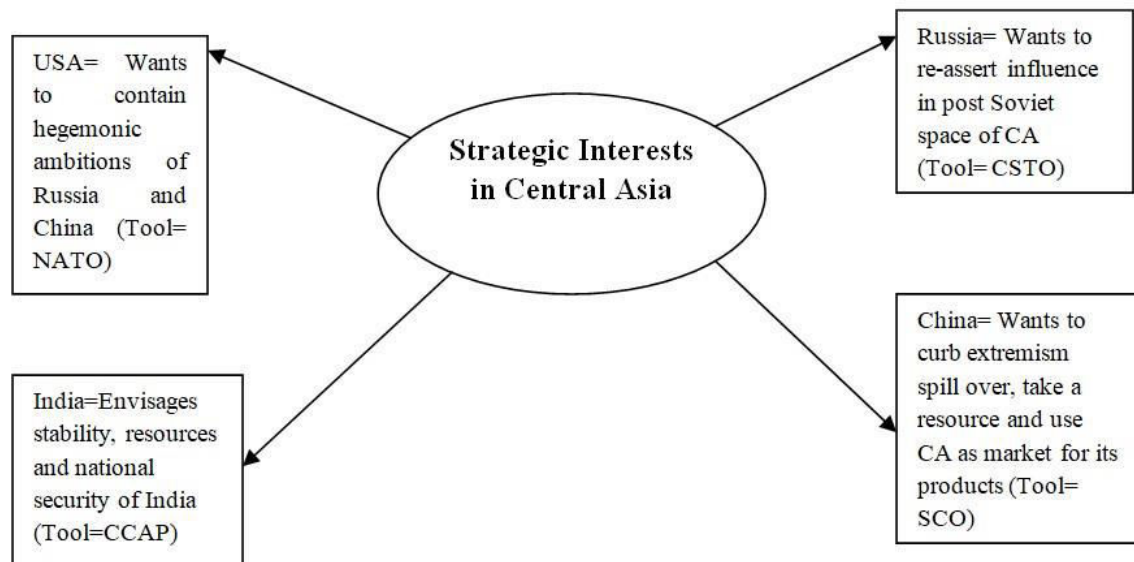
The supremacy of Russia and China in Central Asia created unrest in the area. But on the other hand, China and the US formed SCO in order to not interfere in the internal affairs of Central Asia on 15th June 2001.³⁹ The SCO's motto has been to determine the principle of credit attribution as a tool for a self-motion of the image of an organization. China conflated the agenda of Uyghur's Central African Republic (CAR) and with Al-Qaeda. This allowed China to cooperate with the USA to make the sovereign issue of Uyghur in Xinjiang, a frontline in the USA's Global War on Terror (GWOT). Central Asia supplies energy to China. It is for this reason that China realizes that the presence of the USA hinders the internal stability of China and other countries regarding energy export policy. For that reason, it is observed that China plays a crucial role in its balance of power. The republic country on the one hand maintains its balance of power for healthy relations between the USA and Russia by trade; and on the other, this state avoids the USA's strategy to dominate the Caspian Sea region's energy fields. Article-II of the SCO Charter asserted that "the US does not use unilateralism in Central Asia and none of the

³⁸ Neil Thompson., "China's Growing Presence in Russia's Backyard", *The Diplomat*, March 2015. This article also available at: <https://thediplomat.com/2015/03/chinas-growing-presence-in-russias-backyard/> (Accessed on 16th August 2018).

³⁹ Chien-peng Chung., "The Shanghai Co-operation Organization: China's Changing Influence in Central Asia", *JSTOR*, No. 180, December 2004, pp. 998-1001. The article is also available at: <https://www.jstor.org/stable/20192414/> (Accessed on 8th July 2019).

member states of SCO will accept any unilateral interference in internal issues of Central Asia by any external power”.⁴⁰ Hence, SCO expresses concern over growing Russia, China tangle over the export of energy. Some western experts including Ariel Cohen opined that “Moscow and Beijing were driven by considerations of opposing the USA as the sole superpowers for developing a strategic partnership in Central Asia region”.⁴¹

The strategic interests of Central Asia in the USA, Russia, India, and China are given below:



It is clear from the above chart that the Great Game of the USA, Russia, China, and India are obvious and continuing in this region.

If one takes these four countries as main players (the USA, a developed country, Russia and China, producing and exporting countries and India, no doubt a high market economy country), the other countries in Central and South Asia regions are to be called as ‘buffer state’. It cannot be denied that from the time immemorial India accepted the Silk Route, but in the Silk Route related meeting held in Beijing, China on 14th-15th May 2017, no Indian high officials participated in that meeting. In fact, China’s excessive influence in the form of Centralized

⁴⁰ Pavneet Singh., *International Relations: for Civil Service Examination*, (Chennai: McGraw Hill Education Private Limited, 2018) p. E-64.

⁴¹ Nirmala Joshi., *Central Asia: The Great Game Replayed an Indian Perspective*, (Delhi: New Century Publications, 2003), p. 187.

control over the region, the Indian government took this decision.⁴² Obviously, a Great Game politics is prevalent in Central Asia, South Asia, the USA, and Russia over the issue of Silk Road. It is essential in this context that without any discussion on oil diplomacy, it is very difficult to focus on India's strategy in energy interest, for instance:

- (i) High diplomacy in foreign policymaking which involves supportive and non-supportive factors and
- (ii) The International North-South Transport Corridor (landlocked Central Asian countries, energy export, and import may be possible by using access to the Arab Ocean which runs through Iran).

An analysis of big powers rivalry exposed that an agreement for US\$10billion was signed between Pakistan and Russia for off-shore oil and gas with the provision that at a later stage the undersea pipeline will go to other South Asian countries. It appears from this that Russia is preoccupied in Sri Lanka's tiny market. It is notable that the pipeline is to run through high seas and not through the Pakistani soil, with the provision to extend it to any South Asian nation. From this, it could be guessed that this strategy is undoubtedly good to involve Pakistan with the project. It aimed at supplying oil and gas to India (South Asia) as Russia should not remain pre-occupied with the tiny market of Pakistan or Sri Lanka and in this way, Pakistan could be bypassed effectively. But in this regard, the Pakistan Government would be unable to change the status quo of Pakistan's domestic affairs which is ridden with Jihadi movement.⁴³

⁴² This issue has rightly elaborated by Indian honorable Ambassador Ashok Sajjanhar at Indian Habitat Centre, New Delhi in 2018. This Central Asian expert opined that the subject of Silk Route is undoubtedly a vital issue on the way to develop cooperation with India and Central Asia. But this high official figure out that Silk Road initiative involves the countries like, Pakistan, Afghanistan, India, China, Uzbekistan, Kazakhstan and Turkmenistan. Asia. The project could not be implemented under the current state of relations between the states involved. India's prospect in this region so far as Silk Route is concerned is bleak. India did not participate in the meeting organized by the above countries in Beijing, China on 14th and 15th May 2017- this is the main reason that emphasized by Ambassador. Now, the 'Silk Road' has become 'One Belt Road' which is financed by 'Silk Road Bank'. This Silk Road is called as 'Silk Road Economic Belt', approx 3000 kilometer stretching, which is known as 'Maritime Silk Road'. In fact, the Silk Road, as visualized by the involve countries, would provide trade facility to the connection between the countries like China and Central Asia. But this corridor will never be used for supply of energy or energy related product from Central Asia to India. India remained aloof from this corridor for some obvious reason which stated by this personnel opined by this expert. But India is being an adjacent country to this corridor that is deprived of the benefit which can be accrued if India enters into this project. It seems to be India's agony that if it accepts this project indirectly, it is going to admit the sovereignty of Pakistan over Azad-Kashmir which India always denied. In fact, this corridor has gone through the territory of Azad-Kashmir. May be, this is a vital issue which India has taken into account for avoiding this controversial issue.

⁴³ On this crucial issue of Jihadi interference, in Pakistan, Mr. Sergius Stroeve, a retired diplomat and researcher stationed at USSR Embassy in India stated that 'not that much Jihadi but Intelligence-cum-Army community that ruled Pakistan for 70 years. They played with Jihadi's almost similar to America's play with those in uniform. The difference is that American's could dump military when they got close to Chinese but military cannot dump Jihadis'.

Again, the US, a great power, is always maintaining liaison with Pakistan for Jihadi's playing globally in order to destabilize the regions which are nearer to the territories of its adversaries. But it is a matter of fact that China is an emerging power in South Asia has been trying to contain the US in its game in the region. Russia, capable of producing new technologies and being powerful for its oil and gas reserves and other strategic minerals which are essential for the strategic growth of a country, is primarily a matter of concern for the US. Suppose, if one goes to the picture of a world map, it will be obvious that the regions so far became destabilized for extremism- a rim on the southern side of Russia, that is Syria, Iraq, (Iran is a gap in this rim), Afghanistan while Israel, Saudi Arabia, Pakistan are its allies, Ukraine and others on Russian periphery find support from the US for anti-Russian venture. The Islamic extremism, if persists, in Peoples Republic of China's (PRC's) western province of Xinjiang seems to be a movement for autonomy having no support either from Pakistan or the US. While the origin of all sorts of extremism globally, it may be ISIS, Al-Qaida (and others like Taliban), Jaish-e-Mohammad, Harkun-Ansar: all these terrorists' organizations are active in Afghanistan and Kashmir in India is a well-known fact. Pakistan, Saudi Arabia, and the US are indirectly helping all these organizations in their activities in the region. The Great Game of China and the US-centered on energy targeted towards Caspian Region are always changing. There are obvious reasons for this. The excessive aggressive policy of China and the US support towards China has made Russia and India in a corner.

The connectivity between India and Central Asia emerge from all these challenges discussed above. There were two aspects of paramount importance, like, supportive factors and non-supportive factors. In this chapter, connectivity theory is very most important for India's vision towards the Caspian Sea basin. But there are various challenges come up in this connectivity theory is concerned. These challenges and supportive factors has vividly analyzed below:

Source: This statement is highlighted from a social media site, Mr. Sergius Stroeve who expressed his interest about Central Asia's region and connectivity issues.
https://www.facebook.com/permalink.php?story_fbid=2322762991342043&id=100008250934276/ (Accessed on 16th April 2019).

India-Central Asia relations; applying the ‘Connectivity theory’, present Status and a New Paradigm:

An assessment of Indo-Central Asian connections reveals that old model, such as, ‘Great Game’ and ‘Silk Route’ do not usually represent contemporary realities. In the nineteenth century, the foreign policies of the United States and Russia were fully guided by ‘checkmate with each other’ tactics. This policy was not only applicable to Central Asia. This checkmate strategy greatly influenced the foreign policies in the Middle East. Presently, the issue of new connections has arisen which has influenced the expansion of India’s energy interests strategy. There are multiple routes that connect India with Central Asia, such as, International North-South Transport Corridor, and Swap Deal system.

The International North-South Transport Corridor project (INSTC): Russia annexed Mumbai with St. Petersburg via Tehran and Moscow under an agreement signed in September 2000 by India-Iran and Russia. This agreement was known as the International North-South Transport Corridor. India-Iran bilateral relations and the supportive and non-supportive factors behind this relationship were highlighted earlier. It has been seen here that Iran has so far been at the center of the India-Central Asia connectivity. India invested lots of capital for making a connection with Gujarat and Mumbai port with the Chahabar port, Iran. All (eleven countries and other countries) Central Asian countries joined this landlocked venture.⁴⁴ In this initiative, there are fourteen stakeholders who supported this move.⁴⁵ This project envisages a multi-modal transport network that connects ports in India’s west coast to Bandar Abbas in Iran by sea, then overland by road and rail networks to Bandar Anzali Caspian Seaport and then through Rasht and Astara in Azerbaijan borders to Kazakhstan and then towards Russia. A long road and rail stretch will run to St. Petersburg, the Russian port on the Baltic Sea through Volvo Grad and Moscow.⁴⁶ It is hoped that this initiative will reduce transit time and transportation costs. The 16,129 kilometers route through the Suez Canal and the Mediterranean Sea now used by the

⁴⁴ INSTC: Members countries are two types, for instance, Founder members where there are countries like India, Iran and Russia again, on the other side, the other members include Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Ukraine, Belarus, Oman, Syria and Bulgaria as Observer.

Source: It is a joint venture of Federation of Freight Forwarders’ Association of India, under the Ministry of External Affairs, Ministry of Commerce and Industry, Ministry of External Affairs and Ministry of Finance and courtesy who prepare the report on ‘International North South Transport Corridor (INSTC)’, on 26th September 2018. Shankar Shinde, took the leadership in this venture.

⁴⁵ R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 131.

⁴⁶ Ibid.

connecting countries will be less and the distance in the North-South Corridor will be only 6,245 kilometers. Hence, the time is reduced and the transportation time is 15-20 days less and the transport cost will be about 30 per cent less.⁴⁷ This corridor is linking the three huge market countries like, Russia, Iran, and India. Not only this, India can easily access with the other energy producing states, namely, Kazakhstan, Azerbaijan and Turkmenistan through this corridor. Hence, this link between the countries concerned is presented below with a figure:

Figure-4.2: International North-South Transport Corridor



Source: <http://www.clearias.com/international-north-south-transport-corridor--instc/>

It is noteworthy that, the International North-South Transport Corridor can play a significant role for connecting India with Central Asia particularly the Caspian Sea region. In fact, after the failure of the IPI pipeline project, this INSTC project has become a central position for India to connect the Caspian Sea region. However, in most of time energy import is done through swap system which is a challenging, complicated and huge capital investment issue. The relations between India and Iran have been going on sometimes positively and at the same time negatively, that can be mentioned as a Lynchpin method. During 27th-29th June 2019, G-20 Summit in Osaka, the US President Donald Trump, addressing Indian Prime Minister Narendra Modi stated, “India-US ties have never been better than this” and pledged “very big”. This

⁴⁷ Ibid.

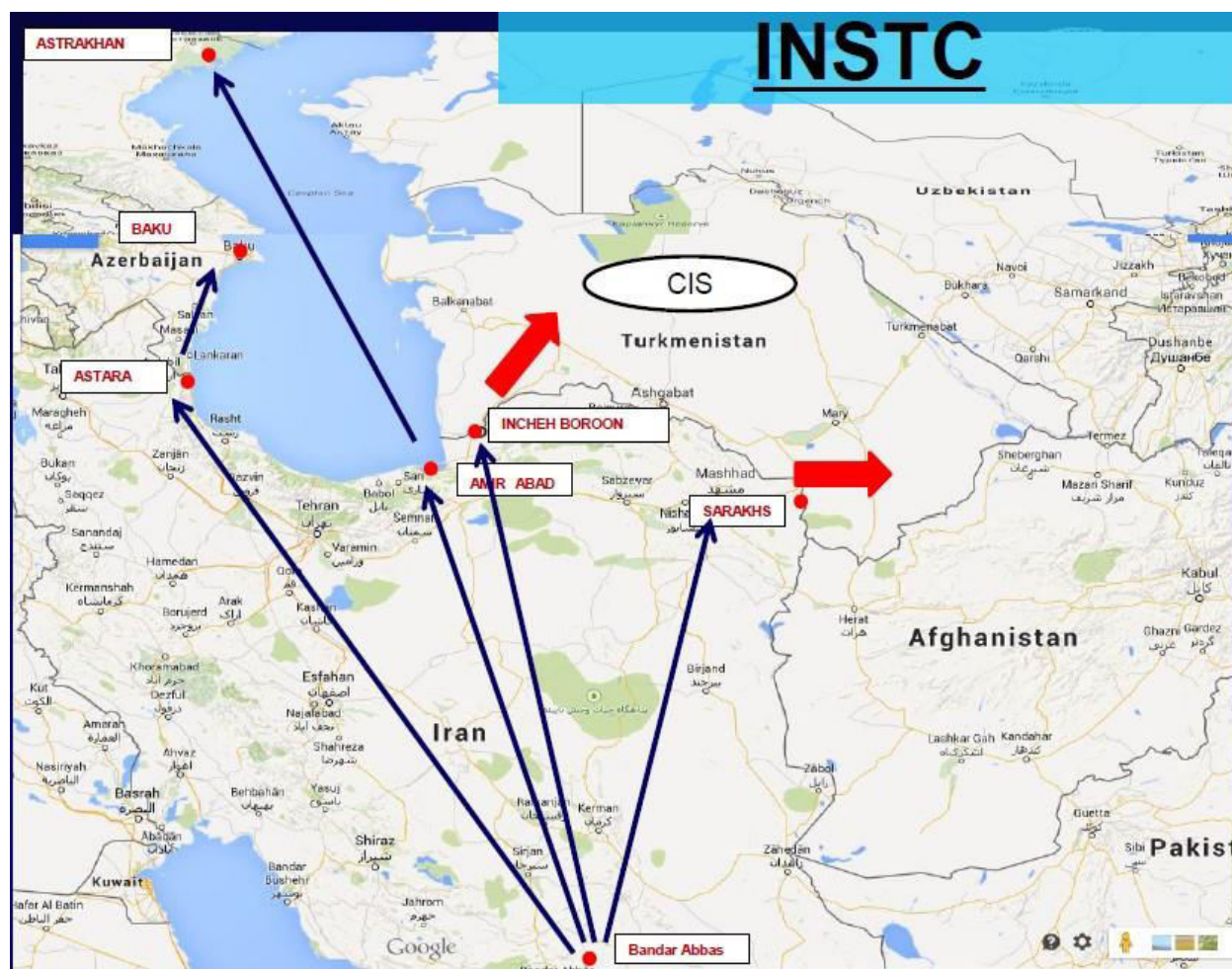
address amply demonstrated that US-India relations are going to be friendly and liberally. The two leaders in this G-20 Summit mentioned about various bilateral and multilateral-strategic cooperation like, economic interest, trade, energy, defense, security, counterterrorism, etc. Among these, the Indian Prime Minister mainly focused on Iran for energy cooperation, connectivity, and energy import, etc.⁴⁸ Indian Foreign Secretary, Vijay Gokhale emphasized that the Indian Prime Minister stressed upon the issue of Iran in the end of this session. He put forward the proposal to the US department for amicable settlement of the US-Iran relations in the interest of India's Lynchpin relations with Iran to be stable and firm. The US President appreciated India's proposal. This challenging face of Iran is also mentioned by the Indian Foreign Secretary. After the end of G-20 meeting, India had taken initiative to send two naval and one cargo ships to Iran's Chabahar port. This Indian initiative has appreciated by the USA. Not only this, India as the second largest market in the world, the former US President Trump supported India's strategic interest in this region, because, the energy producing countries are at keen interest to acquire Indian huge populated market.⁴⁹ The US stand on Iran enabled India to enter into Iran. In a 2018 report of ONGC Videsh Limited stated the USA's embargo on Iran as a challenge to India, but after the G-20 summit 2019, India-Iran relations became forward. This makes a good impact on the INSTC project. As India very much interests to secure its position in the Caspian Sea energy reserves basin, for that reason, the connectivity of India with Iran is vital for its energy import. But it is also relevant to mention here that other non-supportive factors like, excessive terrorism in Pakistan and Afghanistan, and Pakistan-Chinese political-territorial aggressiveness towards India which fall India in a vulnerable position in international relations. For that reason, India is trying to connect itself to Iran's port like, Bandar Abbas, and Chabahar through Arab Sea for avoiding Pakistan's territory. Via this corridor, India can enter into the Caspian Sea basin and also Central Asia for its huge energy access. The corridor is very most important for India's present atmosphere, because, no direct import connectivity of energy and pipelines have stretched yet. On the other hand, the Indian overseas companies like, OVL only purchase the blocks and holds the assets; they do not explore or import the crude oil and natural

⁴⁸ Indian Prime Minister opined that Iran exported as much as 11 per cent of its energy needs. For this, India had curtailed oil imports from the West Asian countries even though this hurt the Indian economy. This article is available at: <https://www.pib.gov.in/PMContents/PMVisitRelease.aspx?VID=2419/> (Accessed on 4th January 2021).

⁴⁹ An article on 'India-US ties have never been better: Trump to Modi' 29th June 2019, *Economic Time Bureau*, written by Dipanjan Roy Chaudhury, available at: <http://economictimes.indiatimes.com/news/politics-and-nation/india-us-ties-have-never-been-better-trump-to-modi/articleshow/69997040.cms/> (Accessed on 20th September 2019).

gas from abroad. As Indian Rupees level is very low than global money level, like, EURO or Dollar, then India faces a lots of challenges to materialize its business successively. For easy to understand, a figure has shown the route of INSTC project below:

Figure-4.3: Route of INSTC

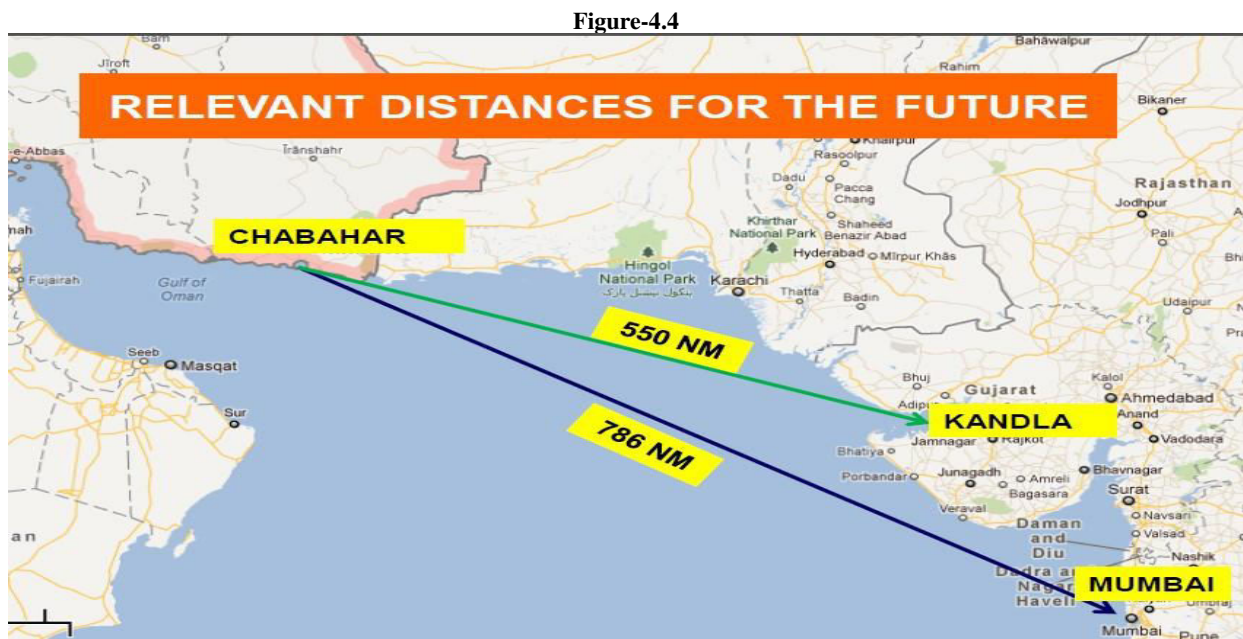


Source: It is a joint venture of Federation of Freight Forwarders' Association of India, under the Ministry of External Affairs, Ministry of Commerce and Industry, Ministry of External Affairs and Ministry of Finance and courtesy who prepare the report on 'International North-South Transport Corridor (INSTC)', on 26th September 2018. Shankar Shinde took the leadership in this venture.

It would open Iran's Bandar Abbas and Chabahar port through which three entry gates for import of energy through Iran would be possible. An analysis of this aspect of energy import is given below:

- (i) Inches Boroon and Sarakhs: these two regions are directly connected with Kazakhstan-Turkmenistan-Iran railway track through which the road to get access to Turkmenistan and Uzbekistan was possible for India.⁵⁰
- (ii) The second route for import of energy in the Caspian Sea region is situated on the western part of the Caspian Sea which connected Astara of Iran and Baku of Azerbaijan.
- (iii) The third stage of the INSTC connects the Chabahar port, Iran stressing to Amir Abad port. This is a sea route which runs through the Caspian Sea and connected Asrakhan, Russia. It is notable that Asrakhan port of Russia is interconnected with four states (Azerbaijan, Turkmenistan, Iran, and Kazakhstan) of the Caspian Sea

⁵⁰ The Honorable Indian Ambassador Mr. Ashok Sajjanhar expressed his opinion about this subject that India has good relations with these countries. According to this high official, Turkmenistan and India has no direct road connectivity. Although, cartography shows that India and Turkmenistan holds the one land bed, but there are lots of geographical barriers between them. It compels India to import oil, gas, and coal using oceanic transport (ship) through Iran's Chabahar port and then reaching Gujarat, India. Since the construction of railway line is completed, oil and coal can be imported from the Caspian Sea region by tanker and stored at Iran's southern port and from there it may be comes to India by cargo. On the basis of this above statement, a figure (map) is given below which will show the distance between Chabahar port of Iran and Kandla, Gujarat and Mumbai port of India to understand properly:



Source: It is a joint venture of Federation of Freight Forwarders' Association of India, under the Ministry of External Affairs, Ministry of Commerce and Industry, Ministry of External Affairs and Ministry of Finance and courtesy who prepare the report on 'International North South Transport Corridor (INSTC)', on 26th September 2018. Shankar Shinde, took the leadership in this venture.

region.⁵¹ This port (Asrakhan) connected Moscow through it stretches up to St. Petersburg which connected standard route of INSTC.

But there are lots of hindrances behind this project. As India needs to cross the country's land border, so there largely a challenge of fragmentation or quality of processes and services. These non-supportive points are mentioned below⁵²:

- (i) Multiple clearances and control and not only at the border: the same procedure can be repeated up to seven times on certain corridors.
- (ii) No continuity across and even within borders;
- (iii) Typically much time is spent to initiate transit operations;
- (iv) Fragmented market structure of core services (truckers and brokers) and little incentive for quality services: monopolies, entry barriers, regulated freight operations;
- (v) Infrastructure quality no longer the major cause of unreliability.

It is notable that most of the part of this project is depended on the railway track and border crossing is very few. As a result, the transit bare is minimum but to overcome the above mentioned non-supportive factors or challenges (for the cost reduction) there must be three key policies in this study.⁵³ These are given below:

- (i) **Transit systems and processes:** ensure effective implementation mechanisms of transit agreement, and reduce multiple clearances, differentiated treatment of operators
- (ii) **Logistics Services market:** Align incentives for efficient transport and transit operations, phase out anti-competitive practices such as cartels and queuing system wherever possible.
- (iii) **Corridor Management:** cross-border cooperative institutions, public-private dialogue, monitor performance.

⁵¹ It is a joint venture of Federation of Freight Forwarders' Association of India, under the Ministry of External Affairs, Ministry of Commerce and Industry, Ministry of External Affairs and Ministry of Finance and courtesy who prepare the report on 'International North South Transport Corridor (INSTC)', on 26th September 2018. Shankar Shinde, took the leadership in this venture.

⁵² Alina Mustra., "Development of Trade and Transit Corridors: The Role of Private and Public Sectors", *World Bank*, p. 9. This report is also available at: <https://www.unescap.org/sites/default/files/tfforum12-s2-mustra.pdf/> (Accessed on 22nd September 2019).

⁵³ Ibid., p. 10.

The International North-South Transport Corridor showed how the new project has been able to import energy with much less cost and secure energy to India. The railway connectivity from Bandar Abbas port to Caspian Sea region is still not in operation. If multilateral relations would be based on a solid foundation, this project would not definitely face any hindrance to get it a concrete shape for India. Not only had that, once upon a time, but this corridor also connected Russia-Kazakhstan-Turkmenistan-Iran-Oman-Azerbaijan with India. On the other hand, it will connect India to CAS, as Chabahar port of Iran is the main gateway of the nearest the Arabic Sea.⁵⁴ Mr. T.S. Trimurti, the secretary of Indian Economic Relations, Ministry of External Affairs, said that ‘India has already provided a draft of the framework for implementation of Chabahar Agreement and will send it to Iran and Afghanistan through diplomatic channel’.⁵⁵

SWAP DEAL system: Besides, the INSTC project, during the last five years ‘swap deal’ has become the enormous issue so far as economic and trade connectivity. The ‘swap deal’ means ‘exchange’, that is to say, if a country is willing to import oil from another country, the concerned country is far away from the buyer country; then the buyer country can import oil from the remotest country with the help of adjacent country; because, pipeline connectivity for import of oil is maintained between the remotest country and the adjacent country; the buyer country is supposed to import oil from the remotest country (since the same company is engaged in exploration of oil in both the buyer country and the remotest country) through the adjacent country since the adjacent country has the pipeline connectivity with the remotest country. The price of oil is to be sent to the adjacent country. This is called a swap deal. In fact, in the international oil politics swap deal means an agreement. This agreement is made between public and private companies which can be analyzed below.

In fact, India’s three companies, for instance, ONGC Videsh Limited, GAIL, and Engineers India Limited are engaged in import of oil through the swap process. To get understanding what ‘swap deal’ process means, Mr. Narendra Kumar Verma, the ONGC Videsh’s managing director

⁵⁴ India, Iran, Afghanistan, Turkmenistan, Kazakhstan, etc., countries assembled in the Tehran meeting after fulfilling the importance of national interest of Iran, which is called the implementation of Chabahar Agreement. Dipanjan Roy Chaudhury., “India to open new ports to connect Iran’s Chabahar”, *The Economic Times (Politics)*, 21st December 2019. This article available at: https://economictimes.indiatimes.com/news/politics-and-nation/india-to-open-new-ports-to-connect-irans-chabahar/articleshow/72910555.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst/ (Accessed on 22nd September 2019).

⁵⁵ Dipanjan Roy Chaudhury., “India explores corridor to Kazakhstan, Eastern Russia via Iran”, *The Economic Times*, 23rd October 2018. This article is available at: <http://www.ecoti.in/fMLHjb/> (Accessed on 22nd September 2019).

made a statement based on import centric stated citing the place (Gazprom, from where the first Indian swap deal process begins) in December 2016. This statement relates to the supply of natural gas through a complex swap involving Russia, China, and Myanmar. The statement runs thus: ‘Myanmar is sending gas to China through an existing pipeline. If Russia can supply equivalent gas to China, then we can reverse the flow of gas from Myanmar to China and bring that gas to India’. Mr. Verma mentioned this statement in a conference ‘India Petrotech Energy Conference’ held in 2016 at New Delhi. Expert further stated, *“for that, we need a pipeline from Myanmar to India”. According to him, this was the best way of getting Russia to help India with its gas needs, but would need the cooperation of China and Myanmar”*.⁵⁶

According to the late Professor Hari Vasudevan, an expert of Central Asian study and energy security field, whom I conducted an interview on 5th April 2018, opined, *“the import of energy by India from the Caspian Sea was not at all successful, it could not be admitted because India with the help of SHELL company’s swap dealing process imported energy from the Caspian Sea via Dubai”*.

An email conversation between the author and Professor Nirmala Joshi, who is one of the renowned academicians on Central Asian studies, on 6th July 2019. It reveals that *“India was buying Kazakh oil but there was no way of printing it to India because as India had no land boundary with it. For that reason, India needs an arrangement with Iran. Kazakhstan would provide oil to Iran and in return, Iran would give India the equivalent of oil given to it by Kazakhstan. It was, however, Kazakh oil for India. This was the swap deal, swapping through the third country.”*

Similarly, Iran was interested in exporting energy through swap dealing process. A leading newspaper, ‘Tehran Times’ brought out news on 18th August 2017 that ‘Iran has the capacity to swap 500,000 barrels per day (BPD) of oil with the Caspian Sea littoral states’. But it is the matter of fact that this swap deal process will not function in the coming seven years. In an analysis of Iranian Oil Company, this closure of the supply of oil has been mentioned. Under the swap deal process, Iran usually accepts oil from other Caspian Sea littoral states and it delivers the same quantum of and quality of crude oil to its southern oil terminals in the Persian Gulf

⁵⁶ Economic Times (Energyworld.com) brought out in an article, namely, ‘ONGC exploring swap deals to import gas from Myanmar’, 7th December 2016. Available at: <http://energy.economictimes.indiatimes.com/news/oil-and-gas/ongc-exploring-swap-deals-import-gas-from-myanmar/55850427/> (Accessed on 22nd September 2019).

region for meeting the demand to international customers of the Caspian oil suppliers. It is for this reason that several oil tankers have been off-loaded at Neka port on Iran's shore of the Caspian Sea. The swap consignments will gradually increase in volume. The average daily swap was to the extent of 90,000 BPD in 2009. Iran targeted to raise this supply to 300,000 BPD by 2015. Iran decided to impose the price of oil to be supplied to its partners including India with a transit fee which was to the extent of 880 million dollars between 1997 and 2009. It is relevant to mention here that Iran's primary swap partners are: Kazakhstan, Turkmenistan, and Azerbaijan. Iran's semi-official Tasnim News agency reported that UAE's (United Arab Emirates) Dragon Oil Company- wholly-owned international upstream subsidiary of Dubai state-owned Emirates National Oil Company which produces oil from concessions in Turkmenistan's sector of the Caspian Sea has recently shipped 6000 MT of Turkmen oil to Meka aboard a Russian flagged oil tanker. In this way, ONGC imported oil from Dubai and supplied it to India. That is to say, the Caspian Sea region has been importing oil to India. Iran has been expanding the infrastructural facility of the port with the purpose of surpassing the volume of Caspian oil trade previously handled. Now, Iran is targeting swap contacts of a few hundred thousand barrels of oil each year.⁵⁷ But the pertinent point here that the swap process could be successful only when the quality and quantity of oil will remain the same. Now, a crucial question arises whether the India could be able to import oil by adopting a swap process? Whether this process will be costly to the Indian Government?

To specify these research questions, this author had tried to analyze this swap system by conducting interviews and basis of secondary data. This swap statement has emphasized by Arnab Dasgupta, Assistant Professor, Department of Political Science, Chandannagar College, West Bengal published in his article, 'Emerging Strategic Equations in West Asia: Impact on India's Energy Security'. On the other hand, the one of the most renowned Central Asian expert late Professor Hari Vasudevan, whom this author took an interview on February 2018 on the 'swap deal' system, agreed to the statement of Professor Dasgupta. Swap system is a communicative-connectivity method. This swap system is an expensive process that is obvious. According to this matter, the writer took another interview to the honorable Indian Ambassador Ashok Sajjanhar, who is the President of the Institute of Global Studies on April 2018. The

⁵⁷ This data is available at: <http://www.tehrantimes.com/news/415944/Iran-restarts-oil-swaps-with-Caspian-states-after-7-year-hiatus/> (Accessed on 22nd September 2019).

expert admitted the opinion of Professor Dasgupta. But this system needs changes which relate to the functioning of the deal. According to Professor Dasgupta before taking up the swap system, the urgent reforms are needed in the domestic gas sectors. But on the other hand, honorable Ambassador stretched that despite the system involves a high price; the Government of India may incur the cost of high price to ensure energy import connectivity significant.

Summing up:

The bilateral relations between any countries of Central Asia with India emerges the connectivity issue which has been taken up in this study as a case study. In this context, India's energy security strategy in the Caspian Sea basin is based on two important issues. For instance, India's bilateral relations with the Caspian Sea region's states' and Central Asian states', thereafter, to widen the area of connectivity in Central Asia with the help of the International organization is very most vital issues and prospects for this development. This is the point that has been discussed in this chapter. At the outset, the issue, how the geopolitically Central Asia and Indian could be connected with each other. In the mid of the chapter, the focus has been given on trade relations between Central Asia and India and India-Iran relations. At the end of this chapter, attempts have been made to identify the efforts those India could undertake to directly connect with Central Asian states. The purpose has been to determine India's energy security strategy: how to connect with Central Asia directly. Here the pertinent point is the connectivity route between India and Afghanistan by road to Central Asian states; it is possible, but the problem remains. It relates to the issue of Azad-Kashmir through which the Indian cargo is being obstructed by the Government when it enters into its territory of Azad-Kashmir. Here, it could be mention that some sort of railway track links like Jodhpur and Karachi via Munabao (India) and Khokhrapan (Pakistan) on the border existed. On the other hand, some Memorandum of Understanding (MoU) between India and Russia, signed by both the countries for road, rail and sea connectivity. But it is a matter of agony that by no means Pakistan extended help to India in this regard. Again, India granted Most Favored Nation status to Pakistan since 1990 but Pakistan did not extend MFN status to India. This type of anti-Indian sentiment in Pakistan always obstructed the idea of connectivity issue of India with Central Asia. It is only for this reason that the IPI pipeline project still did not materialize. The most important reason for this was that Pakistan had been unable to offer a concrete guarantee for the security of the IPI pipeline project

in its own territory from the attack of non-state actors (Terrorist outfit). Therefore, it is obvious that at present India visualizes an alternative. That is to say, India has been willing to develop good relations with Iran through which INSTC and swap deal could be implemented. The state of this deal and its future prospect: all these issues require a framework for which India-Iran bilateral relations is very much important. This is the point that has been focused in this chapter. In fact, being deprived of Pakistan, Iran is the only source of India for oil import. Recently, G-20 summit was held at Osaka city of Japan where the US President and Indian Prime Minister met with each other. The impact of this meeting has brought about a good impact on the part of India so far as India-Iran energy relations are concerned. In this backdrop, the Iranian President has said that Iran will supply good quality and the quantity of oil as required by India and there will be no impact of an embargo of Trump in this regard.

The energy cooperation process between India and the Caspian Sea region states has not been a message for the future. This process continues to function after 2000. India's state-owned company, ONGC made collaboration with Mittal Industrial Group and formed OMEL. It made a serious effort to acquire energy assets in Kazakhstan. The formation of OMEL was meant to give more energy to India's global energy search. Mittal had earlier acquired Russian company, Luk Oil's assets in Kazakhstan. It is a powerful factor, that is to say, India's effort to deal with overseas energy procurement. The OMEL put a very high bid of US\$3.9 billion to acquire the Canadian owned Petrokazakhstan Company. In fact, this company operates in Kazakhstan. Afterward, at Satpaev Oil field bloc, OVL made a joint venture with Kazakh-state Company, Kazmunaigaz, amounted to the worth of US\$400 million. Despite this deal, it can be safely said that this venture was not successful so far as India's energy strategy was concerned. In fact, India was serious about its energy diplomacy in Central Asia. India's involvement in the energy sector of Central Asia started since then. During, President Karimov's visit to India on May 17th-18th, 2011, India and Uzbekistan signed a total of 34 agreements. All these agreements included an MoU between OVL and Uzbekneftgaz on cooperation in the hydrocarbon sector. Another MoU was meant for cooperation in oil and gas sectors between Uzbekneftgaz and India's private sector Essar Group. The Uzbek Government made a declaration that ONGC would undertake the exploration of in the Central part of Uzbekistan. Kazakhstan has been emerging as a major partner to meet India's energy security needs. It states sector company, Kazatomprom, has already signed an MoU with Nuclear Power Corporation of India Limited (NPCIL) to supply

Uranium following the inter-governmental agreement on cooperation for the peaceful uses of nuclear energy. Not only Kazakhstan, but Turkmenistan has also drawn one's attention as an important source for India's demand for energy. Indian companies have stakes in exploration blocks in offshore Turkmenistan in the Caspian Sea. OMEL holds 30 per cent stake in exploration bloc 11-12 in offshore Turkmenistan in the Caspian Sea. It covers an area of 5,636 kilometers². The bloc is located close to discovered and producing fields. The other partners in the project are Wintershall, a German Company, and Maersk Oil Danish Company.⁵⁸ The Prime Minister of India visited Turkmenistan in 2015. At this time, he made an agreement with Gurbanguly Berdimuhamedow, the President of Turkmenistan for building an office of OVL at Turkmenistan. His other projects in the agreement were the construction of a transport corridor and TAPI gas pipeline.⁵⁹

If one desires to undertake case study on Central Asia in relation to India's strategic position towards this Caspian Sea region states, the important factor are the bilateral relations between the two, connectivity issues, joint ventures, Public-Private cooperation's and game of big powers and the necessary support available from them. Since India is an energy deficit country and since its market is highly wide; for this reason, her friendship with Central Asia is very essential. Off course, there have been many challenges: INSTC, swap deal process, shareholder and pipeline connectivity- all these are required to be overcome to make success in this deal which is undoubtedly a primary concern to India.

In this regard, I would like to state that India may consider opening a Central Asia fund. This fund could take into account its experiences gained with the Africa Fund, although it covers a large number of countries. This could be possible if India in keeping with its stated objective of becoming a partner for the development of its relations with Central Asia. It would also create a space for India in getting the mass needed presence in those countries. What is the need of the hour has been developing infrastructure, both physical and social? Health and education would be the ideal sectors for the development of the partnership.

⁵⁸ R, Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s.), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 94.

⁵⁹ Pavneet Singh., *International Relations: for Civil Service Examination*, (Chennai: McGraw Hill Education Private Limited, 2018) p. E-79.

Now, the crucial question relates to taking a step for strengthening the relationship with Central Asian countries in the economic and commercial sectors. Since trade is hostage to a viable surface road; they could cross this bridge by moving in the direction of investments. In the early stages, Indian entrepreneurs had not adopted this route. It is high time that they should do this. At the Government level, it could give a push and enter into a framework for agreements which are now going on. There is now an increasing interest which India has been seen in Central Asian countries, in particular Turkmenistan followed by Kazakhstan and Uzbekistan. This has been the investment route for India. Therefore, the prime emphasis should be given on investments in the Caspian region's states' and Indian entrepreneurs should be given enthusiasm for investment in Central Asia. India should focus on bilateral relations in the context of developments taking place in the region.

Steps should be taken to bring about greater awareness about one another, as this could give a push to cooperation. There is a need to involve the media and also promote increased cultural activities and student exchanges. The presence of the Indian Diasporas is increasing. Steps need to be taken to involve them increasingly. Since both Diaspora in conjunction with other activities will help build India-Central Asia connectivity. Apart from that, there is a need to focus on greater academic exchanges, in particular, in identified areas for joint research, as this would not only help in bridging the information gap but also provide each other the knowhow to achieve objectives.

Energy Issues in Turkmenistan's Foreign Policy

In this chapter, various aspects of Turkmenistan, such as, geographical factors, geopolitical outlook, energy potential, energy production, production-related policies, year-based annual production and export policies, etc. are highlighted. Since in this chapter Turkmenistan's energy production, exploration and export policy is the primary concern is primary investigation, it has tried to highlight various aspects of the above issues based on the information obtained from the Oil and Natural Gas Commission, New Delhi, an Indian organization and a primary report prepared by Wood Mackenzie entitled 'A Verisk Analytics Business', "Turkmenistan Upstream Summary". Hence, data taken from all these sources have been utilized for study. Moreover, honorable Indian Ambassador Ashok Sajjanhar, who is represent himself the region from Latvia to Kazakhstan, and, the Ambassador of Turkmenistan, Mr. Parakhait Durdayev, Turkmenistan Embassy, New Delhi, India; the First Secretary Mr. Bayram Aganyyazov, Turkmenistan Embassy, India; and Mr. Dulal Halder, Strategist-Analyst officer, EC Cell, Oil and Natural Gas Commission Videsh Limited, New Delhi, India are interviewed by the author. The Turkmenistan's primary energies like, crude oil and natural gas and its export policy and also the connectivity methods from this country have been highlighted through various primary and secondary data. It focuses on issues related to Turkmenistan's foreign policy.

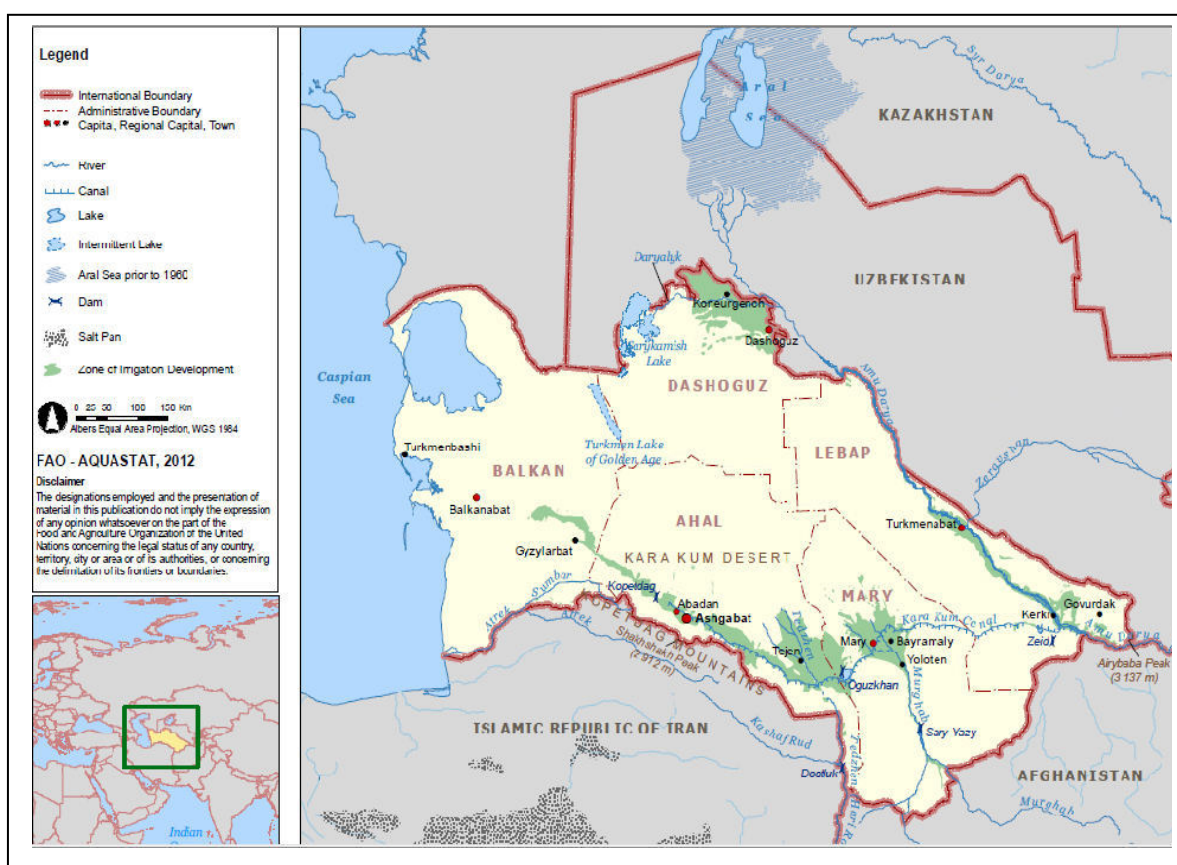
Turkmenistan is located on the southeastern shore of the Caspian Sea Basin. Thus, it is bounded on the west by the Caspian Sea. Turkmenistan was bordered by Kazakhstan to the northwest, Uzbekistan to the north and northeast, Afghanistan to the southeast, and the Islamic Republic of Iran to the south and southwest. In October 1991, Turkmenistan became independent from the Union of Soviet Socialist Republic (USSR). The country is 491200 kilometers² (km²). Its population was 5291317 as of July 2016 census.¹ It adopted its new constitution in May 1992. At the 50th session of the United Nations General Assembly, Turkmenistan was declared a neutral state and gained an independent, sovereign, neutral state. It was subject to international law. It declares itself to be a democratic secular state governed by the rule of law. For administrative purposes, the country is divided into five provinces (this is called 'velayat' in Turkmen language) and one independent city. Ashgabat is the capital of Turkmenistan. It retained a

¹ This data is available at:

<https://www.euroenergy.iea.org/countries/turkmenistan#:~:text=Turkmenistan%20is%20on%20the%20eastern,317%20as%20of%20July%202016/> (Accessed on 2nd June 2018).

Soviet-style centralized planned economy.² It is covered by more than 80 per cent of Kara Kum desert areas. In the southwest, along the border with the Islamic Republic of Iran lies the Kopetdag mountain chain where the Shakhshakh peak rises to approximately 2912 meters of above sea level. This highest point is the Airybaba peak, which is 3137 meters in the Kougitantau mountain range in the east, on the border with Uzbekistan. About 12 per cent of this country is covered by water and non-soil formations that are talus, rocks and precipices, etc. Below is a map of Turkmenistan, highlighting the country's position in the world.³

Figure-5.0: Map of Turkmenistan



Source: FAO Aquastat Reports, “Country Profile Turkmenistan, version 2012”, *Food and Agricultural Organization of the United Nations*, 2012, p. 5.

This country has great natural resources. It is in a difficult geographical location. However, the three sides of Turkmenistan, the north, east and west, have been completely landlocked.

² P. Devendra., *Economic Security Dimensions in Central Asia: Role of India*, (New Delhi: KW Publishers Pvt Ltd, 2011), p. 367.

³ FAO Aquastat Reports, “Country Profile Turkmenistan, version 2012”, *Food and Agricultural Organization of the United Nations*, 2012, p. 4.

However, the Caspian Sea is on the western border of this country. The lake is also geographically landlocked. This Central Asian country has no sea connection. As a result, it is true that the country needs to strengthen bilateral and multilateral relations with other countries in order to communicate with the outside world. The Amu Darya water flow that is taken in the interior of this country and it is taken to the farm and municipal users. The canal flows from the Amu Darya to the entire eastern part of the Turkmen Desert. That is why Turkmenistan is facing this problem for access to water for development in agriculture. It is known that Turkmenistan is one of the largest natural gas and oil rich countries in the world. For that reason, energy exploration is one of the largest industries in this country. Therefore, many people in this country make a living by entering these drilling industries. In the Soviet era, the oil and gas industry was maintained by central Soviet subsidies. The production of the country was limited to the production of cotton. It was built on the basis of huge irrigation subsidy given by the government to inefficient and environmentally damaged agriculture. So the country's economy largely depends on the gas industry. During the Soviet period, the state planning agency, which came from natural resources and other sectors of the economy, was run by the central administrative power under Gosplan. As a result, the Constitution did not control the revenue-collecting bodies of officials at the level of the Soviet republic. However, the situation changed after the collapse of the Soviet Union in 1991. Since then, Republican officials in Turkmenistan have controlled all revenues from their territory. In fact, Turkmenistan's agriculture was very familiar with local officials. The petroleum industry was an exception for Turkmen officials due to the emergence of natural gas as a source of foreign exchange earnings. Hence, earnings from gas gradually took a fundamental role in Turkmenistan's post independence politics.⁴

Turkmenistan was a largest gas producing country in Central Asia particularly on the Caspian Sea basin. However, it is a matter of fact that the country's gas production has declined for most of the 1990s. After 1998, the Turkmen government gradually began to release data on gas production, but kept most of it secret. The government of Turkmenistan called that it was a state secret. Turkmenistan is a Central Asian state, whose 54 per cent population lives in rural areas.⁵ In the Caspian Sea region of Turkmenistan, particularly in the Cheleken region where much of

⁴ I. Overlad, and Heidi KJaernet, Andrea Kendall (ed.s), *Caspian Energy Politics (Azerbaijan, Kazakhstan, and Turkmenistan)*, (USA & Canada: Routledge, 2010), pp. 78-80.

⁵ FAO Aquastat Reports, "Country Profile Turkmenistan, version 2012", *Food and Agricultural Organization of the United Nations*, 2012, p. 3.

the oil development is centered, many people are employed in the oil and gas sector. It is one of the largest gas exploration industries in the Caspian region. It is the fourth largest total offshore and onshore gas reserves in the world after Iran, Russia, and Qatar.⁶ The energy sector in Turkmenistan is almost fully subsidized. Its citizens received free electricity, heat, and gas up to a certain level of consumption. These subsidies were introduced after independence and have been guaranteed until 2030.⁷

Turkmenistan's economy is based largely on natural resource extraction. Although the hydrocarbon sector performs well, a report of the US Fund for Peace reveals that 42 per cent of the population of Turkmenistan lives below the poverty level.⁸ FAO AQUASTAT reports in 2012, which in 2010, showed that Turkmenistan's Gross Domestic Product (GDP) was US\$20001 million, of which the agricultural sector accounted for 12 per cent, in 2000, it accounted for 24 per cent. In 2011, the total economically active population in agriculture was an estimate 0.7 million (29 per cent of total active population), of which 53 per cent was women.⁹ Turkmenistan was one of the poorest republics and it has continued to fall behind its Central Asian neighbors in most areas of development. It was a significant contributor to natural resources to other Soviet Republics, including crude oil and natural gas. The other resources which it supplied to other countries were cotton, fruits, and vegetables. This created its economy mainly focusing on resource exploitation rather than development. Following the disintegration of the Soviet Union, Turkmenistan, like many republics, went through a period of economic hardship. It still continues to recover.

Turkmenistan, after disintegration and following the death of first President Niyazov on December 2006, Gurbanguly Berdimukhammetov, a dentist who was the Minister of Health and Deputy Prime Minister under President Niyazov, was appointed as acting President until he was elected in February 2007. He followed the legacy of Niyazov. Minor reforms were made in the

⁶ This statement is enlisted in an article on "Turkmenistan: country overview", published in a journal on *International Energy Agency For Eu4energy*, p. 1 also available at: <https://www.eu4energy.iea.org/countries/turkmenistan#:~:text=Turkmenistan%20is%20one%20of%20the,also%20has%20significant%20recoverable%20oil/> (Accessed on 3rd June 2018).

⁷ Bayram Aganyyazov, First Secretary of Turkmenistan Embassy in India, who supported the above statement. In fact, the Government of Turkmenistan provided subsidy to the people. Presently, it gave loan for education, cultivation and trade at the rate of 1% interest. Since, the energy sector is very vital for Turkmen economy, the Government of Turkmenistan extended subsidy to people to LNG, electricity free of cost or, at times, provided electricity at a very cheap cost.

⁸ FAO Aquastat Reports, "Country Profile Turkmenistan, version 2012", *Food and Agricultural Organization of the United Nations*, 2012, p. 6.

⁹ Ibid.

education system and relaxation of internet restrictions was implemented. It is a matter of fact that no sweeping reform was taken. President Berdymuhamedov instituted a new commission on censorship in October 2008 in order to ensure the ‘quality’ of artistic work, including film, painting, and photography, etc.

Turkmenistan has significant hydrocarbon reserves in both crude oil and natural gas sectors. Onshore and offshore fields have been or are being developed or improved and the main fields include Barsa Gelves, Burun, Cheleken, Gograndag, Kamyshldzha, Korturtepe, Kumdag, Kuydzhih, and Okaren deposits. It has two state-owned refineries: Seydi refinery in Chardzhou, Raion, and the Turkmenbashi refinery in Turkmenbashi on the Caspian coast. The Dragon Oil Company (UAE and UK) commissioned the New Processing Facility in Khazar, a refinery supposed to process its light/ swift crude oil output creating the first foreign-owned refinery in the country. It had a capacity of 50,000 barrels per day and the refinery was officially opened in June 2007.¹⁰

Turkmen’s Government Policies and Regulations:

The main feature of the government of Turkmenistan is that it has a central government, with almost all important decisions of the President regarding the oil and gas industry. For confidentiality, Turkmenistan's energy data, especially natural gas figures and statistics, have not been released to other agencies or countries since 2008. Therefore, the original archives were kept secure. Later on, the Asian Development Bank came forward and arranged an agency for gas assessment, the US firm D. E. Goyler and Mac Naughton. It conducts an audit that was completed in 2005. But, according to the government’s order, the audit report has made private. However, the government’s sources of Turkmenistan referred to the Dovletabad Gas Field which estimated the production to the extent of 4.5 trillion cubic meters of natural gas and the total reserves exceeded 6 trillion cubic meters. The miserable part of the report was that since the audit report was not made public, many observers rejected this ambiguous figure saying that it was a wishful thinking of Turkmenistan. The Gaffney, Cline and Associates; an internationally well-known company identified Turkmenistan’s newly discovered largest Yolotan-Osman gas field or block, as it is the largest in the world. It contains 4 to 14 trillion cubic meters of natural

¹⁰ I. Overlad, and Heidi KJaernet, Andrea Kendall (ed.s.), *Caspian Energy Politics (Azerbaijan, Kazakhstan, and Turkmenistan)*, (USA & Canada: Routledge, 2010), p. 80.

gas. The second and largest company monitoring report, published in October 2008, surprised the world by clearly showing the government's acceptance of this huge production. The present President Gurbanguly has assumed power in 2006 after the past President Niyazov's death. He set the country's production target for crude oil at 10.9 million tones and the natural gas target at 75 billion cubic meters. The president targeted the production to meet Turkmenistan's demand for gas from China, the European Union, Iran, Pakistan, and federal Russia. At present, it seems that the country's gas industry is limited by pipeline access and physical transport capacity to foreign markets. But there are much more regional challenges to connect Turkmenistan to the world market. If the transportation challenges and legal status of the Caspian Sea Basin are partially resolved, the revenue for the country's rulers could increase significantly. Legal changes are often made through presidential decrees, which are later incorporated into the law. Before analyze the petroleum law, the background and present status of Turkmenistan President's policy on exploration, experiment, and export policy on crude oil and natural gas status are highlighted:

Late Saparmurat Niyazov; Turkmenistan's First President and adopted Streamlined Energy Sector and Foreign Policy:

Late and first President Saparmurat Niyazov introduced a local bureaucrat department, who were loyal and neglected to the Soviet Union. The president then began to change his ideological outlook. Therefore, he became a Turkmen nationalist. He consolidated his control over the government and civil society and the economy field. The late president was a master strategist-analyst, who changed the structural remnants of the former Soviet Union. His aim was to create a political system based on coercion, the patronage of fear. This time, Turkmenistan had begun to compete with neighbours, such as, Azerbaijan and Kazakhstan. For this time, this system had attracted the media. At the time, the government's decision was entirely confined to the President's will. There was no independent, legal or judicial authority in the administrative system. The government does not have any credit for covering up the debates and political participation of the people. Late President Niyazov wanted to build Turkmenistan as a democracy through a market-based economy, but now Turkmenistan has become a state of dictatorship. Late Niyazov was later elected as the President of Turkmenistan for life. The President assured the citizens that the country's natural gas and crude oil reserves would soon

produce an excellent resource. The government directed the media to paint a picture of progress towards a glorious future. The fact is that the past President provided subsidized housing and free electricity, water, gas, sanitation, hot and hot water, etc. Afterward, Turkmenistan gradually took steps to reform its economy. This economy reform programme was called ‘Ten Years of Stability’ had taken. The aim was to guarantee free utility services to the people. In this time, the country introduced its own currency, ‘Manat’; one of the main targets of the economic policy was a diversification of production. The main goal is to achieve self-sufficiency in food production. In late 1995, a new wave of reform began. The goal was to stabilize the microeconomic stabilization. But the package of reforms, were not in consistent with the need for a gradualist approach to reforms. In the years after that, the European Bank for Reconstruction and Development (EBRD) became increasingly critical, specifically for the lack of political reform in the country. Turkmen natural gas was the main source of income for its economic development. It had estimated to be about 13 trillion cubic meters.¹¹ However, these large resource exports were limited by the value of post-Soviet markets. Turkmenistan was forced to use existing pipelines and was mainly limited to exporting to insolvent buyers. Thus, these regions remain for export. It is bordered by Ukraine, Georgia, Azerbaijan, Uzbekistan and Tajikistan to Turkmenistan. It estimated that around 10 per cent of GDP fell in the repayment schedule. The country urgently needed the construction of new pipelines to connect it to non-CIS markets. It also hoped to advantage from the development of its considerable crude oil reserves. Crude oil production in Turkmenistan had increased in 1975 and but then began to slow down. The exploration of crude oil offshore and onshore fields’ concessions were given to foreign companies. The Cheleken offshore project, operated in Larmag Energy of the Netherlands and a Joint Venture with Argentine Company, Bidas to develop Kemir and Ak-Patlauk Oil Fields.

The Turkmenbashi oil refinery on the southern Caspian Sea basin was awarded to foreign consortia. The presence of major international oil companies played a significant role in this upbeat assessment. The foreign companies which took interest in the investment policy towards this country’s energy blocks, were the policy of images late President Niyazov’s ‘open door’ policy.¹² The most published data reveals that the reserves in the region are sufficient in

¹¹ Reuters Agency., “FACTBOX- Turkmenistan’s Natural Gas Projects”, *Reuters*, 7th February 2008. This data is available at: <https://www.reuters.com/article/turkmenistan-pipelines-idINL0716126720080207/> (13th July 2018).

¹² I. Overlad, and Heidi KJaernet, Andrea Kendall (ed.s.), *Caspian Energy Politics (Azerbaijan, Kazakhstan, and Turkmenistan)*, (USA & Canada: Routledge, 2010), p. 183.

quantum. But still there are many areas which remain still unexplored. It is relevant to point out that the reserves available in Turkmenistan are nearer to major consumer markets like Europe, China and South Asia particularly the huge market like, India. In fact, Central Asian gas reserves has come a very important attentions for multinational for their business interests which are no doubt lucrative. Hence, these powers tried to maximize their influence in gas transportation through their companies.¹³ The table showed the Turkmenistan's gas exploration companies and their blocks:

Table-5.0: Distribution of Turkmenistan Gas Reserves

Companies	Concessions
Petronas (Malaysia)	Block-1, Diyarbekir
Dragon Oil (UAE, UK)	Cheleken, Jeitun, Dugalybek
Rosneft, Itera, Zarabehnft (Russia)	Exploration block in the Caspian
CPNC (China) Bagtiyarlyk	South Yolotan
Canadian Buried Hill	Caspian Block-3
Wintershall, Maersk, ONGC MITAL Limited	Caspian Block-11 & 12
Austrian Mitro-Turkmenneft	Khazar Concession
Burren Energy	Nebigdag Concession
RWE	Caspian Block-23

Source: P. Devendra., *Economic Security Dimensions in Central Asia: Role of India*, (New Delhi: KW Publishers Pvt Ltd, 2011), p. 368.

It appears that the gas reserves possessed by foreign companies are the Chinese state control oil and gas giant CNPC. It has a large stake in the South-Yolotan field (1.7 TCM) in order to ensure supplies to the Turkmen-Chinese gas pipeline. It is expected that it will transport 30 BCM per annum. In the era of this 'open door' policy, a number of steps were taken with the help of technical assistance to develop Turkmenistan's resources, namely, the EU-Tacis Programme taken in 1992. The Turkmen Government sanctioned 10 million Manat to various projects like, the development of a new Petroleum Law which had taken in 1996, and the bank restructuring and tax reform by 1997. Further, tranche of 10 million Manat currencies was announced for 1998-99. Again, various programmes were taken up for strengthening public services by the United Nations Agencies namely, UND, WHO, and UNICEF, etc. Turkmenistan got bilateral

¹³ Ibid., pp. 80-82.

assistance from Japan, Turkey, Israel, Netherlands, the UK and the USA. In this country, the late President Niyazov undertook a market based economy as a part of this programme. Therefore, during this time privatization had taken place for economic development and cooperation. But the programme had begun slowly at the beginning time and therefore, it had come to an end. As a reform measure had needed to the small-scale trade in and in the service sectors. But in regard to handing over the companies, the government was in a fix and for this the handing process delayed and later on blocked. Hence, the privatizations of medium and large-scale enterprises were in doldrums. The government did not enact serious post-communist structural changes by lessening the dominance of the state as well as liberalization and monetization of the economy.

Present President Berdymukamedov Gurbanguly and his Reforms:

Former President Niyazov died on 21st December 2006 in Ashgabat. His death marked the beginning of a new period of change in Turkmenistan. The change was noticeable because it brought a new political-economic dimension to the country. The geo-political location of the Silk Road intersected with the country's mineral resources and the dynamic forces of change. Turkmenistan's geopolitical interests were as keen for a resource-deficient country as China and India, as well as for an economically revived Russia, as well as for a rich and Middle East. For that reason, Turkmenistan played an important role in the formation of new forces throughout the region. At the threshold of this change was the potential for its role, especially in the region in terms of the size of the country's population and its historical impact. For this reason, foreign diplomatic and trade interests have been cautiously noticed in the early stages of the Niyazov government post. The election of the Acting President was held on 11th February 2007 by popular vote. Candidates were drawn from the country's main political party, the Democratic Party. Before the election, incumbent President Gurbanguly Berdymukhamedov promised that Turkmenistan would adhere to the principle of "positive neutrality". It is based on the principles of good neighborliness, mutual respect, equal rights and mutually beneficial cooperation with all countries of the world. It promises that international obligations and commitments will be honored. Holding 'positive neutrality, on one hand Turkmenistan also carries 'open door policy' on the other hand. This shows the country's interest in building relationship with others without bothering its internal affairs. Through the 'open door policy', Turkmenistan encourages foreign trade and investments. This helped the country in making commercial relationship with many countries, mainly

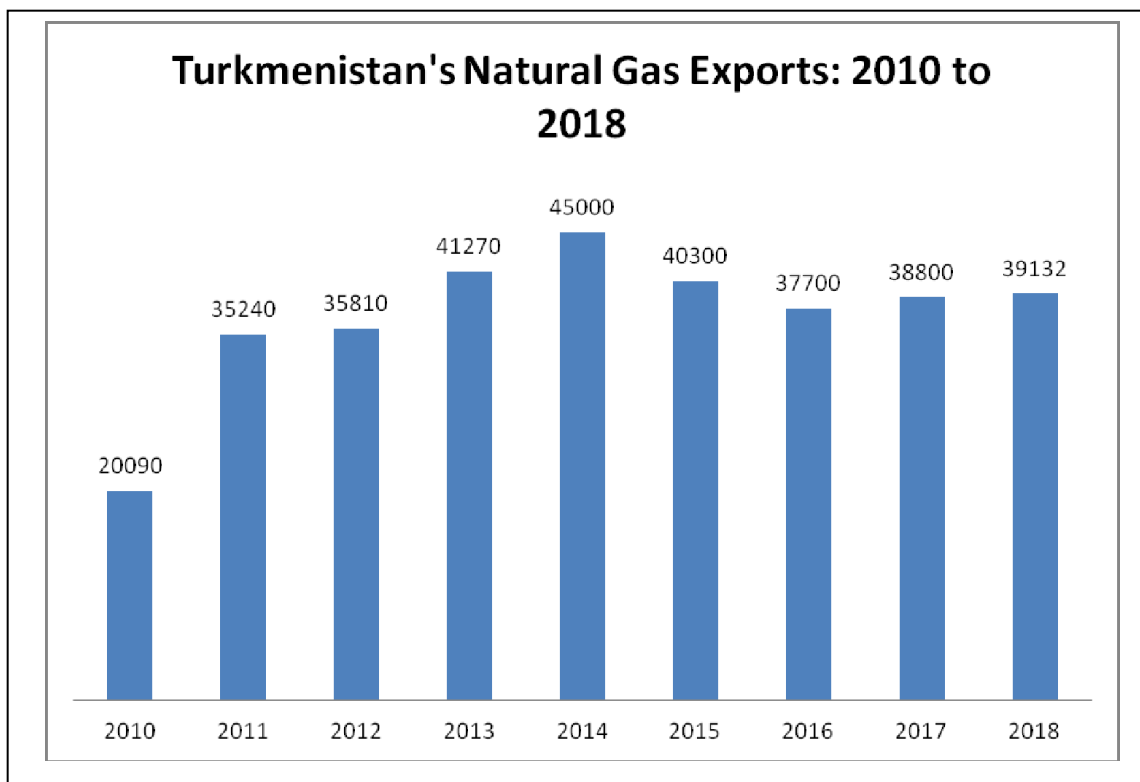
Russia, Iran, Afghanistan, US, Turkey and India. The foreign relations are mainly based on its energy sector. One such example is the TAPI pipeline project to transport natural gas from Turkmenistan to Afghanistan, Pakistan and India. Although the 'positive neutrality' of Turkmenistan was successful in maintaining peace and stability in the region, it has been criticised that President Niyazov used the policy to isolate the country from any kind of external influences and to strengthen his image as 'Turkmenbashi'. The President made an announcement in this decision that Turkmenistan would continue its foreign policy of neutrality. This would put an end to his self-imposed isolation, and international oil companies warmly welcomed him. With this hope, they were determined to focus on the development of policy especially energy production policy and export policy. They thought the improved administration would help Turkmenistan to divert its natural gas revenues to the petroleum sector and address the volatility of petroleum revenues. The International Monetary Fund (IMF), the World Bank and the EBRD came forward to help Turkmenistan take greater responsibility in its monetary and fiscal policies.¹⁴ Turkmenistan has made rapid progress in resource exploration since President Gurbanguly Berdymukhamedov took office, with the newly adopted vibrant energy export policy and the consolidation of the foreign energy sector to revive the economy making the country a world leader.¹⁵ He implemented a number of reforms and changed Niazov's policies. However, the effects of the separatist policy implemented by Niyazov are still felt in present-day Turkmenistan. It was during the Gurbanguly's period that the country began to focus on making more trade relations with other parts of the world, especially to diversify the country's energy exports. Initially, Russia had a monopoly on Turkmenistan's gas exports. It later collapsed in a pipeline explosion in 2009, and Turkmenistan began looking for other trading partners that attracted several countries of east and west. He suppressed most of the ideologies held by the Turkmenbashi and promoted a reform process in other areas of the country as well as in the political system. During his time there were major changes in Turkmenistan's foreign policy, where he focused on enforcing the country's relations with its entire neighbours and key partners. In its relations with Russia, Turkmenistan has also turned its interest to China, India, the United States, and European countries. He referred to this period as the "Great Renaissance". The chart shows

¹⁴ Ibid., pp. 83-87.

¹⁵ In the analysis given above, this author have rightly pointed out that two Presidents in Turkmenistan-Niyazov and Gurbanguly-made several amendments in the legislative council for making petroleum laws in order to give petroleum export to the world more easily accessible as well as for resources generation. Moreover, these laws were congenial for utilizing pipeline project for exporting energy through pipelines.

Turkmenistan's natural gas exports from 2010 to 2018. In 2018, the export was 39,132.000 Cub m mn, which is more than the export reported in 2017 i.e. 38,800.000 Cub m mn.

Chart-5.0: Turkmenistan's Natural Gas Export Year wise Data in abroad



Source: Turkmenistan Natural Gas: Exports Reports, 2019.

Petroleum Law about the Law on Hydrocarbon Resources; in 1996 (amended in 2005, 2008, and 2012):

The Petroleum Law is the primary piece of legislation that regulates the activity of oil and gas companies. The Petroleum Law (No. 206-I) was adopted by the Turkmen Parliament on December 1996 and took effect on March 1997, when the Decree on the implementation of the Law was passed. The law was amended in August and December 2005, it gave more power to the President. Further amendments were enacted in 2012 and 2014 which incorporated some important articles which are as follows:

Article-2 stipulates that the Petroleum Law prevails over other legislation, with the exception of an international agreement.

Article-21 mentions four types of contract: PSC, tax/royalty, JV agreement and ‘Agreement on Service Works at Risk’. There is no elaboration on what the Agreement on Service Works at Risk contract comprises and how the contract operates.

Article-37 describes the ownership of pipelines. Operators may construct a ‘field pipeline’, while the State will have the right to own a ‘Main Export Pipeline’, although companies may be involved in construction, maintenance and operation. Pipeline ownership was further clarified by new legislation in 2013 when a law on ‘Trunk Pipeline Transport’ was adopted by the Turkmen Parliament. The new law establishes a legal and organized basis for the functioning of trunk pipeline transport and provides for state regulation and monitoring of hydrocarbon supply and export.

Article-39 stipulates that ‘Main Export Pipeline’ tariffs are set by the owner and approved by the state.

The Petroleum Law covers a wide range of industry areas and practices, starting from state organizational structures, licensing, contracts and ownership to operations, environmental regulations, and fiscal regimes.

Other Important Laws: There are a number of other legislative acts that are particularly relevant to current petroleum industry operations. Brief details of these laws and Presidential Decrees are provided below. There were also a number of earlier laws enacted during 1991-93. These laws were replaced by more recent and detailed legislation. The selected details of relevant legislation are presented below:

- Law on Joint Stock Companies, November 1991 (revised November 1999).
- Law on Enterprise Activities, November 1991 (amended June 2000).
- Law on Foreign Investment, May 1992 (amended October 1993 and October 2007).
- Law on Subsurface, December 1992 (amended May 1994 and December 2014).
- Law on Foreign Concessions, October 1993.
- Decree on Resources Use, 1999.
- Tax Code, November 2004.

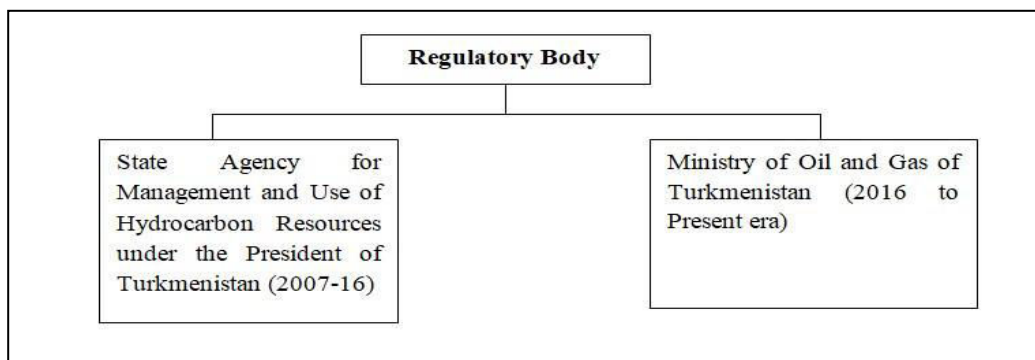
- Decree abolishing the State Agency for Management and Use of Hydrocarbon Resources and Ministry of Oil and Gas, July 2016.
- Law on Trunk Pipeline Transport, 2013.
- Law on Gas and Gas Supply, 2013.

Decree abolishing the State Agency for Management and Use of Hydrocarbon Resources and Ministry of Oil and Gas, 2016:

The State Agency for Management and Hydrocarbon Resources was established in March 2007 by presidential decree. The Ministry of Oil and Gas transferred ‘Competent Body’ responsibility to the State Agency. The goal of the new structure was to improve the efficiency and management of foreign investment, operations and activities in Turkmenistan. In July 2016, a new Presidential Decree announced the abolition of the State Agency and the Ministry of Oil and Gas. Prior to this, the State Agency had been the main point of contact for IOC negotiations. The Ministry’s key functions moved to the Cabinet of Ministers, Turkmenistan’s chief executive body, as well as the Turkmengaz and the Turkmenneft. They also took on the responsibilities of the State Agency, while its financial resources were transferred to the Central Bank.

Regulatory Body: The State Agency and Ministry of Oil and Gas were abolished by Presidential Decree in July 2016. The key regulatory responsibilities passed to state-owned operators Turkmengaz and Turkmenneft. The structure of the regulatory body is shown below in the form of a figure:

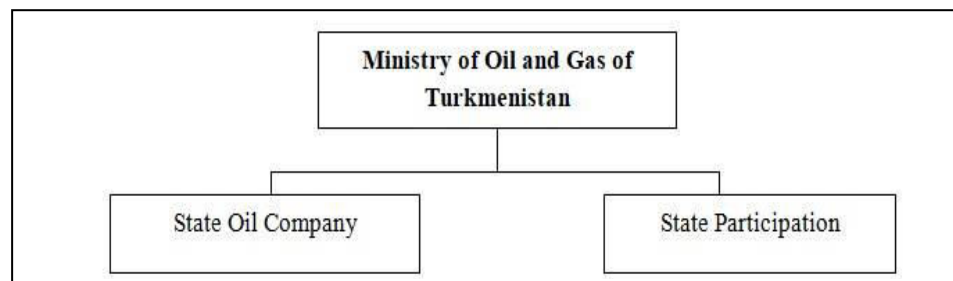
Figure-5.1: Structure of the Regulatory Body



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018

- (i) **State Agency for Management and Use of Hydrocarbon Resources under the President of Turkmenistan (2007-16):** The State Agency was the designated Competent Body for negotiation of hydrocarbon contracts and monitoring of existing contracts prior to July 2016. The Turkmen Government negotiates and signs contracts with the Competent Body. However, it is relevant to mention that the ultimate decision on approving new contracts remained with the President. The state agency was the IOC's main liaison center and, as a separate legal entity, coordinated the response of four government agencies (Ministry of Oil and Gas, Ministry of Finance, Ministry of Natural Resources, and State Inspectors). It performed the following duties and had the following rights: considerations of investment proposals, issuance of licenses for the use of hydrocarbon resources, supervision of field development plans and provision of license extensions, organization of tenders and holding of negotiations, signature of contracts for the construction and use of pipelines, carrying out of inspections, formation or purchase of companies in Turkmenistan and abroad, acquisition of shares in other companies and the opening of branches and representative offices abroad and right to income and the handling of the government's PSC oil allocation, etc. The President Berdymuhamedov, in 2013, issued a decree that provided the State Agency with the authority to work on the implementation of cross-border pipeline projects. The Presidential Decree approved the creation of a special department within the State Agency that would be responsible for the implementation of international oil and gas projects, most prominently the projected Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline.
- (ii) **Ministry of Oil and Gas of Turkmenistan (2016 to present era):** The Ministry was a separate legal entity, responsible for energy production-export policy and planning. Here is mention below:

Figure-5.2: Oil and Gas structure, Ministry of Turkmenistan

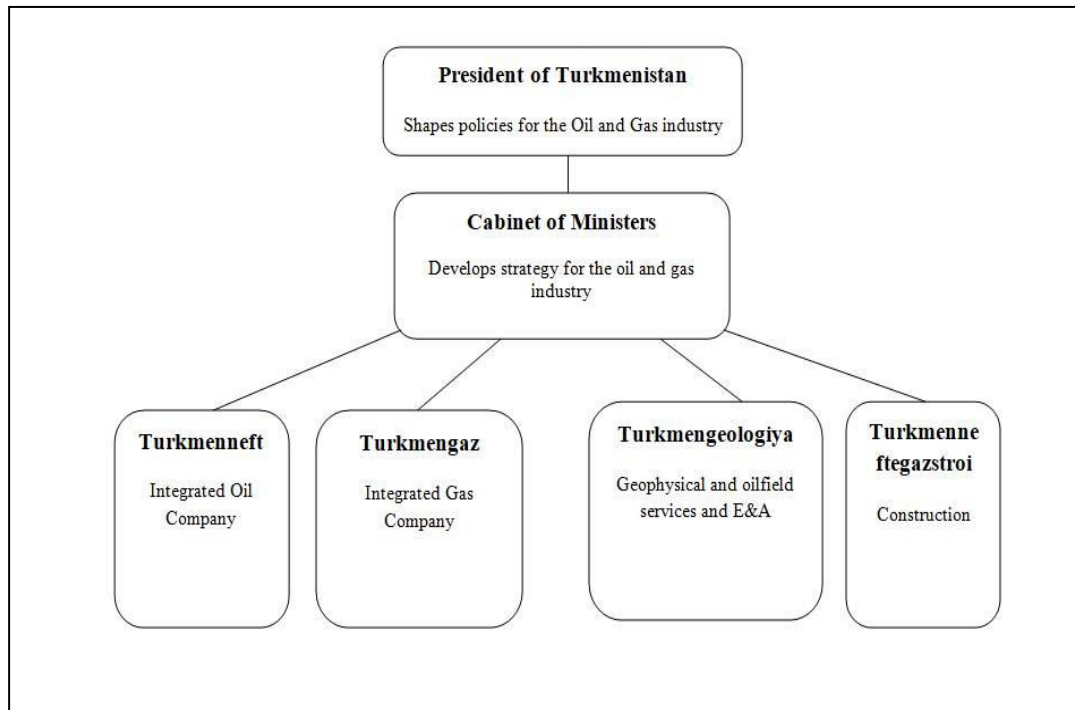


Part-I: State Oil Company: Turkmenistan's oil and gas industry was initially shaped by the 1996 Presidential Decree, which created the following national companies:

- **Turkmenneft:** oil production, processing, and transportation. It is further subdivided into seven regional oil and gas production associations, namely: Kotur Tepe, Nebit Dag, Kum Dag, Kamishldzha, Cheleken, Korpeje, and Yashildepe.
- **Turkmengaz:** gas production, processing, and transportation.
- **Turkmenneftegaz:** marketing of hydrocarbons for export and domestic markets. It also concludes foreign trade contracts and oversees their implementation.
- **Turkmengeologiya:** exploration and appraisal of mineral resources and storage of geological information. After discovering and appraising a field, it hands it over to Turkmenneft or Turkmengaz for development.
- **Turkmenneftegazstroi:** oil and gas-related construction and infrastructure.

The Turkmenneftegaz was dissolved in December 2005. Oil related responsibilities were handed over to the Ministry of Oil and Gas Industry and Mineral Resources and all gas related responsibilities were conferred to the Turkmengaz. The Turkmen President signed a decree to create a closed joint-stock company. Turkmen National Oil and Gas Company were established in January 2016. The shareholders were to include: the State Agency for Management and Use of Hydrocarbon Resources, Turkmengaz, Turkmenneft, and the Turkmenbashi complex. Many experts on this area expects that Turkmengaz and Turkmenneft will continue to exist and will most likely retain asset operatorship. Regulatory bodies and state companies have shown below in a figure diagram:

Figure-5.3: Structure of Regulatory bodies and state companies



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Part-II: State Participation: Prior to the formation of Turkmenneftegaz in July 1998, Turkmen participation in exploration and production projects occurred through a variety of State operating organizations. The protocol laid the basis for the transfer of the government's shares in joint-stock companies, PSCs, JVs and other agreements to Turkmenneftegaz in July 1998. After the dissolution of Turkmenneftegaz in 2005, state interests in upstream, midstream and downstream assets were taken over by Turkmengeologiya. There are several active PSCs, like, Cheleken, Block-1, and Bagtiyarlyk Area where there is no State equity attention. However, in redevelopment projects, including Nabit Dag and Cheleken, the state is allocated 'base oil', which calculates the rate of decline in production from the date the contract was signed. The State also receives a portion of the incremental oil production via royalty in kind. East Cheleken and Nebit Dag (two PSCs) are the only examples where the State has direct equity interest alongside a foreign investor.

So far as the foreign policy of Turkmenistan is concerned, energy has become a prime factor in determining its affairs with the world. Turkmenistan became an independent state after disintegration from Soviet Russia. In this independent state, Niyazov, the first President of

Turkmenistan took the responsibility of administration particularly related to his role towards energy policy of Turkmenistan. In this chapter, an overview of his energy policy has been highlighted. Here, it is pertinent to point out that the newly independent state of Turkmenistan is backward economically. The reason is obvious. Most of the region of Turkmenistan is encircled by Kara Kum desert. This is the reason for which the First Secretary in Turkmenistan Embassy, Bayram Aganyyazov has rightly pointed out that in Turkmenistan cotton cultivation is excessive. Since the entire area is covered by desert, its entire centre of activity is entirely an impediment to transportation. At the end of 2018, two railway tracks in Ashgabat were constructed for transportation by fund given by Turkmenistan government. During the Niyazov period, the ‘new Kuwait’ policy (autocracy and tyranny) was introduced. Later on, an ‘*open door policy*’ (1992-98) was adopted in the energy sector. The policy was taken for progress of economy and inviting adequate foreign investment. Moreover, for exploration of oil in the offshore area of the Caspian Sea region in Turkmenistan, adequate technical and scientific knowhow were needed. As a result, the next President, Berdymukamedov adopted market based economic policy, governed by Democratic Party. Hence the new process started in Turkmenistan. Despite this privatization of Turkmenistan economy but its slow progress compelled the government to cancel privatization of medium and large-scale enterprises. The result is obvious. At present, Turkmen oil and gas reserves are mainly controlled by Turkmenneft and Turkmengaz (the state-owned company). Turkmenistan is such a country whose oil and gas reserves and its production data are completely secret and it is not open to public during the period of President Niyazov. The impacts of the terrorist attack of 9/11 on the World Trade Centre of the USA are likely to be the cause of secrecy for oil and gas reserves maintained by Turkmen administration. For the same reason the investment in onshore and offshore field did not become visible. Export of energy is the primary source of income for landlocked Turkmenistan. For this reason, the Turkmen government is very much interest in exporting energy. The First Secretary, Bayram Aganyyazov stated that only for financial reason the government of Turkmenistan had taken ‘open door’ policy in respect of exporting energy. According to his statement, given on 23rd and 24th May 2018 that in Aboza in Turkmenistan, at a National Tourist Zone, a Caspian Zone, an International Gas Conference was held in a Hotel Cottage. The principal goal in this conference was to focus on ‘open door’ policy for investment by foreign company in Turkmenistan and the government’s interest for encouraging such type of investment. Here, a question came out from

discussions on policy matters that whether the President would utilize energy export policy matters as one of the most ideologies during his Presidential election? Whether this export policy would be given sufficient priority in fixing the government's target for energy export? In regard to the answer of the above queries, the Turkmenistan Ambassador Parakhat Durdayev replied negatively. He stated that it is not an ideology; it is entirely an export policy for the sake of business. Turkmenistan has huge amounts of crude oil and natural gas, and every year it tries to earn a living by exporting them - this is the government's goal. Every year it raises its energy by 10 per cent. By exporting energy it tries to develop its state. The above statement of the Ambassador of Turkmenistan was fully acknowledged by the Ambassador of India. This expert argued that the presidents of all Central Asian states do not usually interfere in the process of supplying energy to world market. To justify his argument, Ambassador said that Turkmen's President Saparmurat Niyazov stayed in the position of President for 15 years and 55 days and the President, Gurbanguly was in power in the last 12 years and till present days. It is expected that this President will remain and continues to remain in power in future. Similarly, Kazakhstan's President Nursultan Nazarbayev was in power from 1991 to 2011. The President of Uzbekistan remained in power from 24th March 1992 to till his death (2nd September 2016). The export of energy in all cases remains a matter outside the purview of the President. The President of Kazakhstan and Turkmenistan adopted an export policy of energy, every five years interval. Therefore, the energy issue is one of the most important factors in making Turkmenistan's foreign policy. Now, it would be pertinent to focus on the current geological status of Turkmenistan. Hence, it is relevant to start our focus on the energy issue in Turkmenistan's foreign policy.

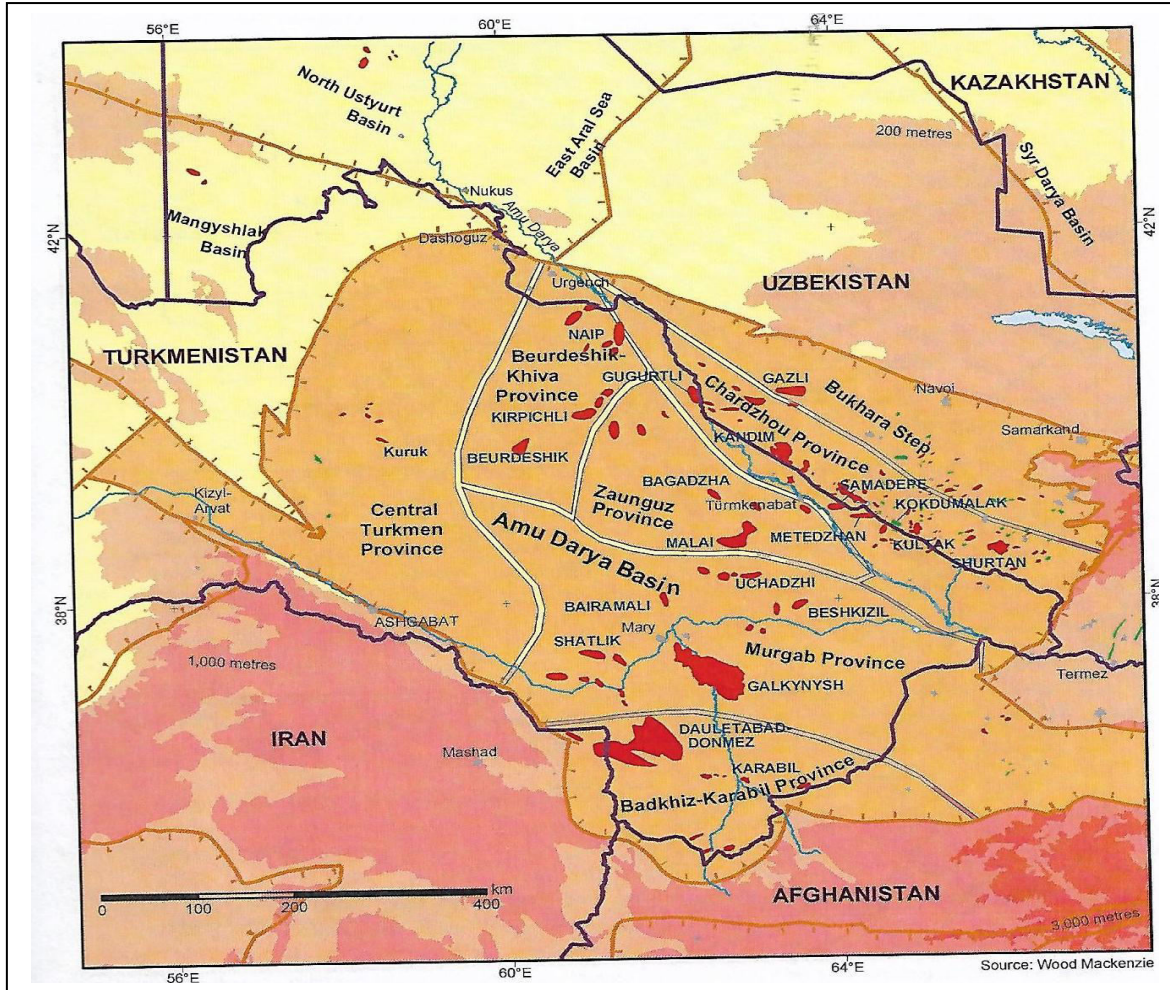
Geology of Turkmenistan:

Turkmenistan is situated in a place which contains two major sedimentary basins. But it would be relevant to mention here that the geology of Turkmenistan's details are given from a primary data materials, that is the Wood Mackenzie report, 2018 (an unpublished data given by the Oil and Natural Gas Commission Videsh Limited, India). These basins contain large volumes of proven petroleum reserves and prospective energy resources. The names of two important basins: Amu Darya basin and South Caspian basin are situated in Turkmenistan. The details of these two basins are given below. The analyses of these two basins are made below:

Amu Darya basin's Energy Potentiality:

Before going to brief discussion about Amu Darya basin in Turkmenistan, it would be relevant to focus this basin by showing a figure, which is given below. This topography is taken from a primary source by this author that is given by ONGC Videsh Limited, India.

Figure-5.4: Amu Darya basin

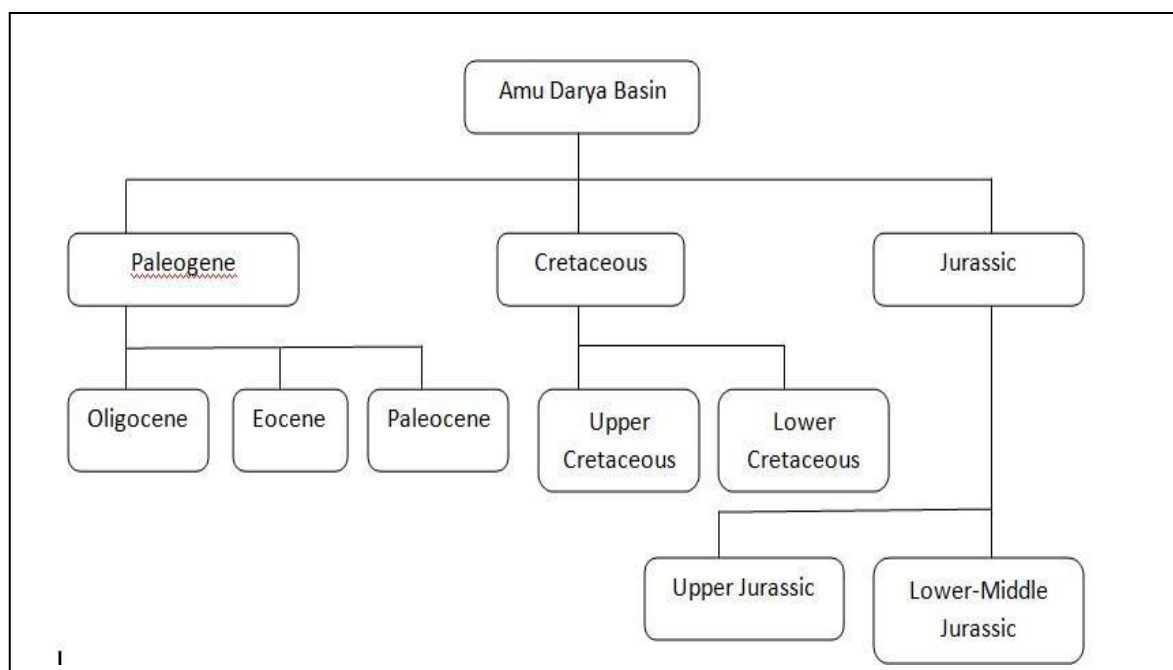


Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

The prolific Amu Darya basin, which extends northwards into Uzbekistan, is a world-class gas province. Prospectively, it focused on (post salt) lower Cretaceous sandstone reserves and (pre-salt) Upper Jurassic Reef Carbonates (A coral reef is made of thin layers of calcium carbonate: Stony corals or scleractinians are the corals primarily responsible for laying the foundations of, and building up, reef structures. Massive reef structures are formed when each individual stony

coral organism or polyp-secretes a skeleton of calcium carbonate).¹⁶ Gas is exploited from post-salt reserves for many years. The presence of significant quantities of gas in the pre-salt section of the Galkynysh (South Lolotan) was confirmed in 2005. However, this deeper gas will not be easy to extract, as the reserves are HP/HT and the gas is sour. The content of hydrogen sulfide (H₂S) is 5 per cent. The said basin is primarily a gas prone. Here most gas reserves can be attributed to two stratigraphic intervals; Upper Jurassic carbonates and Lower Cretaceous Clastic. Other reserves, although relatively small, have been identified in Middle Jurassic to Paleogene stratigraphic units. The Lower to Middle Jurassic clastics and coal and the Oxfordian black shales in the more central part of the basin. These are the source rocks. The Oxfordian basinal black shales are mainly liquids prone. An overview of Amu Darya basin stratigraphy is shown below:

Figure-5.5: Stratigraphy of Amu Darya basin



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

¹⁶ National Ocean Service: National Ocean and Atmospheric Administration, U. S. Department of Commerce, “What is a Coral reef Made of?” also available at: [https://oceanservice.noaa.gov/facts/coralmadeof.html#:~:text=A%20coral%20reef%20is%20made%20of%20thin%20layers%20of%20calcium%20carbonate&text=Stony%20corals%20\(or%20scleractinians\)%20are,a%20skeleton%20of%20calcium%20carbonate/](https://oceanservice.noaa.gov/facts/coralmadeof.html#:~:text=A%20coral%20reef%20is%20made%20of%20thin%20layers%20of%20calcium%20carbonate&text=Stony%20corals%20(or%20scleractinians)%20are,a%20skeleton%20of%20calcium%20carbonate/) (Accessed on 18th June 2018).

The Mesozoic Cenozoic sediments of the Amu Darya basin are 5-6 kilometers thick and are underlain by up to 6-7 kilometers of Permian-Triassic sediments and volcanic. The Permian-Triassic section has been drilled with an aim to exploration but the prospects did not materialize till date. The post-Triassic section contains five primary reservoir intervals which are discussed below:

- (i) **Lower-Middle Jurassic:** The pre-salt Lower-Middle Jurassic sequence comprises alternating mudstones, sandstones, and siltstones, with thin coal seams. The thickness of the sequence ranges from 100-400 meters. Reservoirs consist of lenticular sandstones with moderate to poor reservoir properties. Local sealing horizons are developed intermittently within the sequence, topped by 25-70 meters of Lower Callovian mudstones that form a regional seal. The primary source rocks are informational mudstones of the Bajocian-Bathonian age. These are dominantly gas-prone. Some intervals in the upper parts of the section are oil-prone. A high concentration of heavier hydrocarbons (up to 12-15 per cent) is typical of gas in Lower-Middle Jurassic reservoirs. Methane (CH₄) comprises 63-82 per cent and Nitrogen (N₂) content is as high as 5 per cent. Lower to Middle Jurassic reservoirs are estimated to contain around 15 per cent of the initial resources in the basin and are underexplored.
- (ii) **Upper Jurassic:** Pre-salt carbonates are developed regionally in the Callovian-Oxfordian sequence. Since the confirmation of pre-salt gas at Galkynysh in 2005, this is now the major reservoir in the basin. Carbonates exhibit a wide variety of reservoir facies, including bioclastic, oolitic and reefal (algal and coral) limestones. Reefs, which form the most productive reservoirs, occur as pinnacles or barriers. Oolites and carbonate debris provide moderate reservoirs. The source rocks for gas and oil consist of marine shales. The total thickness of the carbonate section ranges from 150-600 meters. The carbonates are overlain by a thick sequence by a thick sequence of Kimmeridgian-Tithonian evaporates (main halite), which form a highly efficient regional seal. These evaporate are extensive but do not occur on the Central Kara Kum Arch and in the Badkhiz-Karabil zone. They are 500-1200 meters thick in the basin center and 20-50 meters on the margins. This ole natural gas contains 85-90 per

cent of Methane, 4.5-6.5 per cent of Ethane (C_2H_6) and up to 10 per cent of Carbon-dioxide (CO_2), 6 per cent of nitrogen (N_2) and 6 per cent of Hydrogen Sulfide (H_2S), respectively. Condensate content normally ranges from 12-20 BBL/MMCF. The richest gases in the province have a CGR of up to 72 BBL / MMCF. Galkynysh gas is understood to be very dry.

- (iii) **Lower Cretaceous:** post-salt Cretaceous reservoirs include carbonates and sandstones of Neocomian-Lower Aptian age and sandstones of Upper Aptian-Cenomanian age. The Clastic reservoirs have porosities of up to 20 per cent and permeability in the range of 140-200 mD. Carbonate reservoirs are broken and occasionally limestone falls off. Porosities range from 5-10 per cent, with matrix permeability's of up to 22 mD. The prolific Shalik reservoir is Hauterivian in age and occurs in the central part of the province. It comprises fine to medium-grained sandstones, with porosity up to 27 per cent, permeability up to 500 mD and gas saturation up to 70 per cent. The vast majority (90 per cent) of the reserves in the Lower Cretaceous are in the Shatlik reservoir, in fields such as Shatlik and Dauletabad-Donmez. The reservoir is preserved by overlying Barrenmian carbonates and mudstones. The primary source rocks for the gas in the Lower Cretaceous reservoirs are the grey shale's of Neocomian age. In the northern part of the Amu Darya basin, gas from Lower Cretaceous reservoirs contains 90-96 per cent of CH_4 and 2-4 per cent heavier hydrocarbons. N_2 content is around 2-3 per cent. Gas in the Central Kara Kum Arch contains 89-95 per cent of CH_4 , 2-6 per cent heavy hydrocarbons and 5-7 per cent respectively. This play is estimated to comprise around 20 per cent of the total petroleum potential of the basin and more than 50 per cent of the reserves discovered till the time of investigation. It is relevant to mention here that in this part of the Amu Darya basin, the amount of hydrocarbons and methane in this basin can be analyzed to show that the mineral oil and natural gas are of high quality.
- (iv) **Upper Cretaceous:** Upper Cretaceous reservoirs consist of sandstones of Albian to Cenomanian age is inter-bedded with siltstones and mudstones. An effective seal is provided by overlying mudstones of Turonian age. Cenomanian reservoirs in the Central Kara Kum Arch consist of fine to medium grained sandstones with porosities

ranging from 10-22 per cent and permeability from 40-1200 mD. The Darvaza-Zeagli fields show the largest accumulations in the Upper Cretaceous reservoirs, although the giant Gazli field in neighboring country like Uzbekistan also produces from these horizons. Upper Cretaceous (Cenomanian-Turonian) natural gas is predominantly CH₄ with minor concentrations of CO₂ and N₂.

- (v) **Paleogene:** The Paleogene section (0-400 meters) includes the Gypsiferous Paleocene Bukhara Beds and an Eocene section dominated by mudstones. The Karabil field contains a minor accumulation in the Paleogene reservoirs. The reservoir consists of the carbonates and sandstones of the Bukhara Beds, sealed by Eocene mudstones. The Paleogene reservoirs are estimated to contain less than 10 per cent of the total petroleum potential of the basin.

Drilling Activity of Amu Darya Basin:

Soviet-era Exploration: Since the beginning of intensive geological research in 1929, more than 140 sites have been discovered in the Turkmen section of the Amu Darya basin. The first commercial discovery was made at Setalantepe (Uzbekistan) in 1953. The first gas field in the Turkmen part of the basin, Darvasa was found in the Karakum Desert in 1959. The potential of the Amu Darya basin was proven in 1956 when the giant Gazil gas field was discovered in Uzbekistan. As a result, subsequent Soviet exploration activity focused on the Uzbek part of the basin. The five largest Turkmen fields discovered during the Soviet era like Dauletabad-Donmez, Shatlik, Naip, Malai, and Kirpichli were all found in a 10 years period from 1968 to 1978. Their developments were directly linked with that of the region's two main gas export pipelines to Russia via Kazakhstan: Bukhara-Ural and Central Asia-Centre. In 1985, the discovery of the Kokdumalak oil and gas or condensate field, which lies primarily in Uzbekistan, confirmed the presence of commercial liquid reserves in the Turkmen part of the basin.

Post Soviet-era NOC activity: The state-owned entities like, Turkmenneft, Turkmengaz, and Turkmen geology have reported a considerable degree of exploration success in present years, most of which have been natural gas. The Turkmen geology is primarily responsible for exploration. Since 1990, more than 40 discoveries have been made in the Amu Darya Basin, most of which have been natural gas field, with small volumes of associated condensate and or an oil rim. The largest of these is the super-giant pre-salt horizon at Galkynysh (which is in the

South Lolotan area in Turkmenistan). All of these discoveries were the result of a Turkmen search, which carried out almost all of the search and development work in the basin until the time of the investigation. In recent years, drilling efforts in eastern Turkmenistan have continued to yield positive results. As well as the re-development of major existing fields like Dauletabad-Donmez, Malai, etc., efforts are being made to accelerate the progress of smaller fields like Chartak, Gazyldepe, Beshkizil, Yashildepe and boost up additional potential at existing fields like North Naip and Balkus. Galkynysh is a super-giant pre-salt natural gas discovery, from which the first production was achieved in 2013. Post-salt reservoirs had been discovered in the 1970s but were ignored while others larger gas fields were developed. In 2004-05, Turkmen geology acquired a seismic survey over the Galkynysh structure. In November 2005, the 101st Search Wells was completed at a depth of 4,500 meters. Well-flown 49 Million Standard Cubic Feet per Day (MSCF/d¹⁷) natural gas and pre-salt horizons confirm world-class potential. Since 2008, reserves audits have confirmed Galkynysh as the world's second largest gas field. The structure now encompasses several other structures that were mapped on seismic and gave names a number of years ago, including Minara in the northwest, Osman in the southeast, Gunbatar Yoloten (West Lolotan), and Yandakly and Gunbatar (West) Yandakly to the east. Other notable recent discoveries in eastern Turkmenistan are listed below:

- (i) In 1999, a new gas field, Tek-Tek, was reported in southern Turkmenistan, close to the Dauletabad-Donmez field. Official Turkmen sources quoted that the reserves of around 17.7 TCF.
- (ii) In 2001, US\$1.5 million three-well exploration programmes were done at the Yashildepe structure. This structure was originally reported to be part of the Kokdumalak field, but it is now believed to be a separate structure. The third well, Yashildepe-3, tested gas flow 2.5 MSCF/d.
- (iii) In 2002, the Sabir Guundogar-1 (East Sabir-1) well tested 9.1 MSCF/d.
- (iv) In 2004, the Bossan-1 well tested 140 b/d at 3,500 meters (Right Bank Amu Darya).
- (v) In 2008, the South Kutlayuk field was discovered in the central Karakum Desert.
- (vi) In 2009, the Geyazli field was discovered in the central Karakum Desert.

¹⁷ The USA is mainly used a unit of measurement of the 'million standard cubic feet per day'. It's mainly used as a measure for natural gas. One MMSCF/d equals 1180 m³/h. also available at: <https://www.wartsila.com/encyclopedia/term/mMSCF/d#:~:text=Million%20standard%20cubic%20feet%20per,a%20measure%20for%20natural%20gas/> (Accessed on 18th June 2018).

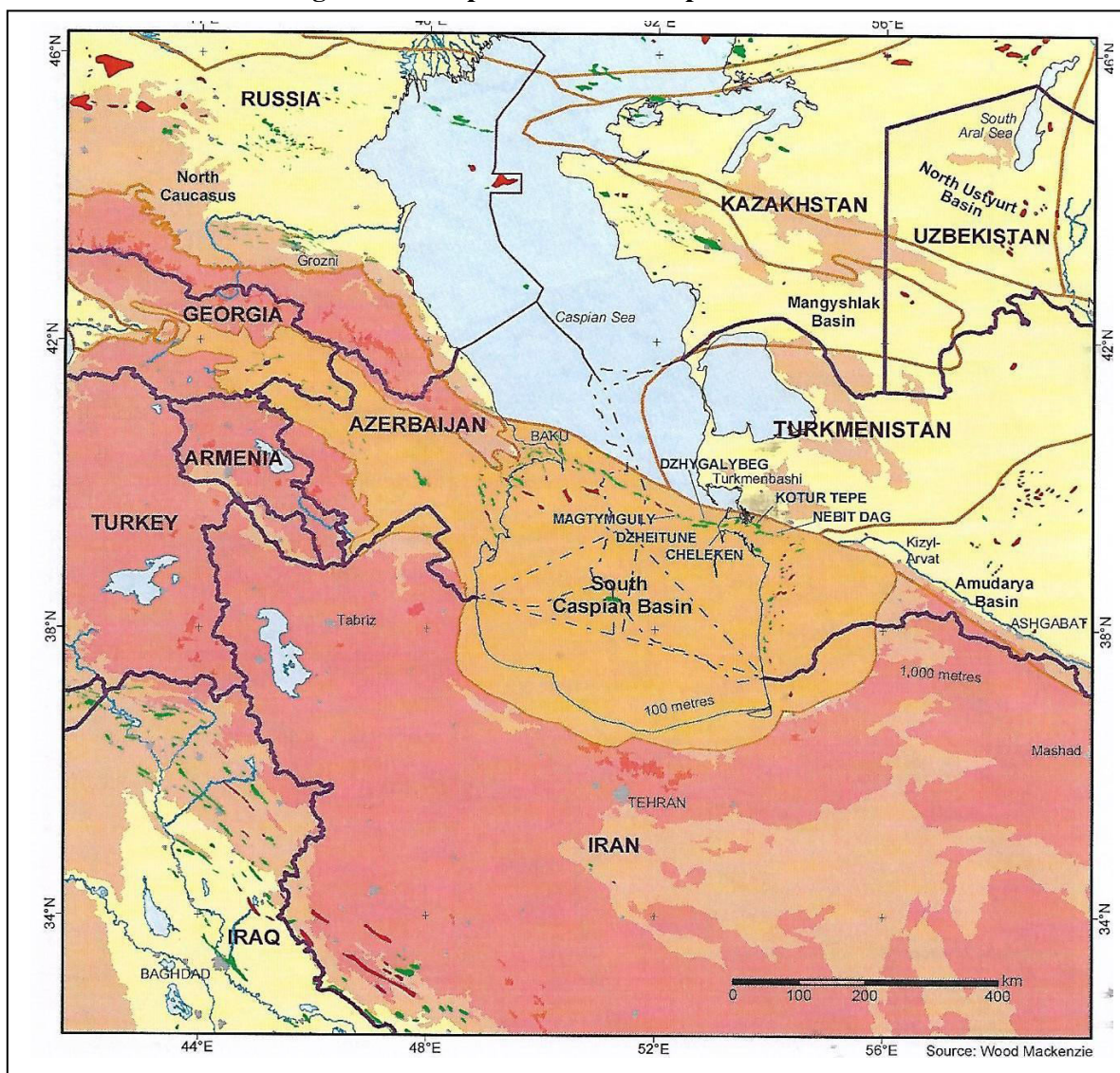
- (vii) In 2011, the Dervezekem field was discovered at a depth of 3,756-3,768 meters in the southeast part of the Turkmen section of the Amu Darya basin (Badkhiz-Karabil Uplift), just 20 kilometers from the Afghan border.
- (viii) Since 2013, multiple satellite fields were discovered near Galkynysh. These include Garakol and Bagly (2015) and Dzhurdzhi and Chelekbai (2016). These are considered part of the Galkynysh zone, with Garakol being the largest.

IOC activity: IOC began its work following Turkmenistan's independence in 1991. In accordance with current Turkmen government policy, IOCs can be awarded PSCs for offshore blocks, whereas onshore fields are to be developed by Turkmen entities, with only service contracts available for IOCs. Until 2007, Bidas (Argentina) and ExxonMobil were the only two foreign companies to have been active in the Amu Darya basin. Both withdrew. In 1991, Bidas established the Yashlar JV to explore a 6,000 Kilometer² area in the Amu Darya basin. In 1995, reserves were estimated at 27 TCF of gas and 165 million barrels of liquids, although further appraisal of deep gas horizons was required to confirm these figures. Bidas suspended all operations pending the resolution of various lawsuits and subsequently withdrew from the venture. In 1998, ExxonMobil signed an agreement for a joint technical exploration study on the area known as the Right Bank of the Amu Darya River. The area covered 16,000 kilometer² and contained undeveloped oil and gas discoveries. Initial results were presented in 1999 and ExxonMobil ultimately withdrew. In July 2007, CNPC was awarded a PSC for exploration and development of the Right Bank Amu Darya (Bagtiyarlyk) Area. CNPC had since then maintained a large-scale exploration programme.

South Caspian basin's Energy Potentiality:

The South Caspian basin is located at the western portion of Turkmenistan. This basin is located on a very small part of Turkmenistan territory. The major portion of this basin is located in Iran and Azerbaijan's territory. Before going to brief discussion about the South Caspian basin in Turkmenistan, it would be relevant to focus this basin by showing a figure, which is given below. This topography is taken from a primary source by this author that is given by ONGC Videsh Limited, India.

Figure-5.6: Map of the South Caspian basin



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

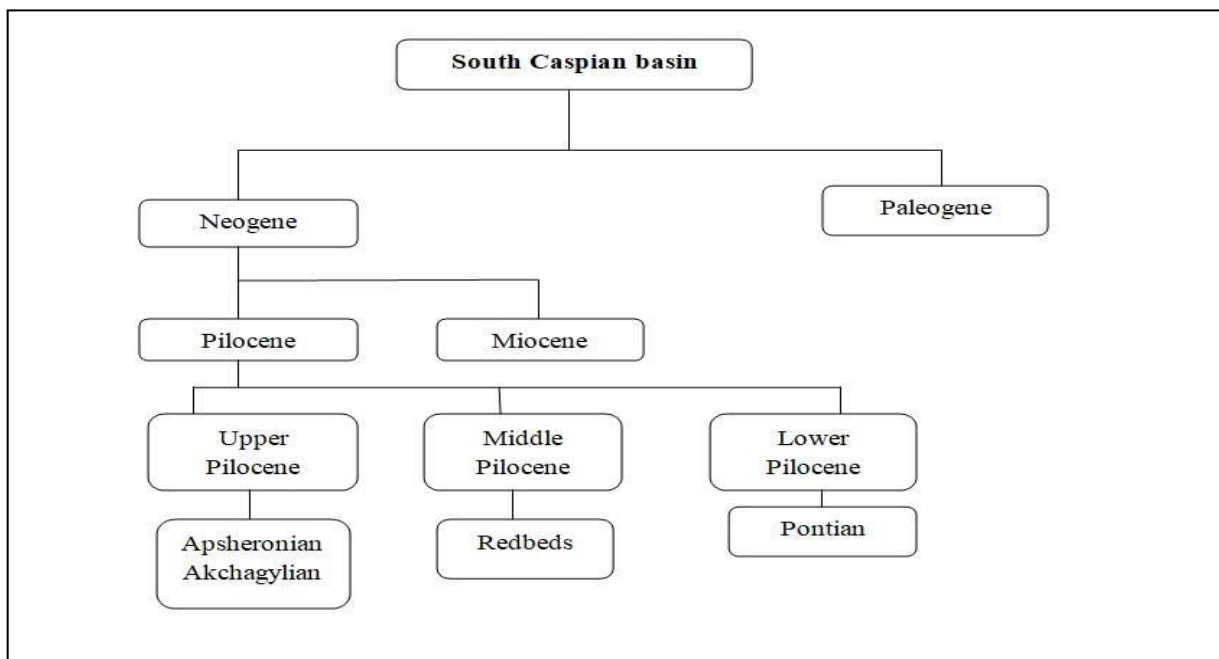
The South Caspian basin is a major oil and gas producing province in Turkmenistan. It extends westward from the Caspian coast of Turkmenistan to Azerbaijan. The potentiality of this area is concentrated in the Middle Pliocene Red Bed sequence. The basin has been extensively explored off the coast of Turkmenistan and in shallow coastal areas. However, it remains relatively uncovered offshore outside the 100 meters isobaths. The red bed sequence and the equivalent productive sequence of Azerbaijan have been harvested on a coast, while in the coastal region, and have been marked at a depth of more than 12 kilometers. This basin sits on of oceanic crust formed during the back-arc spreading episode of the Jurassic period. From the Jurassic through to the Lower Miocene, the South Caspian was a deep marine basin associated with the Tethyan

and Neotethyan ocean margin. During this time, the prolific Oligo-Miocene Maikop source rock was deposited. In the Upper Miocene, the South Caspian basin separated from the ocean system, resulting in a base level drop. This drop saw the formation of a significant canyon system and consequential deposition of sediment into the lacustrine basin. Pliocene is characterized by the wide sandstone sheets covered by the lacustrine shell.

At the end of the Pliocene, tectonic compression and partial subduction resulted in large-scale folding, especially around the basin margins. Uplift and erosion of these structures enabled pressure relief of the permeable sandstones. This produced anticline traps within Pliocene sandstone structures that provide seals to many of the reservoirs within the basin.

The interaction of hydrocarbon migration, timing and structural modification and formation of pressure regression have created an extremely complicated pattern of fluid fill, such that the amount and phase of the fill are far from uniform across the basin. An overview of South Caspian basin diagram is shown below:

Figure-5.7: Diagram of the South Caspian basin



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Filling the South Caspian Basin includes two mega sequences: the pre-molasses Mesozoic-Lower Pliocene and the molasses Middle Pliocene-Quaternary. The reserves discovered till the time of investigation have been almost exclusively in the Middle Pliocene. Prospective reservoir sandstones and carbonates have been identified in the Mesozoic (Jurassic and Cretaceous), Paleogene and Miocene, but no commercial volumes of crude oil and natural gas have been found. The Paleogene contains prospective source rock horizons, in particular in Maikop mudstones, although these have rarely been reached by drilling. The highly prospective Pliocene section is divided into Lower (Pontian), Middle (Redbed Sequence) and Upper (Akchagylia and Apsheronian) stage. The maximum thickness of the Pliocene is in excess of 5,000 meters.

- (i) **Pontian:** The Pontian is primarily composed of mudstones, with interbeds of oolitic limestone and occasional sandstones. The Pontian and older sequences only contain oil in the deeper parts of the Cheleken field, in which flow rates of 368-735 b/d of oil and 3.5-10.6 per cent of gas have been achieved.
- (ii) **Middle Pliocene (Red bed Sequence):** The Middle Pliocene Red bed Sequence in the temporal is equivalent to the Productive Sequence of Azerbaijan. The earliest Red bed deposits consist of marine mudstones, which pass vertically into inter bedded sequences of sands and mudstones and then into sandstone-dominated sequences. This Sequence is subdivided into two series: the Lower and Upper Red beds. These series are further subdivided into suites and productive horizons, with inconsistent local nomenclatures and correlations across the basin. The Red bed Sequence is the main play in the Turkmen South Caspian basin and contains approximately 90 per cent of discovered reserves. The sandstone dominated Upper Red bed Sequence contains the largest oil accumulations and occasionally has large gas caps. Reservoir quality is good, with porosities of 16-28 per cent and permeability reaching 200 mD. Reservoir depths range between 1,500 and 3,000 meters. Wells tested up to 5,880 b/d of oil and 21 MSCF/d of gas. On associated gas in the Upper Red bed Sequence occurs mainly as gas caps, at depths of about 1,500 meters. The Lower Red bed Sequence contains a greater proportion of gas reserves, at depths between 2,500 and 4,550 meters. The natural gas discoveries are characterized by high flow rates up to 35 MSCF/d, high condensate content 40-120 bbl/MSCF/d, and abnormally high formation pressures. Crude oil has also been produced from the Lower Red bed Sequence, at rates of up to 1,470 b/d.

(iii) **Akchagylian and Apsheronian:** Akchagylian sediments comprise inter bedded mudstones and sands. The total thickness of the suite varies from 60 to 700 meters. The overlying Apsheronian contains inters bedded mudstones, sandstones, and limestone. The sandstones are most prominent in the middle and upper parts of the section. The Apsheronian reaches 1,600 meters thick in the Kotur Tepe field. The Akchagylian and Apsheronian contain around 10 per cent of discovered potential in western Turkmenistan. They are productive in the fields of the Pribalkhan zone. Reservoirs have weak sandstone and siltstone units, which produce oil at a rate of 184-1,100 b/d. The larger gas accumulations have been discovered in the Kotur Tepe and Kyzl Kum fields, where flow rates reach 15 MSCF/d.

Drilling Activity of South Caspian basin:

Soviet-era Exploration (Onshore): Oil spilled into the coastal South Caspian Basin, and the shocks attracted early interest in the region. The Nobel Company became involved in the large-scale development of Cheleken Peninsula oil fields in the late 1800s and, by 1900, a total of 23 companies were producing crude oil. The most significant discoveries were made during the civil war. Nebit Dag produced commercial oil and, by 1940, the field accounted for 83 per cent of the country's total oil production of 12,000 b/d in 1930. The 1948 discovery of Kum Dag, followed by Cheleken in 1950, allowed Turkmenistan's production to rise to 40,000 b/d by 1950. There was no commercial gas fields in the region for many years, except for the small caps associated with the oil field. It was only in 1952 that the first crude oil and natural gas and condensate field- Kyzl Kum- was discovered, confirming the area's gas potential. Most of the basin is associated with natural gas. The crude oil fields are found in the giant Kotur Tepe and Narsa Helmes, etc.

Soviet-era exploration (Offshore): The first offshore discovery in the Turkmen part of the South Caspian basin was made in the shallow waters off the Cheleken coast in 1961. Steel jack-up rigs were used to drill exploration wells in deeper waters of up to 50 meters in 1965. The first major fields, Dzhygalybeg (formerly known as Zhdanov) and Dzheitune (formerly known as Lam), were discovered in 1968 and 1972 respectively, in 10-30 meters of water located 20-30 kilometers off the Cheleken Peninsula. The Dzhygalybeg field came on-stream in 1972, with the first production from Dzheitune in 1978. These discoveries led to further offshore exploration, where five commercial oil and gas discoveries in six regions spread over shallow shelves. Three

deep structures were drilled on the southern shelf: Ogurdzhi, West Ordekli, and Fersman, but no commercial hydrocarbons were found in 1990. Prior to the start of IOC-led offshore drilling, over 100 wells had been drilled (a total of almost 400,000 meters). Much of this activity was focused on the shallow and Absheron-Pribalkhan coral trends. Eleven exploration wells have been drilled south of the hole.

Post-Soviet-era NOC activity (Onshore): Turkmenneft divides its efforts in the South Caspian basin between E&A activity, development of new fields and rehabilitation of mature fields. Evaluation of deep Pliocene sand at a depth of 3,500-5,000 meters in the 1990s led to the discovery of gas condensation reservoirs beneath many existing oil fields. E&A drilling will target new possibilities, as well as deeper horizons in existing fields. Prospective structures near the Korpje-Kord Kuy gas export pipeline have been one of Turkmen geology's focal points. In 2003, as part of a new targeting operation, Berneftegaz began an in-depth search of the Akpatlavukh field, deeper horizons at fields in western Turkmenistan. Akpatlavukh-1X had a target depth of 5,500 meters, encountering crude oil reserves. An evaluation field further discovers a great gas-condensed horizon, located on the southern flank of the structure in 2010. Afterthat, the Turkmenneft awarded a US\$240 million contract to Calik Enerji (Turkey) in 2003 in collaboration with Parker Drilling (US), to drill deep wells (approximately 4,000 meters) across Turkmenistan. In total, Calik Energy's drilling programme completed 16 field wells in Galkynysh, Akpatlavukh and Korpje fields by 2006. The company was able to secure a new three-year contract for 12 new wells with Turkmenneft in 2007. Recent E&A activity includes:

- Positive appraisal results were obtained for wells targeting the Lower Red bed horizon at Gograndag, Kotur Tepe and Karadurun in 2008.
- The Altyguyi field was discovered in September 2008. An appraisal completed in 2010. It confirmed the oil potential of the field, which had previously been exclusively considered a gas discovery.
- The Turkmen government awarded a US\$33 million drilling contract to a Serbian company, Naftna industrija Srbije (NIS). NIS committed to drill two 4,800 meter oil wells at the Akpatlavukh field, a 4,500 meter well at the Keimir block and two 3,800 meter wells at the Ekerem field in western Turkmenistan. The Kermer gas field was discovered in October 2011.

- The South Umytly field was discovered at the South Kamishldzha Area in 2014, with commercial volumes of gas and condensate produced from the Red bed formation.
- The Uzynada field was discovered in 2015. Exploration well Uzynada-4 discovered sub-commercial volumes of oil. Appraisal drilling is ongoing.
- The Khalkabat gas was found in 2016. A future appraisal is ongoing to evaluate reserves.

In future, exploration focuses on the unexplored area of the Lower Red bed Sequence, Miocene oil and gas and deeper Mesozoic potential in major structures such as Akpatlavukh, Nebitlidzhe, Keimir, Kamishldzha, Ekerem, Gograndag, Kotur Tepe, Barsa Gelmeh, Cheleken and other fields.

Post-Soviet-era NOC programme (Offshore): Lack of appropriate equipment, skills and financing prevent Turkmen companies from pursuing independent offshore exploration and development projects. Turkmenneft discovered the northern extension of the Kotur Tepe field, which extends slightly offshore into the shallow waters of the Caspian Sea in 2010. The exploration programme exposed productive reservoirs at depths of 4,400 to 4,700 meters. Drilling works were done in seven appraisal wells in the offshore extension in 2013-14. It reveals that initial flow rates exceeded expectations. A 3D seismic survey was contracted to Yug-Neftegaz in the country of Singapore. Turkmenneft sought an international partner (service contract) for appraisal and further development of Northern Kotur Tepe in 2017.

IOC activity on the South Caspian Basin (Onshore): The Keimir JV, involving Bidas, Intercontinental Oil and Gas Ventures and Turkmenneft, drilled its first well at the Keimir field in 1993. Drilling and development activities were halted due to ongoing lawsuits between foreign partners and the Turkmen government. Bidas launched the venture in late 2000. The Nebit Dag PSC, operated by ENI, became effective in 1997. According to the Nebit Dag Contract Area report, previously in operation, engaged in an intensive E&A programme in 1997-2007. The ExxonMobil was appointed by Turkmenistan's government operator of the Garashsyzyk-2 Contract Area through its subsidiary Mobil Exploration and Production Turkmenistan Inc (MEPTI). The Garashsyzyk-2 block included the onshore Cheleken field. The ExxonMobil was joined in the block by Turkmenneft and Monument. Following the disappointing result of the Cheleken Deep-1 well in 2002, ExxonMobil relinquished the Garashsyzyk-2 Contract Area and closed its Turkmenistan office. Turkmenneft signed a PSC for

the East Cheleken field with Pado Oil and Chemical, which later transferred its contractual rights and obligations to Mitro International. According to the East Cheleken report, deep drilling was undertaken in 2002-05 to more than 6,000 meters, one of the deepest wells ever drilled in Turkmenistan. Foreign companies are involved in Turkmenistan on the basis of service agreements. In recent years, Turkmenneft has sought the cooperation of international partners to modernize its areas to the west of the country. Turkmenneft agreed on a long-term contract with Schlumberger to work over wells in western Turkmenistan, which was renewed in 2004. A further deal was signed with China in 1998, whereby CNPC supplied equipment for good work-over.

IOC Activity on the South Caspian basin (Offshore): Offshore exploration activity is an important part of Turkmenistan's development programme and significant investment will be required in the appropriate technology and equipment. 16,130 kilometers of 2D seismic were acquired and processed in 1995-2000 in preparation for the 2000 licensing round. The data package comprised 12,500 kilometers of marine seismic and 3,500 kilometers of onshore and transition zone seismic. Exploration activity has been conducted by PETRONAS on Block-1, Dragon Oil on the Cheleken Contract Area and Wintershall on Blocks-11 and 12. At Block-1, exploration activity has declined in recent years, but appraisal wells are continuing to be drilled. New crude oil reserves have been discovered at Garagol-Deniz and Diyarbekir. At the Cheleken Contract Area, Dragon Oil has completed a reservoir model and has commenced the drilling of appraisal wells to delineate its two fields. Maersk completed a 2D seismic programme (5,070 kilometers) on Block-12. The well was a dry hole. Maersk used the Heydar Aliyev semi-submersible rig (formerly called the Leader and DSS-20) in 2006. Wintershall farmed into the block, taking a 20 per cent stake in 2006. The company subsequently became operator by increasing its share to 34 per cent in 2007. As part of the same deal, ONGC Mittal (India) received 30 per cent of Maersk's share, leaving the former operator with a 36 per cent interest in the two blocks. A new well, targeting two prospects and testing a pinch-out trap in Block-12, was drilled in the mid 2008. The well Darta-Deniz-1, completed in the late 2008 and proved to be a hole. But in early 2010, Wintershall and its partners surrendered their license for Blocks-11 and 12.

Surkhan-Vakhsh basin:

The easternmost corner of Turkmenistan contains a small part of the Surkhan-Vekhsh basin, which lies predominantly in Uzbekistan and Afghanistan. This basin fill is estimated to be 10 kilometers thick. It comprises 5 kilometers each of Mesozoic/Paleogene and Neogene sections. Lower and Middle Jurassic sandstones, mudstones and limestone are overlain by Upper Jurassic carbonates and evaporate. Upper Jurassic reef hills have been identified in the adjacent region of Uzbekistan (South Tandercha field), but their proposed extension into Turkmenistan is yet to be confirmed. The Akgumalam gas field is the sole discovery in the Turkmen part of the Surkhan-Vakhsh basin. The carbonate reservoir has average 7.5 meters net pay thickness and 14 per cent porosity. Natural gas saturation is 60 per cent and the gas contains no H₂S.

Mangyshlak basin:

A detailed review of the geology of the Mangyshlak Basin can be found in a summary of upstream Kazakhstan. The only part of the vast basin in Turkmenistan is the Kara-Bogaz Arch (or Massif) in the extreme northwest of the country. Early drilling results from the onshore section of the Kara-Bogaz Arch proved disappointing; with drilling data indicating that most of the potential reservoir rocks had been eroded. However, in 1999, a gas discovery was reported in the Turkmen section of the basin at Tazedepe/South Alamurun. It is located on the border between Turkmenistan and Kazakhstan. Seismic data suggest that the offshore section is largely intact and could yield further gas discoveries. This basin lies predominantly in southwest Kazakhstan and extends southwards into Uzbekistan and Turkmenistan. There are three major plays in the basin:

- **Permo-Triassic:** This consists of carbonates with inter-beds of sandstones and tuffs.
- **Jurassic Sandstones:** The main productive play of the province.
- **Cretaceous (Hauterivian, Albian, and Cenomanian) sandstones:** This is largely gas-prone.

Deryalyk-Dovdan basin:

In addition to the original four basins, a discovery has been reported at Tezrimgaia on the Deryalyk-Dovdan through north of central Kara Kum Arch in north-central Turkmenistan. The

gas flow of up to 21 MSCF/d has been produced from Jurassic and Upper Paleozoic reservoirs. A number of other prospects have also been identified in the Middle Paleozoic, although the play remains very under-explored.

Turkmenistan is extended to two basins. These two basins are of great importance for the neighboring countries. The Mangyshlk basin is a prolific producing province in Kazakhstan and it extends into north-west Turkmenistan. It may be said that still now no discovery of energy has been made on the Turkmen side of the border. The Surkhan Vakhsh basin extends into eastern Turkmenistan from Uzbekistan and Afghanistan, with one field (Akgumalam) having been found in Turkmenistan so far.

Drilling Activity:

There has been a relatively low level of E&A experiment and drilling, as a result of the financial and technical limitation of the Turkmen NOCs, and the small number of foreign companies present. State-owned operators account for much of the onshore activity, whereas all offshore drilling is undertaken by LOCs. At present years, the State-owned operators have started to address some of the issues of ageing equipment and under-investment through cooperation with service companies like, CNPC Exploration and Development Company (CNODC), Schlumberger, Parker Drilling, Calik Enerji (Turkey) and Ukrainian companies (under a historical gas sells contact). New drilling rigs and equipment continue to be imported, with China and Russia being the major suppliers. State agencies are working with various foreign companies on drilling in the oil and gas fields, renovations of equipment and construction of new pipelines. Offshore drilling activity is very low as a result of the small number of awarded blocks, limit rig availability, high exploration costs and the risk involved. The entire basin drilling process has discussed earlier.

Future Drilling Plans (Onshore): Much of the future drilling activity will target new horizons below 5,000 meters in the pre-salt play. Turkmenistan's ability to meet its exploration targets or develop many discoveries will continue to be constrained by its ability to attract investment and foreign expertise. The low oil price and Turkmenistan's policy to restrict onshore IOC involvement to service contracts are unlikely to result in ambitious exploration targets being achieved.

Future Drilling Plans (Offshore): At Block-1 appraisal, drilling has slowed down, with the recent focus on development drilling. At the Cheleken Contract Area, Dragon Oil has started drilling further appraisal wells to delineate its two fields. Some additional reserve reverse exists in the Cheleken extension. An eastern extension of the Dzhygalybeg, and the Gubkin extension of the northwest of Dzheitune. At Block-21, ITERA (now ARETI) completed 2D and 3D seismic surveys (176 kilometers² of 2D and 216 kilometers² of 3D) to identify drilling prospects. ITERA's first exploration well was expected in 2013, to a depth of 6,000-7,000 meters. However, with Information and Telecommunications Education and Research Association (ITERA) Oil and Gas consolidated by ROSNEFT in 2013, exploration activity has stalled. The block is now owned by ARETI International. Once activity resumes, the operator will have to deal with a very high pressure formation (up to 130 MPA or 18,800 psi) and shallow water (6-7 meters). Buried Hill plans to undertake a seismic survey at Block-3 (Serder-Kaypaz) this has been delayed partly due to the sensitive nature of the ongoing territorial dispute between Turkmenistan and Azerbaijan and also because of a lack of suitable vessels in the Caspian Sea. The company planned to shoot 3D seismic in 2012, Azerbaijan formally protested and all activities are closed.

Licensing and Exploration:

The Soviet Union announced that part of its oil and gas territory in Turkmenistan would be opened up to two foreign companies for competitive bidding for the first time in September 1990. The Turkmen government issued a decree in May 1991 authorizing cooperation with the IOC on oil and gas exploration and production. The independent Turkmen government in 1991 embarked on a series of structured licensing rounds, with the aim of attracting foreign investment. Although more than 440 blocks were offered in 8th licensing rounds between 1991 and 2000. Only 7 awards were made. Just three of these were awarded through competitive tenders. After several unsuccessful licensing rounds, the government began to focus on direct negotiations with IOCs. This method continues to be used to execute contracts with foreign investors.

Turkmenistan's upstream industry is dominated by State-owned Oil and Gas companies. Turkmengaz and Turkmenneft control the majority of service and production. Opportunities for foreign investment, particularly in onshore gas developments, remain very limited:

- PSCs can be negotiated for offshore Caspian Sea acreage. Dragon Oil (Cheleken Contract Area) and PETRONAS, is a Malaysian Company (Block-1) both hold PSCs for offshore developments. In addition, offshore exploration blocks are available, but the most prospective areas are off-limits, owing to a border dispute with Iran. Progress with offshore exploration has been modest, although ARETI International (Russia) holds Block-21. Buried Hill Enerji's PSC for Block-3 (Serder) lies in territory disputed with Azerbaijan, which has prevented work being carried out. ENI signed a MoU for potential exploration on Block-19 and 20 in 2014. No further developments have been made.
- Only service contracts are typically available for onshore acreage, with Turkmenneft or Turkmengaz retaining ownership and operatorship. Turkmengaz is relying on international contractors or development of the super-giant Galkynysh (South Lolotan) field. High-profile contracts were awarded to CNPC, Petrofac, L.G /Hyundai and Gulf International partner of Turkmengaz. Similar contracts are targeted for a potential Phase Three in 2009.
- With some exceptions, only service contracts are available for onshore acreages. Turkmengaz relied on international contracts, most prominently CNPC, Petrofac and L.G /Hyundai, for Galkynysh Phase One. CNPC is also the sole contractor for Phase Two at the super-giant field.
- PSCs can be negotiated for offshore Caspian Sea acreage. Key developments are operated by Dragon Oil (Cheleken Contract Area) and Petronas (Block-1). Interest in offshore exploration has stalled, owing to the low oil price and Turkmenistan's unfavorable investment climate.
- There are three active onshore PSCs with foreign involvement. Two are legacy awards for oil projects in western Turkmenistan: Nebit Dag Contract Area, East Cheleken (Mitro International). CNPC was awarded the gas rich Bagtiyarlyk Area in eastern Turkmenistan as part of the wider deal for the Turkmenistan-China Gas Pipeline.

There are some exceptions to the rule that only service contracts are available onshore Turkmenistan:

- Most prominently, CNPC was awarded a PSC in 2007 for the Bagtiyarlyk area in eastern Turkmenistan. The PSC award formed part of a wider deal between Turkmenistan and

China, in which China agreed to build and finance the Turkmenistan-China Gas Pipeline. On this occasion, the official policy of only offering service contracts for onshore gas fields was waived. Turkmenistan exports gas to China via the Turkmenistan-China Gas Pipeline, which was commissioned in 2009. Three strings are currently operational, with the most recent, Line-C, completed in 2014. Aggregate capacity should reach 5.3 BCFD (55 BCM per annum) in 2017. By 2019, Turkmenistan will depend on China for 90 per cent of its gas exports.

- ENI operates the Nebit Dag Contract Area PSC, a relic of the 1990s when PSCs were more readily available. A contract extension was agreed in 2014 with Turkmenneft taking a 10 per cent contractor share. This is only the second onshore PSC in which Turkmenneft has a direct interest alongside on IOC.
- Mitro International (a Russian based company), operates another legacy PSC for the East Cheleken field in western Turkmenistan. IOC-led offshore projects drive liquids productions-oil production is almost exclusively from the south Caspian basin in the west of the country. The key source of recent growth is the offshore Cheleken Contract Area, where Dragon Oil has achieved a 100,000 b/d oil plateau.

In accordance with Turkmen government policy PSCs¹⁸ are available for offshore blocks, while only service contracts can be agreed for onshore blocks. The most recent official license offering in Turkmenistan was in 2001 when 15 onshore blocks and 32 offshore blocks were made available. However, it proved largely unsuccessful, due to a lack of interest from foreign investors. The license has subsequently been issued on an ad-hoc basis. PETRONAS signed a PSC for exploration, development, and production of offshore Blocks-1 in 1996. The first offshore awards since 1996 were made in 2002, when Maersk was granted a license for offshore Blocks-11 and 12 (as defined by the 8th Licensing Round, not the 2001 offering). No other license was awarded until 2007.

¹⁸ PSC: Production Sharing Contract, the first PSCs were offered in 1994, although the first was not signed until mid-1996. The 1997 model PSC terms continue to form the basis for current PSCs and are presented in the 'Current Fiscal Terms' section above. The 1994 Model Contract was available for negotiation in conjunction with six blocks (I-VI) on offered at that time. Key element included: bonuses, rental and fees (bonuses, rental and fees are payable. Bonuses are usually incurred on contract signature and upon achieving certain production targets with startup and peak. Production for existing wells and facilities is typically allocated to Turkmenistan and is known as 'base' or 'existing' production. A rate of decline for existing production is usually agreed and is negotiable); royalty and other production taxes, PSC cost recovery, PSC profit sharing, corporate (or petroleum) income tax.

Bagtiyarlyk Area: CNPC was awarded a PSC in August 2007 for exploration and development of the Bagtiyarlyk Area, which occupies a 14,300 km² in eastern Turkmenistan. This was part of the wider deal between Turkmenistan and China, where China agreed to build and finance the Turkmenistan-China Gas Pipeline. For this reason, the policy of offering gas fields only on shores only under the service agreement was waived.

Serder: Buried Hill Enerji sign an exploration PSC for offshore Block-3 (Serder) in November 2007. The block is in territory that is disputed by Azerbaijan and its ownership remains unresolved.

Interest in the field of exploration grew in 2007 due to the expected opening of Turkmenistan for foreign investment by the new president. Nevertheless, despite protected negotiations, there have only been two new license awards since 2007:

Block-23: DEA (then RWE DEA¹⁹) signed a six-year exploration PSC for offshore Block-23 in July 2009. DEA exited the block in 2015.

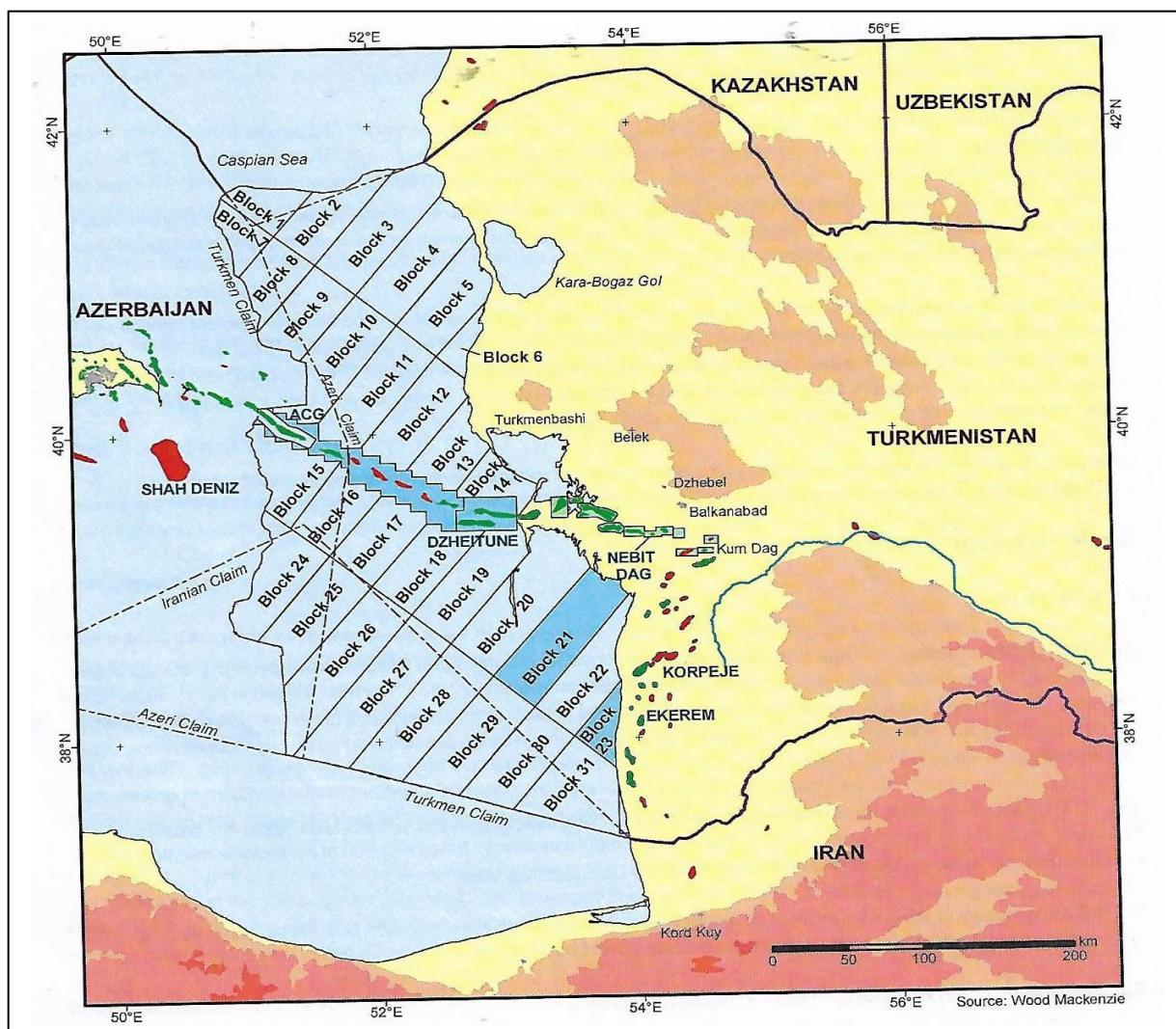
Block-21: ITERA signed an exploration PSC for offshore Block-21 in September 2009. Following the acquisitions of ITERA's Russian assets by Rosneft, ITERA International was rebranded ARETI International. ENI signed a MoU for potential exploration on offshore Blocks-19 and 20 in 2014.

Future Licensing Activity (Offshore): The offshore sector is a relatively high cost operating environment, with perceived high search risks. Turkmenistan has acknowledged that it will require foreign expertise to explore and develop its offshore sector and is open to negotiating PSCs on an ad-hoc basis. Turkmenistan has 34 offshore blocks. Since there has been territorial dispute in the offshore region of the Caspian basin, awarding licenses to foreign companies arose, only 16 blocks available for licensing, 4 of which can be attributed to existing E&P License. Block south of the Absheron-Pribalkhan Trend attracted the most interest although, several of this lie either wholly or partly in the disputed territory. The anticipated exploration potential of much of the region (especially north of the Absheron-Pribalkhan Trend) was greatly

¹⁹ RWE DEA AG is an international oil and gas exploration and production company with headquarters in Hamburg, Germany. The German upstream player owns concessions, facilities and offices in 14 countries of the world. Turkmenistan is one of the share holder countries of this company. This data is available at: <https://www.offshore-energy.biz/germany-approves-rwe-dea-sale/> (Accessed on 10th January 2021).

reduced following two dry holes drilled by Maersk and Wintershall and ONGC Mital (in Caspian Block-11 and 12). Petronas (Malaysia) remained in the Caspian Block-1. The Canadian Buried Hill Company engaged in exploration work in the Caspian Block-3 and RWE Company was working in the Caspian Block-23. Offshore blocks typically come with a good commitment, which is thought to be an obstacle for many companies. Discussions were previously held between the Zarit-partners (Zarubezhneft, Rosneft and ITERA) and former President Niyazov over Blocks-29, 30 and 31. The Turkmen authorities also discussed about Block-28 with Wintershall and Block-27 with Berlanga Holdings (Netherlands). No agreement was reached for these blocks due to the unresolved border dispute with Iran.

Figure-5.8: Offshore License statistics of Turkmenistan in the Caspian Sea basin



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Future Licensing Activity (Onshore): Many foreign companies are interested in accessing the giant and super-giant gas fields of the Amu Darya basin and prospective exploration acreage. However, the Turkmen Government has indicated that this will be developed by Turkmengaz, with foreign participation only possible on service contract basis. Active service companies include Schlumberger, Halliburton and Baker Hughes. Major investment and technological expertise will be required if Turkmenistan is to meet its ambitious gas production targets and export commitments. Many IOCs, therefore, remain hopeful of new opportunities in the long term.

Reserves and Resources:

The Turkmenistan's commercial or technical reserve has been shown below:²⁰

- **Commercial Reserves:** Hydrocarbons that are either in production or under development, or whose extraction is considered likely in the near to medium term.
- **Technical Reserves:** Hydrocarbons for which there is no current commercialization plan.

Reasons for volumes being classified as technical vary, but include the following:

- Any field that is considered uneconomic to exploit, due to a combination of factors such as development costs, commodity prices, and tax regime.
- Technically challenging fields for which more time is required to assess commerciality.
- Fields that has very low productivity wells or other technical characteristics that makes for extremely expensive development.
- Development time frames those are long-term, due to a field's remote location and or a lack of nearby transportation infrastructure to deliver the oil or gas to market.
- Very small fields that are not a priority for development.
- Fields that are licensing to companies without the expertise and or capital to progress with development.
- New discoveries for which further appraisal is required before a decision is made on commerciality.
- Unconstructed gas, requiring a gas sales agreement before development work can begin.

²⁰ Wood Mackenzie report, ONGC Videsh Limited, 2018.

- Fields that lie in areas with difficult access (political, social or physical).
- Fields for which environmental considerations preclude development (for instance, gas with a very high proportion of impurities such as H₂S or CO₂).
- Hydrocarbons that will not be produced before the development or production license or contract expire. In such cases, the reserves will still be in the ground when the license expires and the operator will need to negotiate a license extension. Otherwise, ownership will revert to the State.

The existing Turkmen reserve classification system was adopted in 1995. It replaced an approach that was based on the Soviet ‘classification of deposits, reserves, perspective and prognostic resources of oil and fuel gas’, which was in use from 1983 to 1994. This report is based on OVL’s primary field report. On average, ABC₁ reserves are likely to be around 25-30 per cent higher than equivalent p+p numbers. This is because they are based on technically recoverable reserves over full-field life, including an allowance for future reserve growth. The dominance of State-owned operators in Turkmenistan and the lack of transparency in many aspects of the industry have given below in a table:

Table-5.1: Turkmen’s Reserves Classification from 1983 to 1994

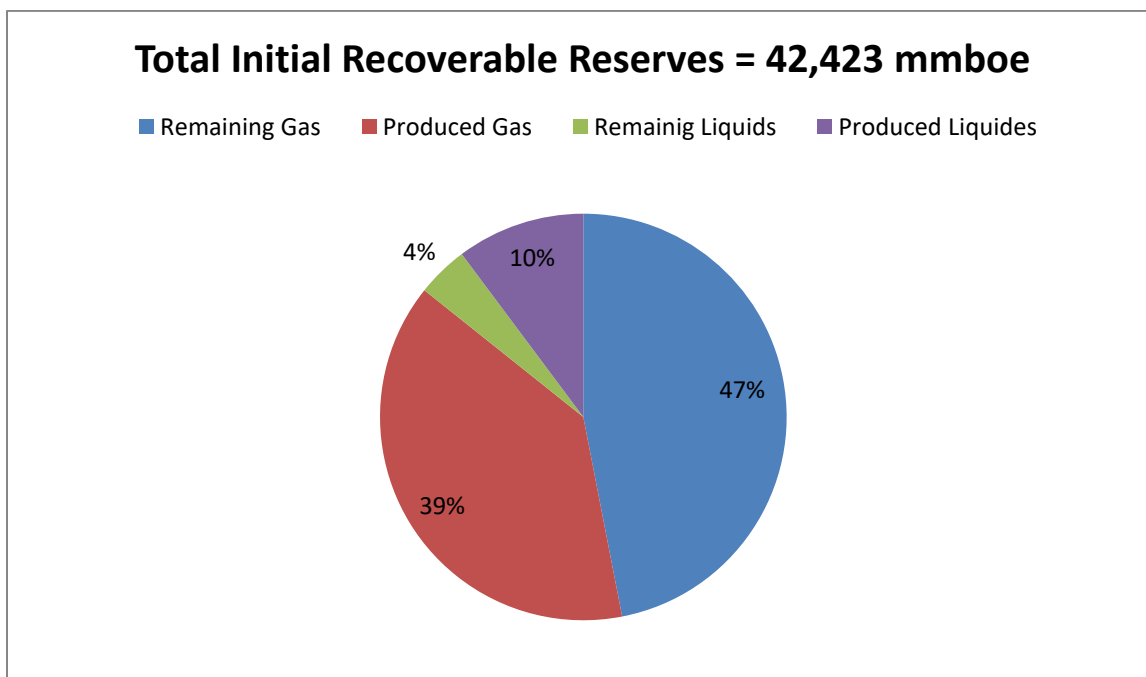
Category	Descriptor	Degree of Development/ Exploration
A	Producing reserves	Development wells drilled and field on production
B	Certified reserves	Development plan approved and development drilling starts.
C ₁	Delineated reserves	Delineation wells drilled and pool tested. Development plan prepared but not officially approved.
C ₂	Preliminary estimated reserves	Well drilled in the pool and total pool productivity inferred. No firm development plans.

Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Oil and Gas Reserves Overview: The same A, B, C₁, and C₂ reserve categories also apply to all forms of gas: associated gas, gas cap, and non-associated gas. Officially Turkmen data use the

same recovery factor for associated gas as for oil. Turkmenistan is predominately a gas province, most notable the Amu Darya basin in the east of the country. Gas accounts for 92 per cent of Turkmenistan's total remaining commercial reserves. Western Turkmenistan (South Caspian basin) is more crude oil-prone. Here it mentions the production and remaining commercial reserves at 2018.

Chart-5.1: Production and remaining Commercial Reserves till January 2018



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Reserves by Basin: The Amu Darya basin contains the majority of Turkmenistan's remaining commercial reserves, with the remainder located in the South Caspian basin. The Amu Darya basin also holds almost all of Turkmenistan's technical reserves. The significant unconstructed gas volumes at Galkynysh (South Lolotan) account for the majority of these. The Deryalyk-Dovdan Trough contains two minor gas discoveries that OVL currently classify as Technical.

Table-5.2: Sector wise Commercial Reserves till January 2018

Location	Initial Liquids (MMBBL)	Initial Gas (BCF)	Initial Oil Equivalent (MMBOE)
Amu Darya basin	609	189,498	33,961
Deryalyk-Dovdan Trough	-	-	-
South Caspian basin	5,312	17,901	8,462
Surkhan-Vakhsh basin	-	-	-
Mangyshlak basin	-	-	-
Total	5,921	207,399	42,423

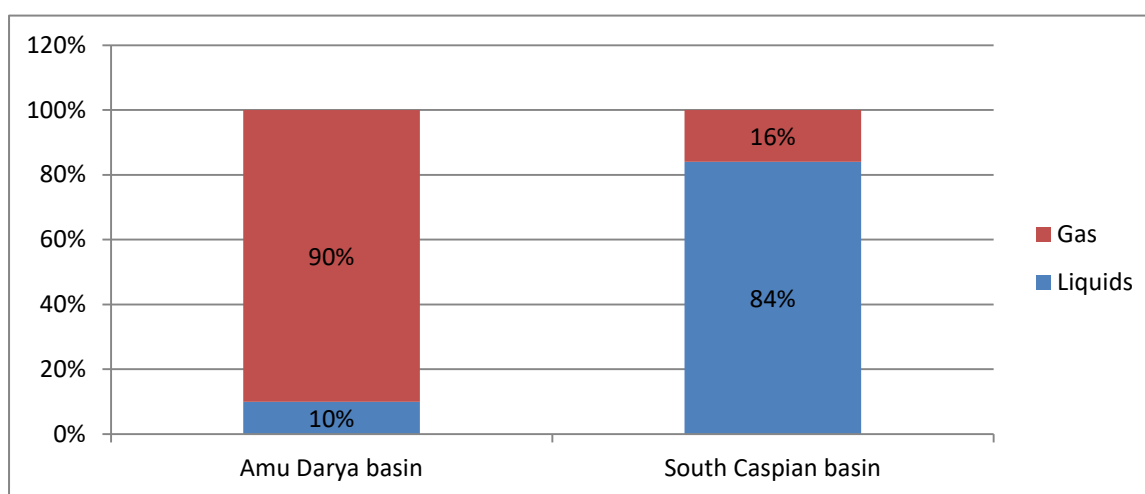
Table-5.3: Sector wise Technical Reserves till January 2018

Location	Liquids (MMBBL)	Gas (BCF)	Oil Equivalent (MMBOE)
Amu Darya basin	477	178,865	31,957
Deryalyk-Dovdan Trough	-	62	11
South Caspian basin	807	9,553	2,489
Total	1,284	188,480	34,457

Source: Wood Mackenzie report, ONGC Videsh Limited, 2018

Crude Oil and Natural Gas Reserves and Resources: Oil accounts for the majority of commercial liquids, but is found almost exclusively in the South Caspian basin in the western province of Turkmenistan. The majority of condensate reserves lie in the Amu Darya basin. The largest gas fields in the Amu Darya basin are relatively dry, with low condensate yields. Most of Turkmenistan's commercial gas reserves are concentrated in a few key fields in the Amu Darya basin [Galkynysh (South Lolotan) Dauletabad-Donmez and Bagtiyarlyk Area]. Amu Darya basin gas is mainly non-associated. In the South Caspian basin, fields are predominantly oil-prone but contain associated gas reserves (most notably Barsa Gelmeh and Kotur Tepe). Offshore Block-1 mostly contains gas-condensate fields.

Chart-5.2: Crude Oil and Natural Gas reserves; basin wise comparison till January 2018



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

In terms of initial reserves, Barsa Gelmeh-Kotur is the largest Oil asset in Turkmenistan. The mature fields are operated by state-owned Turkmenneft and account for 50 per cent of initial liquids. The offshore Cheleken Contract Area (Dragon Oil) and Block-1 (Petronas) provide a sizeable amount of remaining liquids reserves. About 80 per cent of remaining commercial gas reserves is held in two key fields operated by state-owned Turkmenneft: the super-giant Galkynysh (South Lolotan) development and the legacy Dauletabad-Donmez asset. These represent 50 per cent of remaining commercial gas reserves in Turkmenistan.

Production of Crude Oil and Natural Gas:

Turkmenistan's natural gas production will average 6.1 BCFD in 2018, 90 per cent of which will come from the Amu Darya basin. Future gas production will be underpinned by Galkynysh (South Lolotan), the world's second largest gas field. The 2.9 BCFD Phase One development came on-stream in 2013 and Phase Two is under construction.

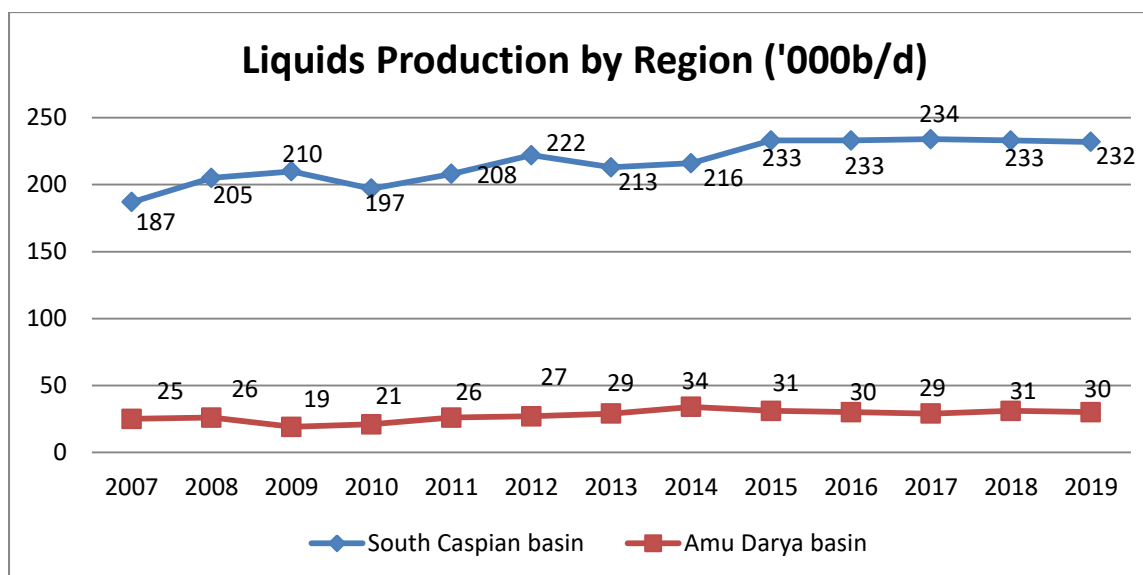
Crude Oil (Liquids Production):

Turkmenistan has a long history of crude oil production, which began on the Cheleken Peninsula in the 19th Century. Oil output remained modest until the Nebit Dag field came on-stream in 1931. This was the first significant discovery in the South Caspian basin. Turkmenistan's largest oil field, Kotur Tepe, began producing in 1959, followed by Barsa Gelmeh in 1964. Production

from these two fields fuelled rapid production growth in the 1960s and 1970s. In the early 1970s, the Turkmen oil output exceeded 300,000 b/d. In 1972, the first significant offshore discovery, Dzhygalybeg (Zhdanov), came on-stream, followed by Dzheitune (Lam) in 1978. However, their development proved challenging. As a result, offshore oil production did not offset a decline at Kotur Tepe and Barsa Gelmeh. Kotur Tepe came off the plateau in the late 1970s and oil output began to decline. Investment decreased, with the Soviet Union instead focusing on maintaining production from the giant West Siberian fields. Turkmen crude oil production continued to fall, before establishing at slightly more than 100,000 b/d in the late 1980s. The output then declined following independence in 1991. Between 1993 and 2012, Turkmenistan received an annual allocation of 4.4 million barrels (12,000 b/d) of Uzbek oil and condensate from the Kokdumalak field, located on the border between the two countries. An accord to split production from the field expired in 2012 when full ownership passed to Uzbekistan. This allocation is not included in our Turkmenistan production figures and is covered in the OVL's (Oil and Natural Gas Commission Videsh Limited, India) analysis. Turkmenistan's liquid production increased steadily from 1998 to 2005 as a result of renewed investment from both state-owned and foreign companies. Further growth has been achieved since 2007, primarily via stabilized production at Barsa Gelmeh-Kotur Tepe and ramp-up at Dragon Oil's Cheleken Contract Area.

Turkmenistan is the fourth largest liquids producer in the former Soviet Union, after Russia, Kazakhstan, and Azerbaijan, although output is dominated by state-owned Turkmenneft and Turkmengaz. There are five IOC-operated projects on-stream: Cheleken Contract Area (Dragon Oil), Nebit Dag Contract Area (ENI) and East Cheleken (Mitro International) are liquids-driven projects. Block-1 (Petronas) has refocused on liquids extraction as a result of challenging gas market conditions. The Bagtiyarlyk Area (CNPC) is a gas project with minor condensate volumes. Cheleken Contract Area is the largest producer of liquids in Turkmenistan. Its liquids are mainly produced from the South Caspian basin. The Amu Darya basin is a world-class natural gas province, but the gas is typically dry, with only modest condensate yields. Here year-wise liquid productions are mentioned below:

Chart-5.3: Basin wise Production of Crude Oil in ‘000 barrels per day’ from 2007 to 2019 (present President Gurbanguly’s Period)



*2019 is projected data.

Source: Wood Mackenzie report, ONGC Videsh Limited, 2018

Liquids production will continue to grow in the near-term. Incremental volumes will primarily come from PETRONAS’ Block-1, while output should be sustained at around 100,000 b/d at Dragon Oil’s Cheleken Contract Area. However, Barsa Gelmess-Kotur Tepe production is expected to remain stable for the next decade, other state-owned fields will experience a gradual decline.

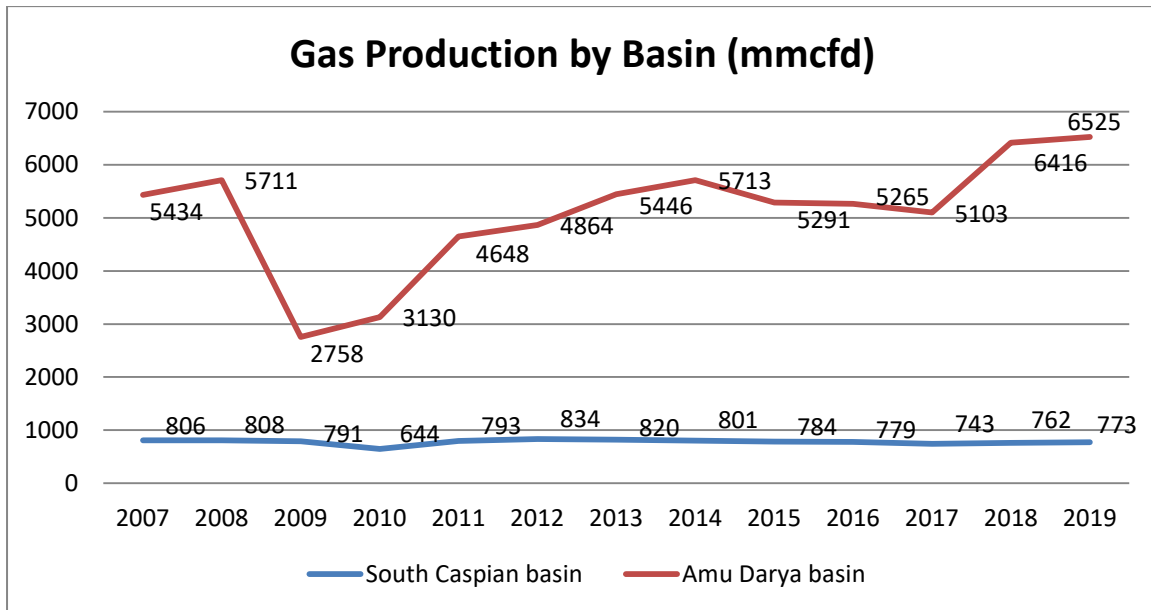
Natural Gas (Production):

Natural gas was first discovered in western Turkmenistan in 1951. Reserves were relatively low, as gas in this region was associated with the main oil fields. However, the first discovery in the Amu Darya basin in 1957 opened up a major new gas province. Several significant discoveries followed in the 1960s, underpinning the construction of a gas export pipeline to Russia: the Central Asia-Centre (CAC) system. Gas production increased dramatically during the 1970s-80s. By 1988, output had reached 8,500 MSCF/D, of which 95 per cent came from only 400 wells in the Amu Darya basin. At its peak, Turkmenistan was the world’s fourth largest gas producer. The giant Dauletabad-Donmez field came on-stream in 1982. By 1990, it accounted for 45 per cent of Turkmenistan’s gas production. Production fell sharply after the disintegration from the Soviet Union. For that reason, the severe decline was the result of gas price disputes, high transit

fees, and non-payment issues, mostly related to Ukraine. At its lowest point, gas output was only 1,500 Million Standard Cubic Feet per day (MSCF/d) in 1998. The collapse in production levels was primarily responsible for Russia's denial of Turkmenistan access to hard currency markets via the Gazprom operated pipeline network. Production rose from 1999 onwards as European markets became accessible again (via Russia). Substantial increases in the gas export price provided an additional incentive to invest in production growth. Exports to Russia were 4,100 MSCF/d (42.3 BCM) in 2008. A further 530 MSCF/d was sold to Iran. The Gazprom reduced its intake of Turkmen gas at the Uzbek border, following pricing and volume disputes in 2009. Turkmenistan continued to inject gas into the CAC export pipeline at the same rate, causing it to rupture. The pipeline was repaired soon afterward, but Turkmen sales to Gazprom have been greatly reduced ever since. The Gazprom ceased purchasing Turkmen gas in January 2016. Turkmenistan has two main pipeline links to Iran. Exports to Iran reached a high of 1,045 MSCF/d (10.8 BCM) in 2011, but have since decreased, as northern Iran becomes less dependent on imports. Commissioning of the Turkmenistan-China Gas Pipeline in 2009 was a landmark for Turkmenistan's gas sector. The line crosses Uzbekistan and Kazakhstan, connecting the Amu Darya basin to the growing Chinese gas market. 2,866 MSCF/d (29.6 BCM) of gas was sold to China in 2016, around 76 per cent of total exports. Total gas production, including volumes delivered to the domestic market, was around 6,000 MSCF/d.

Turkmenistan is the largest gas producer in Central Asia. Natural gas sales have exceeded production from neighboring Uzbekistan since 2011. Gas production is dominated by state-owned projects. Most gas fields are operated by Turkmengaz. Block-1 (PETRONAS) was intended to be a gas-led development, but plans have been hindered by challenging market conditions. The Bagtiarlyk Area (CNPC) is a large onshore gas development in eastern Turkmenistan that has underpinned initial export via the Turkmenistan-China Gas Pipeline. Turkmenistan's largest sales gas producers are located in the Amu Darya basin. The major projects are the legacy Dauletabad-Donmez asset and the super-giant Galkynysh (South Lolotan) field. The South Caspian is largely oil-prone but does provide some gas production. The offshore Block-1 has the potential to become a vital source of gas supply but continues to be restricting by long-stream market constraints. Here it mentions the gas production by basin year-wise has been mentioned below.

Chart-5.4: Basin wise Natural Gas Production in Million Standard Cubic Feet per day (MSCF/d) from 2007 to 2019



*2019 is projected data.

Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

In the future, China will be the main export market for Turkmen gas. Turkmenistan and China confirmed an increase in contract exports to 6,300 MSCF/d (65 BCM per annum) in 2013. In the pipeline, three strings are currently operational, with the most recent, Line-C, completed in 2014. Aggregate capacity should reach 5.3 BCFD (55 BCM per annum) in 2017. In 2019, Turkmenistan has depended on China for 90 per cent of its gas exports. OVL's estimates that Turkmen gas exports to China will be 4,300 MSCF/d (44 BCM) in 2020, 5,500 MSCF/d (57 BCM) in 2025 and 6,200 MSCF/d (64 BCM) in 2030. Future exports to Iran are hard to predict, particularly given Iran's ongoing difficulty in accessing hard currency to pay for its imports. Again OVLs' assumes that sales will be maintained at 4,080 MSCF/d (5 BCM per annum) until 2022 when volumes will gradually decline. First gas from Galkynysh (South Lolotan) Phase-I was achieved in 2013 with the Phase-II expect on-stream early next decade. If Turkmenistan is to fulfill its long-stream export ambitions, state-owned Turkmengaz will need to secure financing to develop this extremely challenging super-giant asset. At present, only service contracts are available for IOCs, but the immense scale of the project means that increased international participation may be required.

Turkmenistan's Energy Export Policy to Global Market:

As in other Central Asian countries, the oil and gas pipeline network in Turkmenistan was mostly developed during the Soviet era to satisfy the requirements of the Soviet economy. It was designed to optimize oil and gas transportation to and from Russia. The legacy still affects the country to this day. The main exception is the Turkmenistan-China Gas Pipeline, which has been built more recently to deliver growing amounts of gas to China. Mr. Bayram Aganyyazov, the First Secretary, Embassy of Turkmenistan, situated in New Delhi, the capital of India, opined in May 2018 that the present President of Turkmenistan always keen interest to show potential energy export to all South Asian countries particularly in large market of India. According to him since India was known as a smart business power, her capability of purchasing energy was existed. But in this context, he further mentioned that the export of energy do not depend on state-owned company only. The companies who hold share by investment, bilateral agreement with those companies in the meeting has decided export policy.²¹

Crude Oil Export Policy taken by Turkmenistan, as well as Connectivity is concerned:

Turkmenistan has no crude oil export pipelines. Oil exports are shipped across the Caspian Sea to Baku (Azerbaijan), Makhachkala (Russia) or Neka (Iran), with Baku and Makhachkala, currently the most widely used. Small amounts of crude oil and products are exported to neighboring countries by rail and road. Turkmenistan also has one crude oil import pipeline, but this is no longer used. This country has a limited internal pipeline network in the west, where, most of the country's oil fields are located. This links the main oil fields to both the Caspian export terminals and the nearby Turkmenbashi refinery. Here a figure has been shown for Turkmenistan's existing and future oil pipelines projects:

²¹ This author interviewed Mr. Bayram Aganyyazov , the First Secretary of Turkmenistan Embassy, situated in India, in May 2018.

Figure-5.9: Existing and Future Oil Pipelines Connectivity in Turkmenistan



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Turkmenistan's oil pipelines are operated by Turkmenneft. Many of the Soviet-era lines are ageing and in a state of severe disrepair. However, new pipelines have been built in recent years to tie-in supplementary fields and upgrade vital links to the Turkmenbashi refinery. Turkmenistan has a limited internal oil network. Oil product is delivered to either the Turkmenbashi refinery which is located in the western part of Turkmenistan's onshore of the Caspian Sea basin or one of the two export terminals, like, Ekerem and Aladja. Several of the lines are ageing and are in need of repair. State-owned Turkmenneft operates all of the pipelines.

Dragon Oil is developing offshore oil fields in the Cheleken Contract Area in the Turkmen sector of the Caspian Sea. 40 kilometers, 30-inch diameter pipeline was built to connect the fields to shore in December 2010, replacing two old, 12-inch diameter lines. Dragon Oil has also upgraded its export facilities at Aladja. The Petronas commissioned a 75 kilometers condensate pipeline from its field in offshore Block-1 to a new terminal at Kiyanly, north of Turkmenbashi in 2011. There is one inactive oil import pipeline in Turkmenistan, which originates at Omsk in Russia and terminates at the Seidi refinery in eastern Turkmenistan. However, this pipeline has not been used for many years and part of the line in Kazakhstan has now been reversed to allow that country to export oil to China. A second line was used to bring oil into Turkmenistan from the Kokdumalak field, which straddles the Uzbek/ Turkmen border. The pipeline runs south to Pelvert, where, prior to 2012, Kokdumalak oil was loaded into rail cars and taken to the Seidi refinery. Turkmenistan does not have an oil export pipeline. Oil and condensate are usually sold FOB²² at the Turkmen coast, for export by tanker to Russian or Azerbaijani ports.

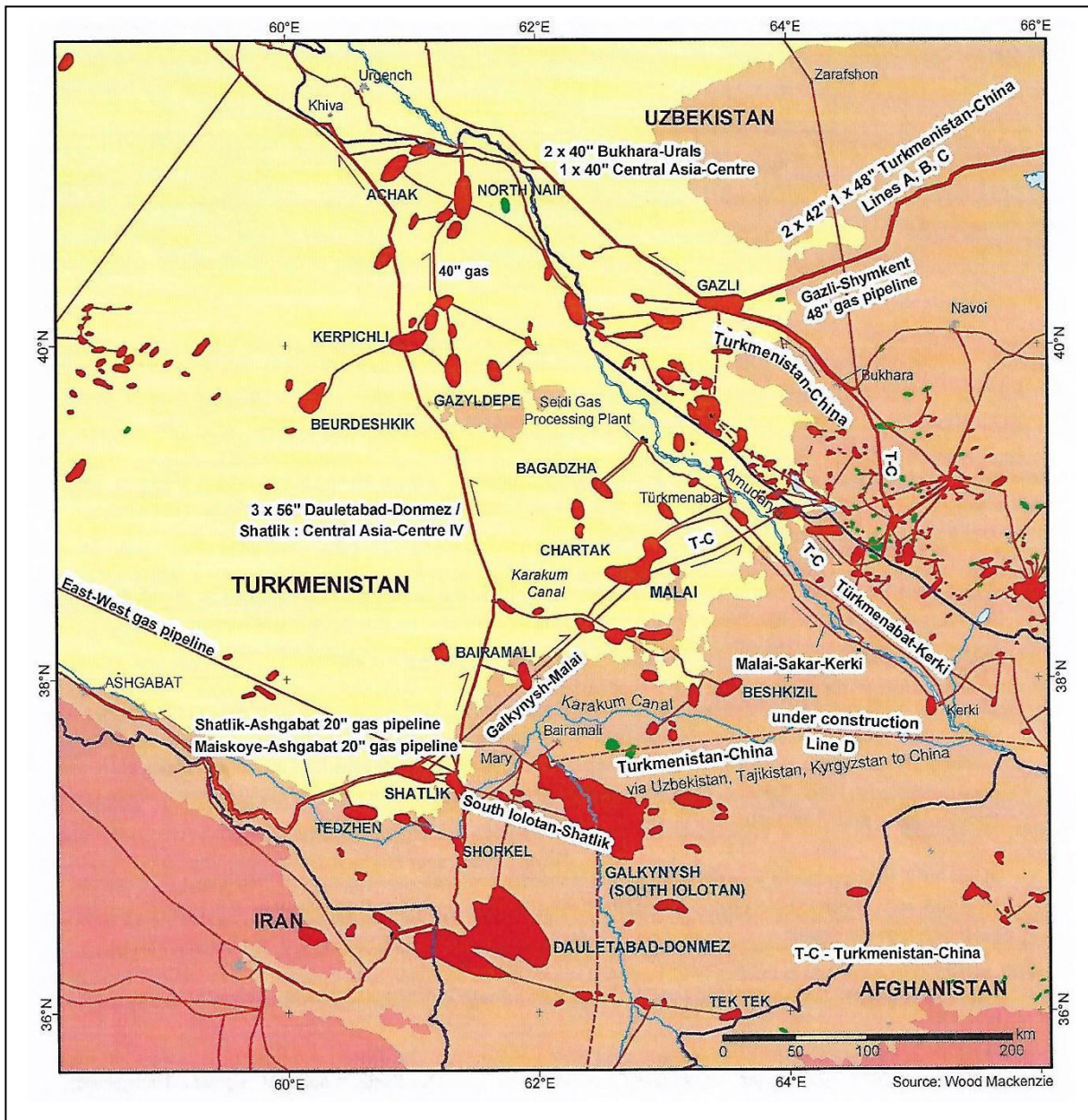
Natural Gas Export Policy taken by Turkmenistan, as well as Connectivity is concerned:

In contrast to crude oil, Turkmenistan has an extensive network of natural gas export and inter-field pipelines. It has operated by Turmengaz and Turkmenneft. The total length of the gas pipeline network is around 9,000 kilometers. Most of the pipelines are located in the east of the country. Here a figure has been shown for eastern Turkmenistan gas pipelines:

²² FOB (Free on Board) contracts relieve the seller of responsibility once the goods are shipped. Once the technologies are loaded - technically, "ship's rail has passed" - they are supposed to be delivered to the buyer's control. When the voyage begins, the buyer then assumes all liability. The buyer can, therefore, negotiate a cheaper price for the freight and insurance with a forwarder of his or her choice. In fact, some international traders seek to maximize their profits by buying FOB and selling CIF (Cost, Insurance and Freight). With FOB contracts, when the voyage begins, the buyer assumes all liability for the shipped goods. CIF and FOB mainly differ in who assumes responsibility for the goods during transit. In CIF agreements, insurance and other costs are assumed by the seller, with liability and costs associated with successful transit paid by the seller up until the goods are received by the buyer. The responsibilities of the seller include transporting the goods to the nearest port, loading them on a vessel and paying for the insurance and freight. In some agreements, goods are not considered to be delivered until they are actually in the buyer's possession; in others, the goods are considered delivered-and are the buyer's responsibility-once they reach the port of destination.

The above statement is given by Christina Majaski, "CIF vs. FOB: What's the Difference?" *Investopedia*. This data is available at: <https://www.investopedia.com/ask/answers/020215/what-difference-between-cif-and-fob.asp/> (Accessed on 16th June 2018).

Figure-5.10: Natural Gas Pipelines Connectivity in Eastern Turkmen region



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

The major pipelines are: Turkmenistan-China Gas Pipeline, Central Asia-Centre (CAC) pipeline (this system was built during the Soviet era to transport Turkmen and Uzbek gas to Russian demand centric and, later, for onward export to Europe), Korpjeje-Kord Kuy Pipeline (this is located in the west of the country and runs south into Iran), Dauletabad Donmaz-Khangiran Pipeline (a second line to Iran was commissioned in 2010), East-West Pipeline (Turkmenistan completed pipeline for the east-west interconnector in December 2015. This connects key gas

breaking ceremony took place for the TAPI section within Turkmenistan. However, the full project faces major political, technical and commercial challenges and is therefore not included in our base outlook; and Trans-Caspian Gas Pipeline (TANAP and TAP), this would extend across the Caspian Sea to Azerbaijan and has long been proposed to link with pipelines following westwards across Turkey into Europe. However, the potential line remains politically contentious, as legal jurisdiction over the Caspian Sea and border delimitations have still not been agreed by all five littoral states in the Caspian Sea basin like Azerbaijan, Iran, Federal Russia, Kazakhstan and also Turkmenistan.

Rail Connectivity System:

Turkmenistan has about 3,080 kilometers of railway tracks, all of which are single track and non-electrified. The principal railway line is 1,141 kilometers long and traverses the country from the refinery and port of Turkmenbashi in the west to Ashgabat and the Seidi refinery in the east before continuing to Uzbekistan. There is also a north-south railway link between the town of Dashoguz and Ashgabat, allowing direct rail access to Uzbekistan and Kazakhstan. Construction of this 530 kilometers railway track completed in 2006, after six years of construction. The total costs were quoted at US\$2 billion. The railway system along the left bank of the Amu Darya River was also upgraded to transport increasing volumes of condensate to the Seidi refinery in 2005. LPG product at the NAIP gas processing complex is transported to domestic and export markets by rail. 50 kilometers pipeline to the Gazachak railhead was completed in 2003.

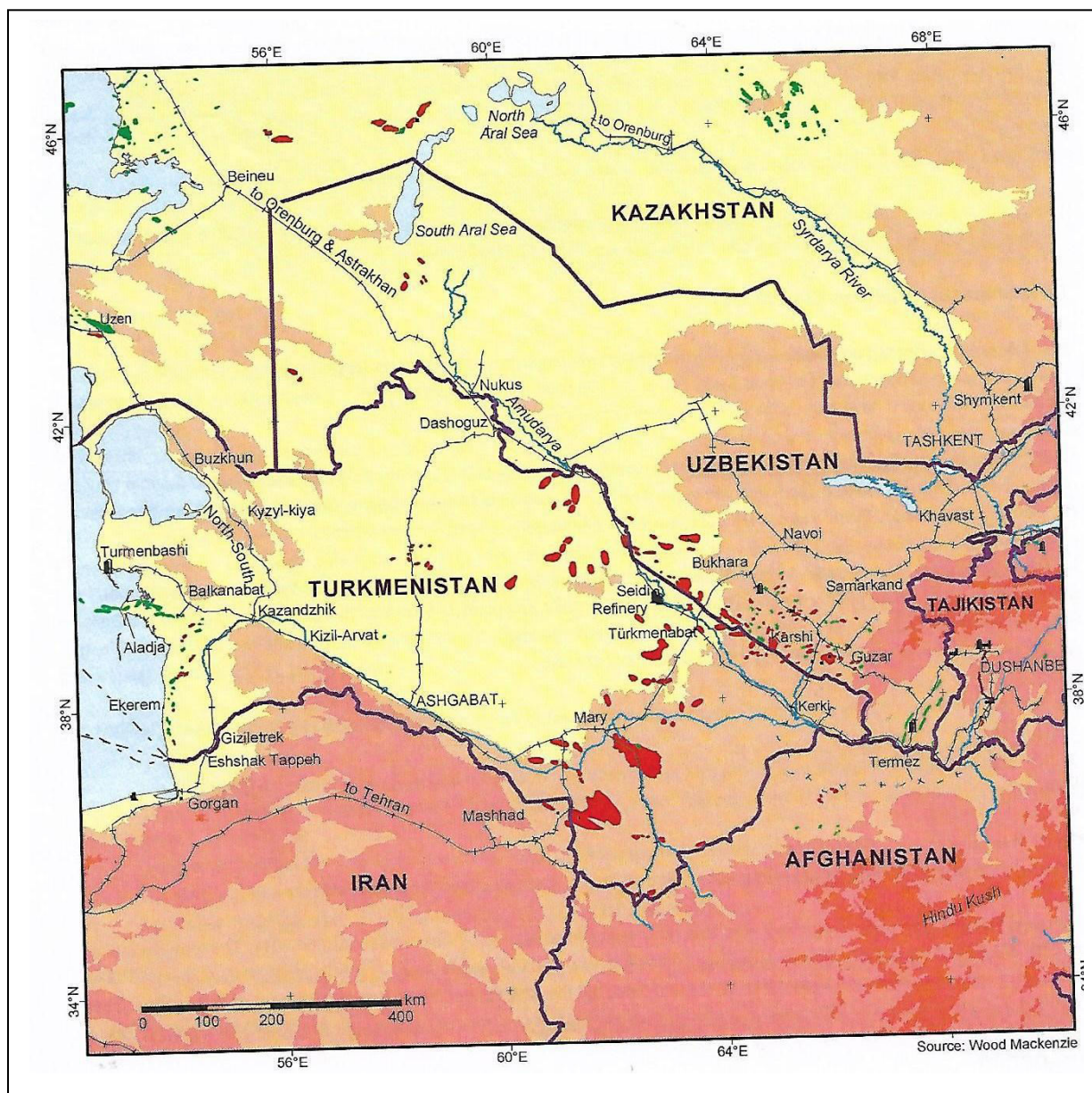
The main railway line that crosses the country from Turkmenbashi in the west to the Seidi refinery in the east carries on into Uzbekistan. Super lines run south into Iran, to the Afghanistan border and east into Tajikistan. A railway line from Tedzhen in Turkmenistan to Mashhad in Iran was completed in 1996. The allowed for faster transportation of goods to and from the Persian Gulf. It is primarily located at east to transport oil products to south and imported goods to north. The initial capacity of the line was 2 million tons a year of cargo. There are plans to quadruple this to 8 million tons a year. The President of Iran, Turkmenistan, and Kazakhstan agreed to connect their countries via a new 900 kilometers railway line- the north-south railway-running through western Turkmenistan along the east side of the Caspian Sea in 2007. Construction of the north-south railway began in September 2009 and completed in December 2014. It is around 925 kilometers long connecting Uzen (Zhanaozen) in Kazakhstan to Gorgan in Iran. The railway

is used for oil products, but could potentially see crude oil transport in the future. Initial capacity is around 5 million tons per annum of freight but is planned to increase to a million tons per annum by 2020. Its total cost is estimated at US\$1.4 billion. Parakhat Durdayev, the Ambassador of Turkmenistan stated that the railway link has been successfully connected. Under this situation, on 17th December 2017, for the first time, various goods, crude oil, LNG tankers and coal energy were exported by this rail link to Persian Gulf region. Not only that from Chabahar and Bandar Abbas port of Iran to Turkmenistan rail connectivity was important and the government of Russia and Turkmenistan had taken enough afford to develop this connectivity. It is relevant to mention here that Bandar Anjali of Iran, located at the Caspian Sea, had been connected to internal railway line of Turkmenistan. The reason is obvious. The INSTC took endeavor to implement this project. He also emphasized that since the bilateral relation between Iran and Turkmenistan was very cordial, the rail link between the two countries was established without any political barrier.²³

A railway map has been shown below for easier to understanding which is a primary source given by ONGC Videsh Limited, India, from a Wood Mackenzie report, 2017-18.

²³ This author had taken an interview in May 2018 with the Honorable Turkmenistan Ambassador Parakhat Durdayev, Embassy of Turkmenistan which is situated in India.

Figure-5.12: Railway Connectivity in Turkmen territory



Source: Wood Mackenzie report, ONGC Videsh Limited, 2018.

Ports and Shipping Connectivity:

Turkmenistan has several state-owned ports on the Caspian Sea, which provide access to other Caspian littoral states and an export route into Russia via the Volga-Don Canal. Oil is exported from the Ekerem, this terminal serves Turkmenneft's oil fields in western Turkmenistan. Its current capacity is around 30,000 b/d, despite plans to increase it to 200,000 b/d. The terminal can be handling by tankers of up to 7,000 tons. Aladja is the country's main oil export terminal.

It is operated by Dragon Oil, owner of the offshore oil fields in the Cheleken Contract Area, and Kiyanly is another terminal that is located about 20 kilometers northwest of Turkmenbashi. Since 2011, onshore treatment facilities have been commissioned by PETRONAS to process gas, condensate, and oil from its offshore Block-1 fields. The Turkmenbashi port has a capacity to transfer 234,000 b/d quantum of crude oil from tankers for processing at the refinery. The port infrastructure can handle tankers of up to 5,000 tons. In this context, the Aganyyazov, the First Secretary mentioned that the government of Turkmenistan declared Turkmenbashi port as an International Sea Port on May 2018 in a formal discussion between the authors. Not only that, Turkmenbashi port was also declared as International Transit Hub of the Caspian Sea region. This hub was connected to International North-South Transport Corridor which was the important medium of implementation of Turkmenistan's export policy. In the present context, it may not be out of place to mention that the Caspian Sea of Iran where Bandar Anjali port was located have been directly cargo linked successful which was very important for energy transportation. Oil products are exported from the nearby Kenar terminal and new facilities for LPG export have been constructed at Kynanly, which is configured to unload oil from tankers to the refinery sector in this country. Oil products are exported from Kiyanly, which is situated about 12 kilometers northwest of the Turkmenbashi refinery. Bekdash port, in the north-west of the country, is far away from the oil producing regions and therefore does not play a role in oil exports.

Summing up:

Turkmenistan is a newly independent state in Central Asia and in the southern part of the Caspian Sea basin. This landlocked country's most of the areas are covered by desert. In fact, geologically Turkmenistan is constituted by two main basins: Amu Darya basin and South Caspian basin. For desert and landlocked geopolitical point of view, Turkmen state has been facing enormous disadvantages in the development of agriculture and transport connectivity. Since independence, nearly 10 years elapsed when the internal mineral wealth of Turkmenistan did not come into focus, and no report was published to this effect. The main reason behind this has been the prevalence of big power rivalry. But after 2000, although Turkmenistan adopted 'open door' policy, privatization in the energy sector did not make any dent. After 2007, the government of Turkmenistan realized that the agricultural sector should be given emphasis in the

country vis-à-vis energy export. The prime reason behind this was that by supplying gas to China in 2009 and fourth level in 2014. The government of Turkmenistan understood that the foreign revenue could be earned by such measure. Again, after 2007, crude oil and natural gas production in Turkmen basin increased enormously. Since Turkmenistan being a landlocked country, emphasis was given on rail link and road connectivity in respect of maintaining bilateral and multilateral relation with the neighboring countries. It is a fact that the importance of Turkmenbashi port in the Caspian Sea region has been increasing gradually. From the beginning the influence of Federal Russia was excessive. But it would not be out of place to mention that energy exports of Turkmenistan were accessed by Russian oil pipeline. But at present after the completion of the construction of TANAP and TAP (Trans Caspian Pipeline-which is connect from South Caspian basin); and CNPC Pipeline, China had captured the large market when the government turned its aim to Europe and South Asia, and later on Indian market via TAPI gas pipeline project for connectivity in regard to export of energy.

This chapter is based on the report provided by OVL. The OVL data taken from the office of New Delhi, India have been analyzed. My case study on Turkmenistan and the facts incorporated in this chapter amply demonstrate the spectrum of Turkmenistan particularly its energy production and export. The present scenario of energy export has also been given. The main focuses were given on historical background of the origin of this state, the Presidential role over energy, the President ruled government's measures over energy sectors, rules and regulation for exploration of energy, involvement of foreign companies over offshore and onshore fields, road-railway and port connectivity in respect of energy export. It appears from investigation that research oriented particularly on energy matters in Turkmenistan did not attract attention from the research scholars earlier; this writer tried to penetrate in this area by interviewing the Government officials who were directly or indirectly connected with Turkmenistan. Hence, in this chapter, our data are based on interviews and primary report.

In addition to external connectivity, Turkmenistan might give emphasis upon the development of the internal link. The government of Turkmenistan was very eager to perform these roles which have been honestly explained in this chapter. It can undoubtedly be reiterated that energy is a vital issue in Turkmenistan's foreign policy. In fact, Turkmenistan's foreign policy as regards energy production is shaped considering the involvement of foreign companies, their investment,

and share holding, etc. all these determine Turkmenistan's energy exploration and export policy which is the prime theme of this chapter. But on the other hand, main focus is concentrated on India-Turkmenistan a connectivity issue which is depended on multilateral relations. Since India is a growing smart business strategic power²⁴ in South Asian market vis-à-vis deficit in energy reserves, India in the forth coming days might give emphasis on connectivity with Central Asian countries, particularly with the fourth largest gas producing country, Turkmenistan. For successful implementation of this venture the major important issues for India was to undertake the projects, like, INSTC, CASA-1000, Iran-Turkmenistan-Kazakhstan railway track, Chabahar Agreement in Iran, connecting with Turkmenbashi port in Turkmenistan, TAPI gas pipeline project and also Trans-Caspian Pipeline project from South Caspian basin, etc. The present status of India-Turkmenistan energy cooperation will be main focus of discussion in the next chapter.

²⁴ The author has interviewed Dr. Bhagaban Behera, Faculty Member (Assistant Professor) of the Department of International Relations of Jadavpur University, Kolkata, West Bengal, India, on 2nd February 2019. According to the professor, most of the countries in the world are following this 'Smart Business Strategic Partner' policy. Not only that, but every state is bound by MoU or other trade agreements with each other every year. The government administration and also the non-governmental organizations are establishing links equally. All these treaties are directly related to trade and commerce, foreign investment, research and development, and the establishment of road-rail-air-waterway-pipeline connections. According to the detailed remarks of the professor, no other country now serves such a keen mindset for the purpose of strengthening the two countries militarily by the expansion of hard power i.e. by military treaty or agreement. However, the cultural integration of two or more countries at present can also be given priority which can be referred to as a 'soft strategic partner'. Therefore, when one country connects with another through the exchange of trade, energy, and information technology, that is, the things that directly connect us to one of the necessities of life and the things that unite us to live a healthy life in the future. This is called as a 'smart business strategic interest'. That is, the two countries are directly involved in the social welfare work of both. From this, it can be firmly stated that the system of exchange of energy is one of the social welfare activities-which protects the security of the people lives in a country.

Energy and India-Turkmenistan Relations

The political-strategic interaction between the individual states of Central Asia and South Asia is of great importance. Besides, there are complex issues that challenge the region; particularly in the political-economical sphere. In fact, after disintegration from the Soviet Union, the Central Asian state faced various challenge but differ from state to state. Thus, the foreign policy of each Central Asian state covers a wide range of issues and challenges, both directly and indirectly. Of these, conservation of energy security and challenges are the most vital. However, this study reveals some special importance for establishing some political-economic strategic relations between the states and the region under consideration. Turkmenistan, the energy rich country situated in the southern basin of the Caspian Sea region, Central Asia; and India is located in South Asia surrounded by three great oceans. These geographically diverse countries are the leading states' in world politics; because, Turkmenistan has its energy reserves. For that reason, it wanted to sell its energy to the global market; and India's huge market demand is played a crucial role in the global market for purchase energy from abroad. These two countries are located in one belt, one land territory. For that reason, these two have a great significance in the world's market economy. One wanted to sell its energy outside the world and one's tried to buy its demanded energy from this energy resource state. This relationship deserves particular attention for investigation. Researchers in this area are very few because the newly emerged independent states of Central Asia do not find a viable and satisfactory solution to their impending issues and obstacles, and sometimes adequate data are very difficult to access. Although, in this region, the political issues raised for inter-regional reasons are of primary importance.

According to some Indian scholars, who are of the view that the political aspect related to intra and inter-regional security concern was of primary connotation. On the other hand, it is also important to note that the economic aspect is more complex than the political one. In Central Asia, states' regional politics is controlled by the energy-economic paradigm. India has been interested primarily in trade and economic cooperation with Central Asian states mainly Kazakhstan, and also with the fourth largest natural gas producing state namely, Turkmenistan. As my research work is on Turkmenistan, so I have tried to focus Turkmenistan's case-study

properly. Turkmenistan's annual policy and regulations of the law are maximum focuses on the energy-related aspects. Energy is the very most concern it's for a business policy with abroad.

In my previous chapters, I have tried to give emphasis on the possible connectivity with India and the Caspian Sea region's state' particularly Turkmenistan. Turkmenistan, one of Eurasia's and Central Asia's geographically important countries, is now gaining strategic importance in the world economy. The country is enriched with various natural resources like natural gas, petroleum, salt, and Sulphur. Turkmenistan and other Central Asian states are very much interested to cooperate with India in all possible ways. India has learned from its experience in the economic field that some reciprocity was proved as partners of Central Asian countries. However, the 'all-embracing' interest by Central Asian states has paved the way for a more rational and balanced approach. Not only that Central and South Asian states are engaged in several fields, such as, but Uzbekistan also is a member of the non-alignment movement that includes other South Asian countries; Turkmenistan did not join any bloc and avoided its policy from big powers rivalry when it disintegrates from Soviet Russia in 1991. Until the disintegration from USSR in 1991, Turkmenistan was part of the greater Soviet Union. The government and economy of the Soviet Republic were highly centralized. Moscow has not done much for the development of Central Asian countries. Turkmenistan was also among the neglected republics. During the Soviet period, several industrial or infrastructural developments were achieved in the country. As countries gained independence, they began to focus on various strategies to develop their economies. Turkmenistan has the least changed economy among the five Central Asian countries. The country still adopts the strategy followed during the Soviet period. Since independence, Turkmenistan has declared itself a neutral state, meaning it will not join any alliance or side with any party during the conflict. They will always act as a mediator. It is the first and only country to be recognized by the United Nations as having the status of permanent neutrality (Permanent Neutrality of Turkmenistan, 2015). It has tried to maintain its '*neutral*' position and thus, it has maintained its activity in formulating strategic interest following this stated ideology.

This strategic interest in neutrality is in accord with India's stand towards non-alignment ideas. Although Turkmenistan is not a member of the World Trade Organization (WTO), it is still part of the Organization for Economic Co-operation and Development (OECD), which provides a

platform for promoting trade between member countries. It is pertinent to point out the participation of India into the organization like, CICA. This initiative has taken by Kazakhstan with their partial membership in SCO. Not only that, vis-à-vis, India has supported Turkmenistan's candidacy as well as other Central Asian states for their full time membership in ASEAN, one of the largest regional forum in the world. It can be safely mentioned here that, India's strategic position in the world forum is quite impressive and its smart business interest can move a country in higher GDP growth. For that reason, India's positive interest in Turkmenistan can build smoothly to ensure both countries' position. On the other hand, Turkmenistan, with a closed economy, did not achieve as much as a free interest till 2005. Since 2010, the country has pursued an open economy policy, so the country has many advantages such as economic growth, low cost, availability of goods and services, research and innovation. However, the situation in Turkmenistan is completely different. Although the country follows a separate policy and has a partially closed economy, it is still one of the fastest-growing economies country and the fourth-largest natural gas reserves in the world. Turkmenistan's neutrality does not mean that it will never have relations with any other country in the world. The country is always engaged in building peaceful foreign relations but does not allow any external force to control its internal affairs. Turkmenistan has trade relations with various countries, mainly Russia, Iran, Afghanistan, the United States, Turkey, India, and so on. Its foreign relations are largely based on its energy sector. One of the most crucial initiatives to strengthen regional ties is the TAPI gas pipeline project for the supply or export of natural gas from Turkmenistan to all contracting countries.

In this research work, India-Turkmenistan relation is mostly highlighted for their economic and energy cooperation. At present, Turkmenistan is one of the most leading energy reserves countries in the southern basin of the Caspian Sea region. This country has risen after globalization. Then, the country is aloof from the world forum, as their policy was not kept free. This case study is based on a perspective that largely highlights the energy issues. Therefore, Turkmenistan, a landlocked country of Central Asia, how could not improve in the early twentieth century. After independence, the country has maintained its privacy to the global market, because of its geographical position and great power's involvement in their territory. The country's maximum position is surrounded by desert and mountain ranges. For that reason, at the primary stage, Turkmenistan is highly dependent on its neighboring states, namely, Russia, China, Iran, and Kazakhstan, etc. After 2010, when the Turkmenistan government has expressed

its huge energy reserves and simultaneously, take the ‘*open door*’ policy in its strategic interest; therefore, all the countries of the world has looked on eye towards this Caspian region’s state. Now, as an energy deficit developing country like India, is not an exception.

But it is an agony the fact that import of energy for India is not an easy process. In comparison, this country has to bear sufficient capital and time, not only that, the challenges in the overseas to import sufficient quantum of energy. For this reason, as India is located in the southern part of South Asia; this country is very near for its connectivity towards this Caspian Sea region, as well as Turkmenistan. India, at present, is very much eager to connect highly enriched energy resource regions like, the Caspian Sea basin approximately 3500 kilometers away from New Delhi (India’s capital). At the beginning of the 21st century, Indian scholars have taken various attempts to connect India-Turkmenistan relations in the international arena.

In India almost 70 per cent of energy demands are met from imports. Hence, this chapter emphasizes the energy links of these two countries. India is close to Turkmenistan from the historical side other than the geographical paradigm. ‘*Turkmen Gate*’, built-in Delhi in the 1650s was a testimony to this friendship. Again, at different times, the Presidents, the Prime Ministers and the higher officials of both the countries tried their level best to establish bilateral relations amicably. For instance, the then Prime Minister Jawaharlal Nehru visited Turkmenistan in 1955 and present Prime Minister Narendra Modi visited Turkmenistan in 2015. Through all these visits by high leaders of both the countries, it has tried to build up the bilateral relations between India and Turkmenistan, particularly on energy issues, side by side cultural, yoga, economic, trade, connectivity issues like, air, road, and rail and sea route. Therefore, medical instruments like, health care facilities, surgical instruments, technological machines, etc and also the supply of cultivation instruments, and fishing merchandises also supplied from India. Similarly, Indian music gained a foothold in the minds of Turkmen people. All of these are examples of improved communication and connectivity of states.

An Overview of India and Turkmenistan Relations, particularly Trade are concerned:

In globalization, if anyone wants to measure the bilateral, trilateral, and multilateral relations between the countries, the economic ties become the prime factor. As many regional forums have been formed in the world, all are centered on economic ties; because after World War-II,

along with these big powers has come a belief among the newly independent developing states or buffer states that their free-market economy and import-export based business could strengthen the economic structure of that country. Therefore, a 'smart business strategic interest' has emerged in their foreign policy among all countries. After independence, India has adopted foreign policy and made it widespread for multilateral cooperation for strengthening economic and trade ties. For instance, India's entry into the ASEAN and subsequent economic ties with South East Asia bears one of the brilliant examples for securing energy demand. In this regard, it is pertinent to mention that it is necessary to strengthen the economic and import-export relations of any country as well as strengthen the economic-energy security as India was still dependent on 70 per cent of energy supply from abroad for its domestic needs. This huge quantum of energy shortage directly impacted the economy at the grass-root level. Moreover, the spread of small-scale industries is also vulnerable to this. It will greatly hit the Gross Domestic Product (GDP) level in the country as well as the international share market. The GDP level, particularly its growth rate, determines whether a country is to be known as soft power or smart business power. Until 2012, India was known as soft power in the world forum. At present, India is to be regarded as a smart business strategic power. This good impact has been observed in bilateral and multilateral relations. For a well smart business strategic interest, India needs to emphasize the connectivity issue properly. Without proper connectivity is concerned between the states, it's not possible to fulfill the energy vacuum for India. However, communication is very much needed for these two countries' relations, but without connectivity or direct link between the two, there is no chance to enhance its position in the global market.

At present, most of the energy resource countries like Kazakhstan, Turkmenistan, and Uzbekistan in Central Asia is very most vital to India. The main factor is, India's domestic energy production has not gained its demand target. This can be filled in only by spreading its connectivity with newly energy resource countries, namely, Turkmenistan, and Kazakhstan. But as the case-study is mainly emphasized upon Turkmenistan, so, it is relevant to focus on Turkmenistan's bilateral relations with India. Experts of this study opined that it can be possible to fulfill India's energy demand by taking up this connectivity measure. For this, it is necessary to strengthen trade ties with this county. In the world, Turkmenistan's natural gas reserve is standing in the fourth stage. Besides, petroleum products, chemicals, cotton, wheat, a variety of vegetables, and fruits export policy also played a crucial role. Hence, the purpose of the study

will be to focus on data relating to trade between India and Turkmenistan and highlight the possible future cooperation potentials and how to enhance this volume of export between Turkmenistan to India. It is pertinent to point out that after the disintegration from Soviet Russia among the five Central Asian states; Kazakhstan holds a significant priority in India's energy security policy.

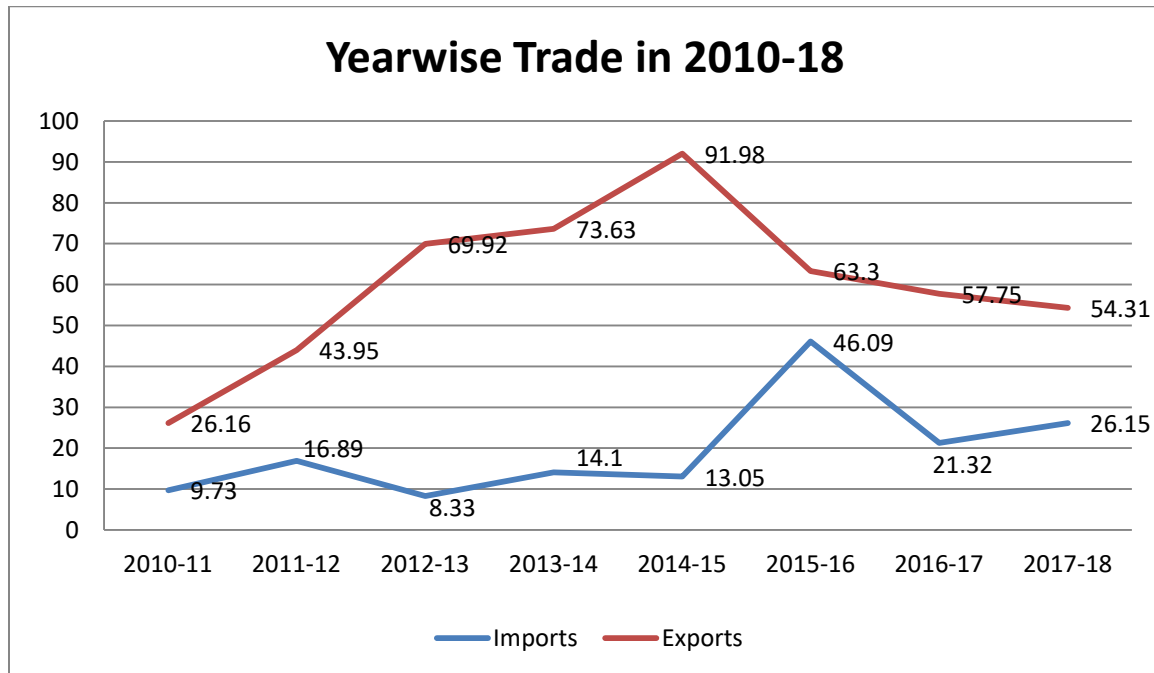
India and Kazakhstan have made a new horizon in the sphere of bilateral relations between the two nations. Among the five countries in Central Asia, Kazakhstan is the largest trading partner.¹ But it is a matter of agony that India's current trade with the Central Asia region is not at all encouraging, a little over 1 billion dollars and there is no prospect for growing economy much. The trade volume with the region accounts for a mere 0.11 per cent of India's total trade system. India's share in Central Asia's total trade is only about 1 per cent.² Over the year, India and Turkmenistan slowly connected and their bilateral investment and trade of various goods and materials are growing gradually.

Turkmenistan imports electronic and electrical products like, Korea products, machinery and oven, and pharmaceuticals, and frozen meat, etc from India by air link. India imports from Turkmenistan that comprises materials like rawhides and inorganic chemicals, e.g. Iodine (I₂). A line-chart in respect of bilateral trade between India to Turkmenistan is given below that shows the import-export graph between the two countries:

¹ R, Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Althar Zefar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publication, 2014), p. 187.

² Ambassador P. Stobdan, a Senior Fellow at Indian Defense and Strategic Analysis, New Delhi, 12th February 2018. Available at: [http://idsa.in/idsacomment/significance of India-Joining-Ashgabat-agreement p-stobdan-120218/](http://idsa.in/idsacomment/significance%20of%20India-Joining-Ashgabat-agreement%20p-stobdan-120218/) (Accessed on 18th March 2019).

Chart-6.0: Bilateral Trade in US\$ in Millions from 2010 to 2018



Source: <http://embassyofturkmenistan/ashgabat/>

It may point out from the chart that from 2013-15, the export from India to Turkmenistan was upwards. In 2015, some developments took place which resulted in the commencement of the India-Turkmenistan Inter-Governmental Joint Commission on trade, economic, scientific, and technological cooperation which was known as the protocol of the fifth meeting (Ashgabat on 8th April 2015).³ In this meeting, there had participated various high officials, such as the Indian Foreign Affairs minister late Mrs. Sushama Swaraj and Mr. Rashid Meredov, Deputy Chairperson to the Cabinet Ministers and Ministers of Foreign Affairs of Turkmenistan. This meeting between the two countries played a vital role in cementing the bilateral approach. The result was the increase in India's imports from Turkmenistan. During 2015-16, the volume of overall import-export trade between the two countries stood at US\$109.39 million. India's import from Turkmenistan was US\$46.09 million. Most of the highest imports this year have come from Turkmenistan. The trade relations between the two countries during 2014-16 serve the highest position level than all year wise phenomenon.⁴ But afterward, during 2017-18,

³ Government of India, 17 pages report, Ashgabat Agreement. This report is available at: <https://eoi.gov.in/ashgabat/?pdf6344?000/> (Accessed on 14th April 2018).

⁴ This statement is available at: <http://www.eoi.gov.in/asghabat/> (Accessed on 20th March 2019).

exports of goods had been declined by Turkmenistan. But India's export of goods, services and electronic products to Turkmenistan is getting high.⁵ This gradual reason for the progress of trade has been revealed by the Honorable Ambassador of India in an official discussion. The expert stated that Pakistan tried to sabotage India's communication in Central Asia through jokes or cunning. At present, for lack of direct connectivity, the trade relations between India and the Caspian Sea region is very slow despite Central Asia countries has been very much eager to cement the relations between the two. It is for this reason that the International North-South Transport Corridor is an important project through which the government of India has been playing a foremost role to enough degree. India has invested its adequate amount of capital for the construction of the Iran-Turkmenistan-Kazakhstan railway track for connectivity with the Caspian Seaports.⁶ In this way, the India-Turkmenistan relation particularly on trade and business management has faced various challenges. But simultaneously, the two countries have a lot of prospects for making its smart business strategic partnership strong in position by the export-import method. But there are lots of challenges than its prospect, these are given below:

- (a) Lack of direct connectivity: Turkmenistan in the Caspian Sea region is a landlocked country. As a result, for making a commercial transaction, Turkmenistan has to cross many coastlines. The cost of transportation increases whether it is done either through land or through the sea. It compels India to find out an alternative route. That is to say, India has shown interest in the International North-South Transport Corridor by making collaborating with Iran and Russia. This has made it easier for India-Turkmenistan to import and export energy.⁷
- (b) The banking sector of Central Asia faced major problems when the global economic downturn went on. It continued. It was one of the foremost weaknesses of Turkmenistan's economy. For this, a major impediment to the Turkmen's economy has been the non-availability of currency and lack of conversion facilities.
- (c) The marketing networks through major media outlets or newspapers of respective governments are inadequate.

⁵ This data is available at: <http://www.eoi.gov.in/ashgabat>, (Accessed on 10th December 2018).

⁶ This statement has given by the honorable Indian Ambassador Ashok Sajjanhar, New Delhi, in April 2018.

⁷ G. Sachdeva., *Economic Changes in Central Asia and India Response* in Roy, J.N and B.B. Kumar (ed.s), *India and Central Asia: Classical to Contemporary Period* (New Delhi: Concept Publishing Company, 2007), pp. 251-272.

- (d) Language barrier is one of the great barriers to connect this region. Because The Russian language is widely used locally, for that reason, it is very important to master this language for research in this area.
- (e) Central Asia is known as one of the great game areas for its huge energy reserves and particularly the presence of the Caspian Sea basin's reserves. Big powers rivalry and game politics is a great challenge for a state like, Turkmenistan. For this reason, it will always hinder the export policy of Turkmenistan.⁸

All the challenges and prospects have tried to emphasize clearly. But regarding India and Turkmenistan's relations, the high official of the Embassy of Turkmenistan expressed his opinion that the communication between India and Turkmenistan has increased significantly; not only that, besides communication, the connectivity between these two countries has been also trying to develop adequately.⁹ Both ambassadors were present after the government-level agreement was reached at the time of the agenda. This is the biggest example that India and Turkmenistan had been tried to cooperate in Science and Technology. All this cooperation between the two countries has always been within the high officials of both countries. Such as, the Science and Technology department of India signed a memorandum in New Delhi, India from May 2010 to 2015-17. In this memorandum, it was stated that the relations between the two countries have been pertaining to the exchange of information, scientist, researchers, experts, technologists, etc through short and long term visits, joint research through collaborative projects, the nomination of a specialist traveling under the present programme of cooperation (all these are done under Article-6 of the MoU). This MoU was valid until 31st December 2017.¹⁰ Afterward, in 2017, another MoU was signed on the supply of chemical products in Memorandum of Understanding between Indian public sector undertaking, Rashtriya (state) Chemicals and Fertilizers Limited (RCF) and with the state concerned 'Turkmenhimiya'.¹¹ In this MoU, Turkmenhimiya, the state concern company of Turkmenistan has decided to supply

⁸ R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athat Zafar (ed.s.), *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 195.

⁹ Mr. Bayram Aganyyazov, the First Secretary of the Embassy of Turkmenistan, New Delhi, India, whom I conducted a formal discussion in May 2018.

¹⁰ This article is on "Programme of Cooperation in Science and Technology between the Government of the Republic of India and the Government of Turkmenistan for the Period of 2015-2017", The Embassy of India Ashgabat, Turkmenistan website. This memorandum is available at: <https://eoi.gov.in/ashgabat/?pdf6283?000/> (Accessed on 8th August 2017).

¹¹ This article is on "Memorandum of Understanding on Supply of Chemical Products between Indian Public Sector Undertaking Rashtriya Chemicals and Fertilizers Limited (RCF) and the State concern 'Turkmenhimiya', The Embassy of India Ashgabat, Turkmenistan website. This memorandum is available at: <https://eoi.gov.in/ashgabat/?pdf6282?000/> (Accessed on 8th August 2017).

urea to India under Article-1 and 2. The volume and the cost of supplied urea will be materialized by a separate agreement under Article-2 of that MoU. All of these MoUs are significant in the sense that they are helpful in increased economic engagement between the two countries. The energy ties between India and Turkmenistan are comprehensible but there are several roadblocks on the way of developing relations which have made hindrance in matters of economic trade and energy security paradigm. There is an enormous prospect for future cooperation, communication and connectivity. In this context, MoUs are the means of relations between these two countries. The two institutes like Foreign Service Institute of India and the Institute of International Relations of the Ministry of Foreign Affairs of Turkmenistan are engaged in these MoUs which are mutually beneficial for cooperation like a training programme for diplomats (Article-1 of the MoU) and exchange of trainees, faculty members and experts (Article-2 of the MoU). For increasing economic and energy trade direct connectivity, certain measures are taken, for instance, Inter-Governmental Joint Commission which has been signed by the late Foreign Minister of India Mrs. Sushama Swaraj; and Co-chairperson of the Turkmen side, Mr. Rashid Meredov. All these MoUs are indicative of significant relations between these two countries.¹²

From the growing economic engagement between the two countries, it has been acknowledged by the governments of both sides that despite the rapid increase in bilateral trade over the past

¹² According to the fifth meeting of the Intergovernmental Protocol in April 2015, there was an uninterrupted and steady increase in bilateral trade; the volume of trade was less than the interests of the two countries and both sides agreed to make joint efforts to promote trade respectively. In this regard, it can be mentioned that the completion of the TAPI project would significantly increase the volume of bilateral trade particularly energy is concerned. The Commission identified, in addition to hydrocarbons pharmaceuticals, Information Technology (IT), construction, automobiles, fertilizers, and agricultural machinery including tractors, agricultural and animal products, textiles and wool as specific sectors for bilateral cooperation. It was agreed that the two governments would further encourage companies in both countries for partnerships, including through joint venture with the aim to enhance trade and investments. Both sides reiterated their intention to create favorable conditions for participation in their respective international tenders by companies of both countries and called upon various agencies and chambers of commerce and industry in both countries to take essential efforts in a timely manner. Both sides agreed to encourage and facilitate opening of trade or representative office in each state and by companies, organizations, as a means to further boost business linkages. Both sides, India and Turkmenistan agreed to intensify holding of exhibition in each other country. Both sides felt that the potential of direct flight connectivity between the two countries could be better utilized to encourage import-export of products, such as fresh fruits or vegetables and packaging food items from India to Turkmenistan, and agreed to cooperate together to facilitate movement of airship and cargo. From, Indian side, it has informed the Turkmen side that there is huge potential for cooperation in the paradigm of pharmaceuticals, as India has emerged as a supplier of high quality pharmacy products. All the cooperation link both the countries close in strategic interest.

few years, the potential trade volume between the two countries could be multiplied for the mutual benefit of both countries.¹³

The two leaders of the Government of India and Turkmenistan agreed to actively work together for rapid progress at the levels of bilateral trade, investment, and economic cooperation in various sectors like energy, petrochemicals, transport, communications, information and technology, textile industries, chemical and pharmaceutical industries, construction of agro-processing units, etc. Not only that, the two countries felt it compulsory to promote the participation of private companies including joint ventures in various infrastructural and investment projects. It was realized by the two countries that economic engagement would be increased only when business cooperation and the forum constituted for this purpose would play an active role in investment. Dr. S. K. Mathur stated in a seminar on “*International Relations: Global Business and Smart Strategies*” on 8th February 2019 at Jadavpur University, Department of International Relations, Kolkata, West Bengal, India that the business forums of South East Asia, Switzerland, and European Countries have increased the demand of MBA. In these foreign countries, this helped to convene joint ventures. But in Central Asia, only Kazakhstan which formed the Indo-Kazakh Joint Working Group on Information and Technology has been working actively. Not only that, in India, TCS (Tata Consultancy Service) and NIIT (National Institute of Information Technology), and Shree InfoTech Company have been able to connect with the banking sectors. But Turkmenistan still has not been able to attract investment from any private sector. This is obviously one is the subject of backwardness between these countries. But it has shown much eagerness in the construction of Software Technology Parks.¹⁴

¹³ According to the honorable Indian Ambassador Ashok Sajjanhar in a conversation with the author, expressed that Kazakhstan and Turkmenistan have been interested in deal with India for supply of crude oil and natural gas. Coal, natural gas, uranium, and crude oil of Kazakhstan; natural gas and dam centric hydroelectricity, urea, and crude oil of Turkmenistan are items in which they are interested to export to India. India has widened the road of energy import by completing the drilling process in Kazakhstan on 7th July 2015. Indian company namely, ONGC Videsh Ltd is also attached to this project. The Caspian States have chosen South Asia to make connectivity so far as crude oil and natural gas export are concerned, particularly, these states, namely, Turkmenistan, Kazakhstan and Iran are interested to build relation with India (a high populated value base country which holds one of the largest market systems in the world). As India is an energy deficit country so, it has a great influence in the global market. In this Caspian region, the possibilities of crude oil and natural gas, and coal are increasing for extraction from the offshore and onshore region. The huge quantity of hydro-electricity reserves is also in Azerbaijan. All these states are engaged in energy exploration and distribution to world market. As, they may face challenges in regarding export policy but for according to smart business strategic interest, it is very vital to gain these challenges.

¹⁴ Dr. S. K. Mathur., fellow IIM-B, former Programme Director, EGDM, International Business Programme, Institute of Public Enterprise, Osmania University, Hyderabad, India, who gave a statement on this issue, *op cit*, in this chapter, p. 8.

Energy as a vital issue between India and Turkmenistan:

India is one of the largest importers of energy in the world and its energy needs are increasing day by day. Energy sectors have played a crucial role in Central Asia, particularly in Turkmenistan. The country's largest natural gas and oil-producing fields are at the Amu Darya basin and the South Caspian basin. Therefore, India and Turkmenistan rely heavily on energy imports and exports for sustainable development and economic commitment and sustainable modernization to continue this trend. India's interests in various energies like, natural gas, crude oil, uranium, and ammonia, which is mainly produced in Iran. It is noteworthy that India can be fulfilling its demand from Turkmenistan and Iran. India needs 8,000 tons of uranium per year because India's demand for nuclear fuel is likely to rise every year.¹⁵

This author conducted a formal discussion in May 2018 with the First Secretary of the Embassy of Turkmenistan, India, Mr. Bayram Aganyyazo who opined that since the output of LNG has been increasing in five-folds and ten-folds increase in the power generation capacity of nuclear power stations in India by 2020, both the countries are required to boost up cooperation in this field for long term benefits for both. The Turkmen government has decided to exempt production, payments, and services within the frameworks of the grant from custom duties, demurrage payments (payments for idle time), internal taxes, Value-added Tax (VAT), and all kinds of taxes and other fiscal charges which a likely to be compulsory.¹⁶

To enhance energy cooperation between India and Turkmenistan, the leaders of both countries welcomed bilateral cooperation, especially in the chemical and petrochemical sectors. For this, Turkmenistan invited ONGC Videsh Limited of India for opening up a representative office at Ashgabat, Turkmenistan. But the OVL exposed its opinion in an interview has taken by the author in 2018 that the invested capital at the Satpaev Oil Field located in Kazakhstan and opened the representative office. Turkmenistan did not start any representative office even in the mid of 2018 and no capital was paying attention at that time. The reason for this has been clearly stated by the Strategic-Analyst In-Charge of EC Cell, OVL¹⁷ that since Turkmengaz and

¹⁵ Muzalevsky, R., "India, Kazakhstan Bolstar Ties", *Asia Times Online*, May 13, 2011 available at: http://www.atimes.com/atimes/South_Asia/ME13Df03.html/ (Accessed on 12th March 2018).

¹⁶ MoU between the Government of Turkmenistan and Government of India for improvement and modernization of the Turkmen India training and industrial centre, Article-4 of the protocol, Ashgabat, Turkmenistan, April 2015.

¹⁷ This author had taken an interview to Mr. Dulal Halder, A Strategic Analyst of ONGC Videsh Limited in India in May 2018.

Turkmenneft is a state-owned company and plays a crucial role, it requires proper MoU at the governmental level.

According to the joint protocol of the fifth meeting of the India-Turkmenistan Inter-Governmental Joint Commission (IJC) on trade, economic, scientific, and technological cooperation, both countries are expected to play a vital role in implementing the TAPI natural gas pipeline project. TAPI is a very necessary project to connect both countries. The Gas Purchase Framework agreement, Gas Sale Purchase agreement, Inter-Governmental agreement, etc, would fundamentally play a crucial role in the development of energy-related cooperation. The late Foreign Minister Mrs. Sushama Swaraj, India's Co-chairperson in the meeting (Protocol of the 5th Meeting, April 2015) mentioned that by improving bilateral cooperation in the oil and gas sectors, the exchange of fertilizers and petrochemicals will be essential for the enhancement of energy security. Turkmenistan energy companies welcomed Indian experts to its energy sectors for experience working. The Indian side would reiterate its offer to organize and undertake training courses for experts and technical personnel of Turkmenistan in the oil and gas sectors in institutions run by ONGC and GAIL (an Indian Oil and Gas Company). These companies will look for specific proposals from the Turkmen side in this regard. The ONGC Mital Ltd has already obtained a 20 per cent share of offshore Caspian Block-11 and 12 for undertaking exploration.¹⁸ Later, the Turkmen side welcomed the visit of Indian delegation in 2015. The visit aimed to consider setting up a production facility for urea or ammonia in collaboration with the state companies of Turkmenistan. The Turkmen government assured all possible support particularly for the supply of natural gas at a competitive price for the successful implementation of the TAPI project. The ONGC Mital Limited made a Joint Venture with Wintershall, a Russian company but in this context, the high official of the OVL stated that all these companies only invest money (share) and then withdraw it and they are not exploring oil and export it to India. The fact is that still now direct connectivity between India and Turkmenistan has not yet been made. He emphasized that the only export route of energy from Turkmenistan to India has been the TAPI pipeline project.¹⁹ According to Professor Nirmala

¹⁸ P. Devendra., *Economic Security Dimensions in Central Asia: Role of India*, (New Delhi: KW Publishers Pvt Ltd, 2011), p. 368.

¹⁹ Mr. Dulal Halder, the Strategist-Analyst officer of the EC CELL, OVL, New Delhi, India, whom I was conducted a formal discussion in May 2018 stated this valuable statement.

Joshi, the present system of export of oil to India is done through the swap process. Oil of Kazakhstan and Turkmenistan of Central Asia is exported to India via Iran.²⁰

Leaders of Turkmenistan have welcomed India's proposal to set up a urea production facility in collaboration with Turkmenistan's state-owned companies. They noted that the implementation of such a proposal would enlarge the scope of economic cooperation between the two countries. The present Prime Minister Mr. Narendra Modi, India in 2019 categorically stated that India's state-owned oil and gas companies possess diverse expertise in the field of training, designing, construction, exploration, and production, etc. Indian honorable Prime Minister also invited Turkmen companies for their investment in India on a long-term basis for cooperation with Indian firms.²¹ Mr. Gurbanguly, the President of Turkmenistan accepted the offer and acknowledged it. India's technical expertise could be of value in assisting Turkmenistan's efforts in furthering the development of hydrocarbon and petrochemical sectors.

A New Orientation of Technological Development:

Nowadays, the paradigm of evolution in the true sense of the term takes shape against the backdrop of global change in the advancement of technological knowledge in the world. Technological advancement takes shape and its widespread weight is found everywhere. Among these technological advances in the notable areas are namely, Astronomy, Biotechnology, Nanotechnology, Information Technology, Renewable Energy (Bio-energy, Solar-Photovoltaic, Solar-thermal, and Wind Energy), Chemistry, and Petrochemicals, Earth Science, etc. All these new advances are required to be developed and expanded for economic development, welfare, and for raising the quality of life as well as for the security of the environmental system. In Turkmenistan, the resource of power is satisfactory. The development of science and technology is very necessary for this country. Simultaneously, with energy exploration, it is necessary to focus on the environment. In India, science and technology have developed very noticeable levels. Under these circumstances, the governments of both countries have been working enough for cooperation for progress in both these sectors. For instance, the 'Programme use of cooperation in Science and Technology between India and Turkmenistan' initiative, in 2015-17

²⁰ Data collected from a mail through conversation to Professor Nirmala Joshi, Jawaharlal Nehru University, at New Delhi, India on 6th July 2019.

²¹ This statement has taken from the Prime Ministerial portal in India. This is available at: https://www.pmindia.gov.in/en/major_initiatives/make-in-india/ (Accessed on 18th March 2019).

is undoubtedly a noteworthy step in this direction. According to Article-2 of this initiative, the Department of Science and Technology of India has made collaborated with the Academy of Sciences along with the Ministry of Education of Turkmenistan. The result of this cooperation has been mentioned in Article-3 of this programme. According to this article, the Science and Technology Department of India has been able to make rapport with the various branches of the Academy of Sciences of Turkmenistan. The network technologies were established in Bangalore, India, which is very developed for which India is known as an industrialized country. Turkmenistan takes help from India and signed an MoU by which it can mobilize expertise from Bangalore and this could make it easier for its' industrial sector to develop.²²

It is clear from the above that energy cooperation between India and Turkmenistan is necessary at the bilateral level, especially in the field of Science and Technology. Through the engagement of various MNCs, bilateral cooperation between the two countries has gradually developed and taken firm root. But India-Turkmenistan mutual relation is very slow as compare to other countries of the world, as India is a latecomer in Central Asia and the Caspian Sea region. The scientists and technical experts of India are required to enormous visit to Central Asia to make the 'Connect Central Asia' policy flourishing. In this context, the 2015-17 programme for Cooperation in Science and Technology was made under Article-7 of this protocol. According to this article, the scientists and technical experts of Turkmenistan are entitled to get the VISA, free of costs, as well as medical insurances, international travel up to the airport nearest to the host institute, boarding, and lodging in the state, local transport in the country; all these facilities would be provided during their position in Turkmenistan. All these costs will be borne by the concerned country. Besides, facilities such as mutual consent or organizational expenses will be provided in the meeting. According to the Turkmen government's privacy policy, all these benefits must not exceed seven days.²³

In the current century, Turkmenistan has been taking globalization as well as modernization with scientific and technological development. Particular attention has been taken on mobilization and to strengthen the cooperation between these countries'. In the middle of every year (month of June), the academy of sciences of Turkmenistan convinces a conference, the President of the

²² This article is on "Programme of Cooperation in Science and Technology between the Government of the Republic of India and the Government of Turkmenistan for the Period of 2015-2017", The Embassy of India Ashgabat, Turkmenistan website. This memorandum is available at: <https://eoi.gov.in/ashgabat/?pdf6283?000/> (Accessed on 8th August 2017).

²³ Ibid.

state addressed the delegates in the opening session. Data reveals that the total of 14 conferences of the Science and Technology department convene in 2019. At the same time, there are some external factors which come with the technological development and it played a crucial role in this regard. On the other hand, since India is developed in the Science and Technology sectors, Turkmenistan has always been keen to follow India's leading position. It brings about the opportunity for political-economic development of both two countries'. The participation of Indian representatives in the Sixth meeting held in 2015, and an International Exhibition and Scientific Conference on Health, held in July 2019 at Ashgabat are the prime examples of bilateral cooperation.²⁴ Besides, the foreign companies, the so-called Multi-National Corporations (MNCs) transfer for business, raw materials, and engagements particularly in the gas sectors. The use of 'the raw materials in exchange for technology' and 'science and technology are the wings of the national economy'.²⁵ The Turkmen organizations have invited the IT centers of India namely, TIITC (Turkmen-India Industrial Training Center, especially the pharmaceutical sector). It is intimated from the Indian side that the Indian Centre for Development of Advanced Computing (C-DAC) had already visited the IT center during 2014 to conduct refresher courses for the Turkmen IT Engineers.²⁶ But it has been noted that there are no initiatives had taken by Turkmen sectors or government, or no C-DAC has been used till 2019. The C-DAC has enough training slots but Turkmen IT engineers did not use those slots properly. On the other hand, the Turkmen economic programs have been using Indian technology and economic cooperation programmes to develop it (these are the most important elements for capacity building and human resource development). But India has arranged an Indian IT sector training course in Turkmenistan. However, India invited Turkmen experts to do the training course. This training course is known as 'India-Turkmenistan Industrial Training Centre'.²⁷ The headquarters is located in Ashgabat, Turkmenistan.²⁸ But towards the end of 2018, Turkmenistan's IT sector did not formulate any plan for the proper formulation of industrial

²⁴ <http://10times.com/international-exhibition-and-scientific-conference/> and <http://science.gov.tm/en/news/-Page7/> (Accessed on 26th October 2019).

²⁵ <http://science.gov.tm/en/news/-Page7/> (Accessed on 28th October 2019).

²⁶ Ministry of External Affairs Annual Report, New Delhi, India, 2019-20, the 30th Chapter on 'Foreign Service Institute', p. 356. Available at:

https://mea.gov.in/Uploads/PublicationDocs/32489_AR_Spread_2020_new.pdf/ (Accessed on 7th January 2020).

²⁷ 'Up Gradation and Modernization of Turkmen-India Industrial Training Centre (TIITC)', at Ashgabat, Turkmenistan. This data is available at the Embassy of India, Ashgabat, April 2015, Turkmenistan in Events Photogallery at:

<https://eoi.gov.in/ashgabat/?4228?003/> (Accessed on 7th January 2020).

²⁸ Ibid.

training courses. These all are examples of lack of interest of the both countries'. The President of India, Mr. Ram Nath Kovind, received a telephone call in October 2020 from his Excellency Mr. Gurbanguly Berdimuhamedov, the President of Turkmenistan.²⁹ The leaders acknowledged the warm and cordial relations between the two countries underpinned by historical and civilization links. They noted with satisfaction the sustained momentum of cooperation in diverse areas. The leaders agreed on the immense potential that exists in trade and economic spheres and noted the success of the joint collaboration between Indian and Turkmen companies, particularly in the pharmaceutical sectors. The President thanked the President of Turkmenistan for his telephone call and for his commitment to strengthening bilateral relations with India.³⁰ Among all these is the communication between both the countries'. However, in terms of connectivity, adequate fuel must be injected for this development. This is obviously a prime factor behind this connectivity is concerned.

At present, Turkmenistan has drawn the attention of foreign concerns in the implementation of various research projects. When the people of both India and Turkmenistan determine the relation between the two, they face many types of challenges for connecting with each other. Prominent among them are science and technology. The special areas of importance are for both countries are: nuclear technology, space research, information and communication technology, green economy, and irrigation technology- all these sectors have become priority areas in the domain of bilateral relations between India and Turkmenistan.

India in Turkmenistan's Foreign Policy, a new configuration:

This part of the study is based on an interview conducted during the year 2017-18. Hence, the data incorporated in this portion are based on the fieldwork and vis-à-vis secondary sources. The First Secretary of the Embassy of Turkmenistan stated that during the past 15 years, the Turkmenistan-Indian cooperation in the domain of foreign relations has been going on gradually but steadily towards the development of political, economic, and cultural paradigm. This cooperation is based on an intense dynamic approach and pertains to the development of bilateral relations based on equitable partnership. It stands on mutual respect and understanding and

²⁹ GG News Bureau, 'Telephonic Talks between President of India And President Of Turkmenistan', New Delhi, 15th October 2020. This article is available at: <https://www.globalgovernancenews.com/telephonic-talks-between-president-of-india-and-president-of-turkmenistan/> (Accessed on 8th January 2020).

³⁰ This article is available at: <https://eoi.gov.in/ashgabat/?pdf11617?000/> (Accessed on 16th January 2019).

suggested a united approach pertaining to the views and positions of the two countries in the various areas of this cooperation. Initially, the *Silk Route* connected the two lands, the ‘Turkmen Gate’ in New Delhi, India remains as a symbol of the owner to the Turk soldiers.³¹ Turkmenistan is the adjacent country of the South Caspian Sea basin and its location bears geostrategic importance for its huge energy reserves. Therefore, Turkmenistan has been declared a permanently neutral state at its foreign policy-making level. Even the United Nations recognizes it as a ‘*neutral state*’.³² For an introduction, this country produces cotton and wheat and it is a major cloth exporter besides energy of the world.

Since 1995, high officials’ visits have been taking place from both countries. Specifically, on 19-21 September 1995, ex-Prime Minister late P.V. Narasimha Rao, Mr. Hamid Ansari, ex-Vice-President of India visited Turkmenistan on 4th-6th April 2008. Late Foreign Minister Mrs. Sushama Swaraj, Foreign Affairs Minister of India had visited Turkmenistan on 12th September 2014. For all these visits the Gurbanguly Bardimuhamedov, the President of Turkmenistan welcomed Indian dignitaries. The present Prime Minister’s visited of India on 10th-11th July 2015, Hamid Ansari’s, Former Vice-President of India, visited in the same year on 11th-13th December 2015, is no doubt important from the point of view of making relations with Turkmenistan.³³ Not only that, Raksha Mantri, late Mr. Arun Jaitley’s visit on 20th June 2017 is notable. Again, Dharmendra Pradhan, the Minister of Petroleum and Natural Gas and Skill Development and Entrepreneurship in India who participated in the inauguration ceremony of the V. Asian Indoor and Martial Arts Games (AIMAG) in September 2017 cemented the relations between the two countries.³⁴ Mr. M. J. Akbar, the Minister of State for External Affairs, India visited Ashgabat to participate at the ‘VII Regional Economic Cooperation Conference on Afghanistan’ (RECCA-VII) on 14th-15th November 2017. On the other hand, President Saparmyrat Niyazov visited India on April 18th-20th, 1992, and 25th-26th February 1997, after that, President Gurbanguly Berdimuhamedov visited India on 24th-26th May 2010, Deputy Prime

³¹ Devang Pathak ., “The Untold Story of ‘The Turkman Gate Massacre’ During India’s Emergency”, *Online Journal*, 14th March 2017. This article is available at: <https://homegrown.co.in/article/28998/the-untold-story-of-the-turkman-gate-massacre-during-indias-emergency/> (Accessed on 13th March 2018).

³² “The Permanent Neutrality of Turkmenistan”, *The Diplomat*, United Kingdom, November 2015. This article is available at: <https://diplomatomagazine.com/the-permanent-neutrality-of-turkmenistan/> , (Accessed on 8th January 2021).

³³ This article is on “Programme of Cooperation in Science and Technology between the Government of the Republic of India and the Government of Turkmenistan for the Period of 2015-2017”, The Embassy of India Ashgabat, Turkmenistan website. This memorandum is available at: <https://eoi.gov.in/ashgabat/?pdf6283?000/> (Accessed on 18th January 2019)

³⁴ AIMAG, “Ashgabat 2017: All you need to know about the 5th Asian Indoor and Martial Arts Games”, *Sportskeeda*, 17th July 2017. This article is available at: <https://www.sportskeeda.com/sports/all-you-need-to-know-about-5th-asian-indoor-and-martial-arts-games-set-to-be-held-in-ashgabat/> (Accessed on 29th November 2019).

Minister (Oil & Gas) Mr. Baymurat Hojамuhammedov visited 21st July 2015 and First DFM Vepa Hajiyeв led a delegation to New Delhi from 17th-18th March 2016 for the Foreign Office Consultations. Mr. Rashid Meredov, Deputy Prime Minister for Foreign Minister for Foreign Affairs of Turkmenistan visited New Delhi again on 13th August 2017 and met EAM late Mrs. Sushama Swaraj, Mr. Venkaiah Naidu, Vice President of India, late Mr. Arun Jaitley, Minister of Finance, Mr. Nitin Gadkari, the Minister of Road Transport, Highways Navigation and Mr. Dharmendra Pradhan, the Minister of Petroleum and Natural Gas. The Turkmen Minister of Education, Mr. Mammetmyrat Geldinyyazov accompanied by an officer, participated in the Mahatma Gandhi International Sanitation Convention (MGISC) in New Delhi on 30th September 2018.³⁵

All the visits of high-ranking officials to the meeting held by the two countries have greatly improved their foreign relations. An India-Turkmenistan relation for mutual development has been very sluggish. Because all these development concentrated on energy import for India's ever-increasing energy needs and the deficit of energy India has been facing over the years. Now, it is crucial to point out the various treaties or agreements like infrastructure, double taxation avoidance agreement, transit agreement between India-Iran-Turkmenistan, Gas Export Agreement, Economic Cooperation Agreement, bilateral investment, promotion and protection agreement, Inter-Governmental Commission, textiles cooperation, agriculture cooperation, transport corridor, energy cooperation (OVL to open an office in Turkmenistan), capacity building in JCT, MoU signed between Turkmenistan and Rashtriya (state) Chemical Fertilizers for Urea Supply, etc are notable.³⁶ Through all these agreements and MoUs, the foreign relations between the two countries are established for regional global security, reconstruction of Afghanistan, and interaction within multilateral bodies like the UN, CICA, and SCO. All these points of discussion are indicative of the prime factors of cooperation between the two countries.

Various positive external facets are there, despite slow progress in the relations whereas the level of cooperation with the neighboring countries like Russia and China are comparatively quite high, India's low position in this respect is a matter of agony. But it cannot be said as the fourth-largest economy in the world and the second-most populous country India's relation with

³⁵ This data is available at: <http://eoi.gov.in/ashgabat/>, (Accessed on December 2018).

³⁶ P. Singh., *International Relations for Civil Services Examination* (Chennai: MacGraw Hill Education Pvt Ltd, 2018), pp. E-78-79.

Turkmenistan stands in a suitable position. Despite it can be safely said that there has been a plethora of opportunities to change things for better days ahead. India is a rising global player and is treated as a serious course in the world. It is for this reason that energy which is the prime need for India's economic development as well as energy security, a vital issue, need a strong market economy and trade as well as a cultural link through Yoga programme and various programmes at the embassy level, for example, the Yoga and Traditional Medicine Centre at Ashgabat, where the Turkmen Ministry for Health and Medical Industry Mr. Amanpesov was present as chief guest. All of these initiatives indulged in positive and essential lessons in each of the two cases. Moreover, a survey, the result of which published in 2018, stated that at present Turkmenistan has 412 Indian nationals who are eking out their livelihood there. Of these, 228 are in Ashgabat, 47 in Mary, 118 in Balcon, 9 in Ahal, and 10 in Lebap. Most of the Indians living here have been working in oil and gas fields. Among them, many are engineers, junior engineers, and technicians. No Indians can be entitled to settle in Turkmenistan permanently as the local law does not permit citizenship for any foreigners. There is no Indian Diaspora in Turkmenistan. However, a 2018 study found that Indian workers in Turkmenistan are slowly declining due to the completion of certain projects by foreign companies. Even in Turkmenistan, there are very few Indian associations or Indian students in number.³⁷ But India and Turkmenistan have arranged for universities and funding agencies for students, namely, AYUSH scholarship in ICSSR sponsored which is based on fully Indian capital.³⁸ The Nalanda University has taken a keen interest in these areas for scholars and students exchange of Turkmenistan.

Various research scholars in Turkmenistan and India commented that there are many reasons to complicate the relationship between the two. Among them, the most important being the transport and communication sectors. The most important reason is that India and Turkmenistan do not share the same boundary or border. Another hurdle for development has been the lack of communication between the experts and the general people over the current trends related to information about the countries concerned.³⁹ But despite this, it can be safely said that India is still regarded as a 'latecomer' in Central Asia particularly in Turkmenistan's multi-rector foreign policymaking. It requires to contribute to the 'further awakening' of India in the region. The first

³⁷ This data is available at: <http://eoi.gov.in/ashgabat/> (Accessed on December 2018).

³⁸ AYUSH- Ayurveda, Yoga, Unani, Siddha, and Homeopathy, Academic Session 2019-20. Graduate to PhD level scholarship for students coming from Turkmenistan to India. Available at: <http://a2ascholarships.icssr.gov.in/> (Accessed on 15th June 2019).

³⁹ An informal discussion with the Ambassador Ashok Sajjanhar on 7th September 2019 reveals this fact in a seminar organized by Jadavpur University, Department of International Relations, Kolkata, at West Bengal, India.

and foremost subject has been the consideration of the importance of strengthening the Asian side in Turkmenistan's foreign policy in general, and India in particular.⁴⁰

India-Turkmenistan's Communication and Connectivity Issues:

The relation between India and Turkmenistan at the bilateral level for economic development needs transportation between the two a pivotal requirement. In the case of foreign relations between the two countries, such as the transportation system conflicts with each other, foreign affairs experts of both countries emphasized these aspects of foreign relations a prime requisite. Transport service is very much essential for trade link as well as the exchange of products and goods, etc. The transport system is the backbone of any country which determines the standard of life, production of goods, and energy in terms of commercial transaction. All of these protections are particularly dependent on energy security as energy has become a major item of import from Turkmenistan to India. It has been estimated that in 2017-18, the turnover of total trade between India and Turkmenistan was to the extent of US\$80.46 million. Among this volume of trade, India exported goods of the amount of US\$54.31 million and Turkmenistan imported US\$26.15 million.⁴¹ Thus, a direct connection between the two is essential to increase trade connectivity. On the other hand, according to the geography of these two countries, both are located in South and Central Asia. The geopolitical analysis shows that there has been no common boundary sharing. But at present, the situation stands such that India as an energy deficit country needs an appropriate country or countries from which it can export energy as per its demand. Research scholars hold the opinion that Turkmenistan is the most known country in the Caspian Sea region for energy export to India. But there are a lot of complexities and challenges in geographical as well as geopolitical context. For this reason, it has become a challenge to connect India directly with landlocked Turkmenistan. Turkmenistan is situated 1,700 kilometers away from the Arabian Sea.⁴² Again the problem relates to the location of Pakistan, Afghanistan, and Iran remains between Turkmenistan and India. Therefore, the boundaries of the Himalayan range and many other countries have been hindering India's connectivity with Turkmenistan.

⁴⁰ R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Athar Zafar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publications, 2014), p. 240.

⁴¹ This data is available at: <http://eoi.gov.in/ashgabat/?0760?000/> (Accessed on 20th July 2019).

⁴² R. Bhatia, and Meruyert Abusseitora, Laura Yerekesheva, Althar Zafar (ed.s)., *India and Central Asia: Exploring New Horizons for Cooperation* (Delhi: Shipra Publication, 2014), p. 145.

For these various obstacles, it has become a challenge for India to make a hassle-free connection with Turkmenistan. For this reason, the importance of the International North-South Transport Corridor has been increasing rapidly. This corridor has made a link with seaports in two ways, for instance, Trans-Afghanistan Transport Corridor and Iran-Turkmenistan-Kazakhstan railway line via Turkmenbashi port. On 12th September 2000 in the ‘Second Eurasian Transport Conference’, a tripartite initiative of Russia-Iran-India formed an International Transport Corridor (ITC) based on a treaty signed by all these countries. This treaty is known as the ‘Intergovernmental Agreement’.⁴³ This ITC has connected Central Asia with the Caspian Sea basin states and then it goes to connect St. Petersburg, Russia. For this ITC connectivity, an effort has been made to connect Central Asia with South and South East Asia through rail track-road and transportation via sea networks. In this way, India’s connectivity with Turkmenistan is being made. That already has been discussed in INSTC details. Since the Silk Route has not been made for energy import and export, ITC’s importance for India-Turkmenistan connectivity has become a prime factor in the present era. Belarus, Kazakhstan, Oman, Tajikistan, Azerbaijan, Armenia, Syria, Bulgaria, Kirgizstan, Turkey, and Ukraine, etc., are agreed to join ITC. But in 2000, Turkmenistan participated in the ITC as an observer state. The obvious reason was that President Niyazov’s foreign policy of energy was then confined to his state. But afterward, as per the ‘open door’ export policy of the Government of Turkmenistan joined in the Tehran Summit on 16th October 2007 and as head of the Caspian states, after that, Kazakhstan, Iran, and Turkmenistan signed a memorandum for adoption a railway line. This railway line spreads over 929 kilometers which connected the Bandar Abbas port of Iran and Chabahar port to Bandar Anjali port in Iran which is located at the South Caspian Sea basin. For the construction of this railway line, India invested a sufficient quantum of money. This was the first most notable step of the relation between Turkmenistan and India which developed the bilateral relationship between the two.

Much before this development, the road connectivity between Turkmenistan, Iran, and Afghanistan remained⁴⁴. For instance:

⁴³ This data is available at, “A Study of International Transport Corridors in OIC Member Countries”, *PGLOBAL*, September 2011. This report is available at: <http://www.comcec.org/wp-content/uploads/2015/02/IDB-TransportCorridors-Study.pdf/> (Accessed on 21st December 2020).

⁴⁴ Wood Mackenzie report. This primary report has given by OVL, New Delhi, India, May 2018.

- Termez- Mazari Sharif- Shibirghan- Gerat- Dilaram- Milak- Chabahar (2,298 kilometers)
- Termez- Mazari Sharif- Shibirghan- Gerat- Daharan- Bandar Abbas (2,258 kilometers)
- Tashkent- Termez- Mazari Sharif- Shibirghan-Great- Daharan- Tehran- Bazargan (2,812 kilometers)

Besides, with road connection, the railway track is also remained, for instance:

- Termez- Hairatan- Mazari Sharif- Gerat- Sangan- Khaf route and facilitating traffic on the Uzbekistan-Afghanistan border through Afghanistan and Iran to Bandar Abbas, and further by train-ferry to UAE ports or ports in India and South East Asia.⁴⁵

But at present, it is a matter of fact that India has not been able to use Afghanistan, Iran via the Turkmenistan road network. There is still an obvious reason. That is to say, the Azad-Kashmir is now under Pakistani occupation. For this most of the Indian cargoes are not permitted to use Afghanistan road link. This stand of Pakistan is supported by China. However, China invested a sufficient quantum of capital for the construction of Gwadar port which is located in Pakistan. In this context, this author would like to quote Mr. Ved Prakash of Indian diplomat that China has been always instigating Pakistan for maintaining its dominance in the Indian Ocean region.⁴⁶ In that case, Sino-Pakistan connectivity has eventually been increased through proper China's capital investment. It remains a non-supportive factor for India.

Here, it is pertinent to quote 'Mandala Theory' included in 'Arthashastra' propounded by renowned diplomat Kautilya, the famous diplomat of Indian mythology in the 3rd Century CE. As per this theory the two countries, China and Pakistan are always acting as 'common enemy' of India. Again, China and Pakistan are neighboring countries of Afghanistan and Iran and these two countries according to this theory, Afghanistan and Iran are the 'common friend' of India. Herein lies, the dictum of Kautilya's common friendship, the diplomatic venture of China to block energy import to India by using Pakistani land. To counter this, India has been investing in the construction of the Chabahar port in Iran. It is for this reason that India, Iran, and

⁴⁵ Ibid., p. 147.

⁴⁶ This data reveals from Sergius Stroeve's social site, who is an Ex-diplomat in Madras, Delhi and Mumbai, later he is a researcher on Political Systems in South Asia, where I noted Mr. Ved Prakash's statement who is an expert of Central Asia studies, on 6th February 2019. This statement is available at: https://www.facebook.com/permalink.php?story_fbid=2322762991342043&id=100008250934276/ (Accessed on 10th February 2019).

Afghanistan signed a historic ‘three-nation deal’ to develop the strategic port of Chabahar in Iran and build a transport and trade corridor through Afghanistan. According to his ‘Mandala Theory’, Russia always played a ‘Madhyama’ (middle person) role in the support of Indian foreign policy. By presenting this theory, an attempt has been made to provide a practical explanation of theory-politics in the scenario of international relations. But it is a security headache. These three-nation pacts which would establish transport connectivity would lessen energy import-export time and cost. Mr. Narendra Modi, the present Prime Minister of India has taken this diplomatic step which now faces an uncertain future.⁴⁷

There have been various road and railway connectivity facilities in the south Caspian Sea region. However, there are several obstacles like the underdevelopment of railway routes through Iran. This is due not only to the weak railways' network (primarily in Iran) and the need for transshipment of cargo or containers in Iranian ports. In addition to this, there have been some logistical challenges like various rail gauges across countries. The rail track in CIS ranges 1520 millimeter gauges in Iran like in China, North America, and Turkey. They are 1435 mm gauges when India and Pakistan and some other countries have the widest railway gauges in the world like 1600 mm or 1676 mm.⁴⁸

There are some hindrances as regards transportation link as mentioned above, it requires very essential for undertaking energy export policy particularly in all these landlocked countries, especially Turkmenistan has taken enough initiatives in the sphere of bilateral road transport. It results in starting the Tehran Agreement in 1993 and ending on International Road Transport Agreement of Turkmenistan, which are very remarkable energy export measures of Turkmenistan. All these played a very vital role in this direction. As a result, more than 120 international treaties are done by Turkmenistan. Here it would be pertinent to quote the views of the First Secretary of the Embassy of Turkmenistan that nearly 55 treaties and conventions were signed under the aegis of the United Nations Economic Commissions for Europe (UNECE).

⁴⁷ PTI, “India, Iran and Afghanistan signed Chabahar port Agreement”, *HINDUSTANTIMES*, E-paper, 24th May 2016. This article is available at: <https://www.hindustantimes.com/india/india-iran-afghanistan-sign-chabahar-port-agreement/story-2EytbKZeo6zeCIpR8WSuAO.html/> (Accessed on 10th December 2018).

⁴⁸ United Nations: Economic and Social Commission for Asia and the Pacific, “Monograph Series on Transport Facilitation of International Railway Transport in Asia and the Pacific (First Edition)”, p. 10 and 56, also available at: https://www.unescap.org/sites/default/files/pub_2681_fulltext.pdf/ (Accessed on 12th March 2019).

Here it would be taken into mind that India and Iran were not parties to the UNECE. However, they have acknowledged some of the agreements developed within this organization.⁴⁹

India-Turkmenistan transport connectivity received importance from 2015. At this time, meetings, agreements, and the MoUs of high officials between these two countries tended to increase. Among these agreements, for India-Turkmenistan connectivity the most vital being the ‘Ashgabat Agreement’ and ‘Kazakhstan-Turkmenistan-Iran-India quadrilateral plans connectivity corridor to Eurasia’.

Significance of ‘Ashgabat Agreement’ in connection with the INSTC project:

Pakistan and China have been a stumbling block in India-Turkmenistan relations. It is only for this reason that both countries have an additional connectivity measure. That is to say, the importance of INSTC came into the picture. In fact, Ashgabat Agreement, which is the most important strategic measure so far as Indian transport linkages with Turkmenistan is concerned. India gave the ‘Ashgabat Agreement’ the most vital way for connectivity with Turkmenistan. This agreement was made in April 2011. The main objective was the international multimodal transport and transit corridor between Central Asia and the Persian Gulf. This agreement was first signed by Uzbekistan, Turkmenistan, Iran, Oman, and Qatar in 2011. But Qatar left this agreement in 2013. This agreement came into force in April 2016. Afterward, Kazakhstan and Pakistan have become a member of this agreement in November 2016. The main theme of this agreement was to enhance the connectivity with the Eurasian region and for regional transport corridors with INSTC for synchronization.⁵⁰

The two countries agreed to continue discussion and interactions under the framework of the JWC (Joint Working Committee). In 2015, the Turkmen President invited the counterpart for joining in the Ashgabat Agreement.⁵¹ According to this agreement, Turkmenistan was empowered to act as Depository State. The main purpose of this agreement was to integrate the various roads and railways in the single transport transit corridor between Central Asia and the

⁴⁹ Mr. Bayram Aganyyazov, the First Secretary of the Embassy of Turkmenistan in the course of conversation with the author on 3rd May 2018.

⁵⁰ Indian Ambassador Phunchok Stobdan, “Significance of India Joining the Ashgabat Agreement”, *IDS*, 12th February 2018, New Delhi, India. This data is available at: <http://idsa.in/idsacomments/significance-of-india-joining-the-ashgabat-agreementp-stobdan-120218/> (Accessed on 13th July 2019).

⁵¹ http://www.mea.gov.in/bilateral-documents.htm?dtl/25456/Joint_Statement_between_Turkmenistan_and_India_during_the_Prime_Ministers_visits_to_Turkmenistan/ (Accessed on 14th July 2019).

Caspian Sea region. The main reason for the participation of the Caspian Sea region and India in this agreement was to consider the regional transport grouping measures to create a ‘green’ corridor for vehicles. It is an obvious purpose that to replace wheelset at railway checkpoints, create favorable conditions, and adopt effective plans for storing and managing cargo and reducing the time spent on railway checkpoints typically used for seaport berths. It has been done to increase the attractiveness of the routes as well as the volume of transit cargo. The group considered a vital issue for having a unified tariff system for transit by rail.

India gave the proposal that India would enter into the ‘Ashgabat Agreement’. The proposal was submitted to Turkmenistan for its approval on 23rd March 2016. This proposal was approved by the other four member states on 1st February 2018. After India entered into the ‘Ashgabat Agreement’, it invested approximately US\$85 million for Shahid Beheshti terminal near Chabahar port. In fact, Chabahar port has been a vital gateway and shortest land route to Central Asia. Moreover, Chabahar port is a multipurpose terminal. India has a plan for the construction of 610 kilometers long railway line. It will directly connect with Turkmenistan. This north-south railway line spreads up from Chabahar to Zahedan. After Zahedan, it will run up to Kazakhstan via Turkmenistan. It will also connect India with Central Asia, particularly the Caspian Sea basin. It is the main point of the ‘Connect Central Asia’ policy. In this context, Kazakhstan supported the Indian Ministry of Trade and Industry and stated that an express train, namely ‘Termir Zholy Express’, known as ‘Kazakhstan Railway Express’ will be starting from Kazakhstan.⁵² This plan has connected Kazakhstan, Turkmenistan, and Bandar Abbas port of Iran. The next route is the sea route. It spreads to the extent of Gujarat and the Mundra port of India. This route started from Turkmenistan is called the ‘north-south’ transit corridor. This route is important for Turkmenistan as well as Kazakhstan shows interest in this route.⁵³ In this Ashgabat meeting, Indian logistics company, Tuberose Logistics signed a transportation connectivity linked agreement for its development from the Indian side. It is a matter of fact that many private organizations of Kazakhstan agreed to take part in this plan. For instance, Freight Forwarders Associations in India and JSC in Kazakhstan. This route is directly connected with

⁵² This statement was found in an article of Chaudhury, R. D., “India-Kazakhstan-Iran-Turkmenistan quadrilateral plans connectivity corridor to Eurasia”, *ET Bureau*, 1st November 2018.

⁵³ Mr. Bulat Sarsenbayev, Ambassador of Kazakhstan to India expressed his opinion to the President of Kazakhstan, Nursultan Nazarbayev, “growing welfare of Kazakh citizens: Increase in income and quality of life.” Available at: <http://m.economictimes.com/news/defence/india-kazakhstan-iran-turkmenistan-quadrilateral-plans-connectivity-corridor-to-eurasia/articleshow/66455045.cms/> (Accessed on 18th July 2019).

the INSTC project. The Chababar port of Iran is the commercial gateway to the countries like Afghanistan, Turkmenistan, and Kazakhstan, etc.⁵⁴ Almost, US\$5 billion of export-import of Afghan-India trade is done from this Chabahar port, Iran.⁵⁵ According to the Intergovernmental Fifth Meeting, a proposal for the railway connectivity of Kazakhstan-Turkmenistan-Iran to INSTC has been taken in 2015. For making this project successful, the Ministry of External Affairs, the Ministry of Shipping of India, the Diplomatic Corps, the Management of Sea Port in Mumbai, India; the Association of Commerce and Industry of India, the Federation of Indian Chambers of Commerce and Industry, Chambers of Indian Importers and other 30 large logistics and business companies from Indian side participated in this project. Therefore, it is noticeable that India took a keen interest in establishing a direct link to a great extent particularly with Turkmenistan in Central Asia. The First Secretary of the Embassy of Turkmenistan, New Delhi, India, expressed his opinion that Turkmenistan was very much eager to establish direct connectivity through INSTC. He added keeping in mind the energy export that India is a largely populated country in South Asia. Hence, it is quite natural that if Turkmenistan can export energy to India, it can capture the second largest market of export after China in the world. It is for this reason that the bilateral relations between the two countries for connectivity link are very essential.⁵⁶ The ‘Ashgabat Agreement’ is very much essential for India for this connectivity. Therefore, this agreement is currently a final process at the highest governmental level in both countries. Turkmenistan desires to enhance 50 per cent of non-oil export through this connectivity.⁵⁷

Air-link:

Another pertinent point for connecting India and Turkmenistan are relevant to Airways. Turkmenistan Air Lines operates 9 flights in a week to India. Among these, 3 are direct flights to New Delhi, India (Wednesday, Saturday, and Sunday) and 6 flights are from Amritsar, state of Punjab, India to Ashgabat, Turkmenistan. There has been no flight operating from Ashgabat to

⁵⁴ This data is available at: <http://www.hindustantimes.com/india/india-iran-afghanistan-sign-chabahar-port-agreement/story-2EytbKZeo6zeClpR8/> (Accessed on 20th July 2019).

⁵⁵ Mr. Bulat Sarsenbayev, Ambassador of Kazakhstan to India expressed his opinion to the President of Kazakhstan, Nursultan Nazarbayev, “Growing welfare of Kazakh citizens: Increase in income and quality of life.” Available at: <http://m.economictimes.com/news/defence/india-kazakhstan-iran-turkmenistan-quadilateral-plans-connectivity-corridor-to-eurasia/articleshow/66455045.cms/> (Accessed on 23rd July 2019).

⁵⁶ Mr. Bayram Aganyyazov, the First Secretary of the Embassy of Turkmenistan in conversation with the author, dated 3rd May 2018.

⁵⁷ This statement is available at: <http://idsa.in/idsacomments/significance-of-india-joining-the-ashgabat-agreement-p-stobdan-120218/> (Accessed on 23rd July 2019).

Amritsar on Friday and from Amritsar to Ashgabat on Thursday. The flights to and from Amritsar usually carry passengers from and to the UK with stock over in Ashgabat airport.⁵⁸ It is also noteworthy that during this pandemic situation, all the flights from India to Turkmenistan are remaining in a silent position. Only higher officials and political-cultural-technological-trade exchanges have done during this epidemic time.

TAPI Gas Pipeline Project:

The Turkmenistan-Afghanistan-Pakistan-India gas pipeline (TAPI) who's another name is the Trans-Afghanistan pipeline. It is a natural gas pipeline. This pipeline is connected with the Amu Darya basin, the largest eastern gas reserves of Turkmenistan. This pipeline has been developed by Galkynysh TAPI Pipeline Company Limited with the participation of the Asian Development Bank. The Galkynysh gas field of the Amu Darya basin is connected to the TAPI project. The First Secretary, Embassy of Turkmenistan has expressed the idea that this gas field is the largest in Turkmenistan. This pipeline spreads to the extent of 1,735 kilometers long and 3,200 MSCFD capacity of the gas.

It is necessary to reveal the historical background of the TAPI project. According to the report of ONGC Videsh Limited, India, "Until 2010, this long-standing project had made limited progress. Its reemergence was partly due to the difficulties faced by the rival Iran-Pakistan-India (IPI) project, which fell afoul of sanctions against Iran. There were hopes that the 'peace pipeline' would promote stability with Afghanistan and Pakistan and improve relations between Pakistan and India. Accelerated progress on TAPI is a political priority for Turkmenistan, particularly since the end of gas exports to Russia. The Asian Development Bank, ADB is a key backer of the project, which could supply up to 3,200 MSCFD (33 BCM per annum) of Turkmengaz from Galkynysh (South Lolotan) in phase three:

A four-nation summit was held in Ashgabat in December 2010, where an IGA and Gas Pipeline Framework Agreement (GPFA) was signed. The IGA states that the four nations will commit to providing government support, including security, for the pipeline. The GPFA lays down the terms of transporting gas through the pipeline. These two agreements were followed by the

⁵⁸ This article is on "Programme of Cooperation in Science and Technology between the Government of the Republic of India and the Government of Turkmenistan for the Period of 2015-2017", The Embassy of India Ashgabat, Turkmenistan website. This memorandum is available at: <https://eoi.gov.in/ashgabat/?pdf6283?000/> (Accessed on 8th August 2017).

signature of Gas Sales Purchase Agreements (GSPAs) by both Pakistan and India in 2012. The agreements were reached between Turkmengaz, Inter-state Gas Systems of Pakistan, and the Gas Authority of India Limited (GAIL). Pakistan and India signed bilateral gas sales agreements for 1,365 MSCFD of gas each, at a price connected to Brent. Pakistan, India, and Afghanistan also agreed on a transit fee of US\$0.49 per MMBtu for transport through Afghan and Pakistani territory. In late 2012, representatives from the ADB and the respective countries attended investor roadshows in Singapore, New York, USA, and London in the UK to meet potential investors. It stays in the dark how much appetite there is to finance such a potentially high-risk project. Afghan Gas Corporation signed thirty years GSPA with Turkmengaz for up to 145 MSCFD in July 2013 (1.5 BCM per annum). Turkmengaz, Afghan Gas Corporation, Interstate Gas Systems, and GAIL (Indian Oil Company) signed a Transmission Service Advisory Agreement with the ADB, which is now a Transaction Adviser to TAPI in November 2013. The consortium leader is expected to pay US\$30 million to the ADB when it enters the project. Louise Berger Group (United States) and ASPI Consulting Engineers (Azerbaijan) were chosen to perform the feasibility study for TAPI in Afghanistan, Pakistan, and India in January 2014. Turkmengaz, Afghan Gas Enterprises, Inter-state Gas Systems, and GAIL established the TAPI Pipeline Company. Turkmengaz holds an initial 85 per cent stake, with the other partners each owning 5 per cent in November 2014. The groundbreaking ceremony for the TAPI gas pipeline took place in Turkmenistan in December 2015. This marks the start of construction on the initial Turkmen section. The ADB was taken with finding a consortium leader, preferably an IOC, to manage pipeline construction work and attract external financing because of the estimated US\$10-11 billion price tag, the four project countries are unable to fund the project independently. Despite assistance from the ADB, a combination of high costs, concerns over security beyond the Turkmen border, and the low oil and gas price environment have failed to attract an external consortium leader. As a result, Turkmengaz was selected in August 2015. The Turkmen NOC only has experience in pipeline construction within Turkmenistan. Building such a large cross-border infrastructure will, therefore, be challenging. OVL only expect Turkmengaz to build the Turkmen section of TAPI, to the Turkmen-Afghan border. An international operator is still required to guarantee safe and secure delivery. GAIL would be responsible for managing the pipeline's security from the Turkmen border to end consumers in India. Nonetheless, security beyond Turkmenistan remains an unresolved challenge for TAPI. In Afghanistan, TAPI will be

constructed alongside the Kandahar-Herat Highway in western Afghanistan, and then via Quetta and Multan in Pakistan. The final destination of the pipeline will be the Indian town of Fazilka, near the border between Pakistan and India”.⁵⁹

The senior Strategist Analyst of the OVL expressed his opinion that at present there has been no direct connectivity with India and Turkmenistan. Even it can be safely said that the INSTC project of Turkmenistan is under processing. It is for this reason that the TAPI project is the primary source of energy import from Turkmenistan.⁶⁰ Again, the First Secretary of the Embassy of Turkmenistan in New Delhi, India, expressed that there would not be possible to overcome challenges on the way of implementation of the TAPI project. According to his views, every country is interested in securing energy security. It is a fact that Afghanistan, Pakistan, and India have been playing a much active role in materializing the TAPI pipeline project. The first part of the TAPI phase which is located in Turkmenistan is at present completed. He added that the work of the second phase which is in Afghanistan (Herat city) has been started fully. Mr. M J Akbar, the former Indian Foreign Minister was present at the event of innovation held on 23rd February 2018.⁶¹ The OVL representative expressed his opinion negatively in the context of the TAPI project. Conversely, the First Secretary’s impression about TAPI was quite positive because the TAPI project is centered on the business policy of Turkmenistan as well as for the fulfillment of energy demand of the three countries like Afghanistan, Pakistan, and India. It is also crucial for strengthening energy security in the area. Again, on the other hand, the said ambassador expressed his views negatively. He has pointed out that Pakistan may become a factor for the uncertain future of the IPI project which has already been dropped. But he added that in this TAPI project, the government of India and Pakistan has made a capital investment. It cannot be denied that terrorism prevailing in the area may become a political hurdle on the way of implementation of the IPI project between India and Pakistan. It is the most negative factor because Pakistan has always been engaged in instigating terrorism. Hence, an unstable political

⁵⁹ The data utilized here has been taken from OVL the form of an unpublished report entitled ‘Turkmenistan Upstream Summery’ published by Wood Mackenzie: A Verisk Analytics business, dated February 2018.

⁶⁰ Mr. Dulal Halder, Strategist-Analyst Officer of OVL, New Delhi in conversation with the author on 2nd May 2018 expressed the above opinion.

⁶¹ Mr. Bayram Aganyazov, the First Secretary of the Embassy of Turkmenistan in conversation with the author, dated 3rd May 2018.

situation may hinder this TAPI pipeline project. Hence, the ambassador expressed both positive and negative views on the above issue.⁶²

Russia and Europe are the main buyers of energy from Turkmenistan. Compared to all these big buyers from Turkmenistan, India is still lagging in terms of imports from that particular country. Another factor on the way of smooth implementation of the TAPI project was the bilateral relations between India and Pakistan. Pakistan has been backing terrorists to infiltrate India and violating the Line of Control (LOC) in Kashmir several times. The Pakistan-India war in February 2019 and also the Sino-India war situation caused panic among the people and in bilateral relations among those states in the sphere of international relations. China has been supporting Pakistan on this issue. For that reason, the TAPI project is always facing instability in the sphere of the political situation. In this context, India is extremely dependent on the international organization for securing its connectivity vis-à-vis energy security is a concern. This has abrogated the prospect of SAARC and India has leaned towards ASEAN as its prospective business partner. Again, the revolting Baluchistan against Pakistan has further aggravated the situation. Pakistan has alleged that India is instigating Balus to revolt against Pakistan. All these issues have become a stumbling block on the way of implementation of the TAPI project. Initially, Russia has refused to use its pipeline by Turkmenistan for the import of oil and gas to countries. Hence, there is no other way to go to Pakistan for a firm solution to this imbroglio of Turkmenistan. Pakistan has assured Turkmenistan that by no means this project would be hampered in the interest of smooth delivery of gas to Pakistan. For easy access to energy from Turkmenistan to India, TAPI, no doubt, is a viable energy route. Both Pakistan and China are aware of it. But since Pakistan and China face an energy deficit and they are in dire need of energy, in the larger interest of their counties, the political issue of the TAPI project arising out of the China-Pakistan axis would have to be compromised.

TAPI project is a direct project of energy import from the Caspian Sea region to India. But 'Swap Deal' process is the most indirect activity pertaining to this project in the context of Central Asia. The cost of the swap deal is very expensive. Again, this swap deal through Kazakhstan and Iran by GAIL and OVL energy import system with Turkmenistan- this route has not yet been started. Therefore, it is clear that the energy import connectivity between India and

⁶² The author arrived at the above statement on the basis of his conversation with Indian Ambassador Ashok Sajjanhar, Kazakhstan to India in May 2018.

Turkmenistan is still under processing. Hence, the direct link of energy import between India and Turkmenistan has not yet been fulfilled.

Summing up:

The main perspective of this chapter is the present bilateral relation between India and Turkmenistan. For understanding the bilateral position of these two countries, the background of this relation has been vividly highlighted. The base of this bilateral relation relates to the energy issue. In the various stages of analysis, the bases of the mutual relationship of this country, its present position, and the eagerness on the part of both these countries to develop their relationship. But it is a matter of fact that the geographical location and the geopolitical situation have somewhat challenged the speed of bilateral relations. Since 2010, India and Turkmenistan showed very interest to establish a mutual relationship particularly in the sphere of energy import and export is concerned. But to a lack of direct connectivity, in the field of energy import and export, both countries faced various obstacles. These challenges are highlighted in this chapter. Now, some supportive and non-supportive factors influence greatly the foreign policy of India. Among the supportive factors, the notable is cooperation among Russia, Iran, and Kazakhstan. The result has been the implementation of the INSTC project. It has been going on successfully. But for various export policy and foreign policy as well, the INSTC's functioning has been proceeding very slowly and faces various challenges. On the other hand, the other example so far as connectivity issue is concerned has been the TAPI gas pipeline project. This project was expected to be completed its fourth stage by 2019. But for the various internal and external political reasons, this project faces an uncertain future because, the process of construction of the pipeline in Pakistan was stated to be started in 2019, but still it remains in the incomplete stage. It appears from this that the prime non-supportive factor behind this India-Turkmenistan main connectivity issue has been safely said that China and Pakistan have become the principal non-supportive factor in this context. The issue of Azad-Kashmir, India believes firmly that it is a Pakistani occupied territory. But China is supporting the stand of Pakistan so far as Azad-Kashmir is concerned. The anti-Indian sentiment prevailing in this region has become a prime hurdle in importing energy from Turkmenistan. Turkmenistan is very much eager to export energy to India. But it is a matter of fact that Turkmenistan does not feel it urgent to supply energy to India since it has other large export countries like Russia, China, and Europe, etc. All

these large countries are a big market for energy export. There are pipelines to export energy to Russia and Europe and the construction of the Trans-Caspian Pipeline (TANAP and TAP) is going on or Baku-Ceyhan Pipeline which is already completed and the export of energy from Turkmenistan to Europe has been going on. Not only that, it can be mentioned that the USA is the most energy buyer country of Turkmenistan. Therefore, if one wants to connect India-Turkmenistan in the energy sector, the urgent need of the hour is the necessity of capital investment. On the other hand, a firm foreign policy with the various transit countries (Kazakhstan, Iran, Afghanistan, Pakistan) and big powers like the USA, China, and Russia are essential. All these factors are important in the energy policy sector which would act as non-supporting factors.

It is pertinent to highlight the importance of establishing bilateral relations between the two countries, particularly between India and Turkmenistan, the prerequisite which plays a crucial role is: cultural, political, and economic, and the energy aspect. All these aspects are important and the two countries are gradually realizing and trying to develop the relations gradually because, the Indian citizens are not living in Turkmenistan permanently or no migration system has been prevailing, resulting in the issue of connectivity between the two is very weak. The main space of relation relates to the energy aspect. The demand for energy in India has been increasing day by day. Hence, it is pertinent to find out gas-rich countries like Turkmenistan as a prime source of energy and all efforts should be given to developing energy connectivity with the state. India's direct link with the Caspian Sea region, that is, Central Asia depends on its strengthening link with Turkmenistan. But it is an underlying fact that the issue of India-Turkmenistan connectivity, as it is prevailing now, is no doubt slow and faces many challenges.

Conclusion

So far the topic of this scientific research proves the relationship and connectivity between India and Central Asia, particularly Turkmenistan. Therefore, in the present situation, millions of people live in this large sovereign country, India; where people need adequate energy for their daily purpose.

As we are aware of the fact that India is a diverse country located at 78° longitudes in the southern tip of South Asia. India is one of the ancient civilizations of the world. It is a vast country and it can be noted that this country is the seventh largest country in the world in the size and second largest populated country in the world after China. It has a land boundary of about 15,200 kilometers and the total length of the coastline of the mainland including Andaman and Nicobar and Lakshadweep is 7,516.6 kilometers. India is bounded by the young fold mountains in the northwest, north and northeast. South of about 22° north latitude, it begins to taper, and extends towards the Indian Ocean, separating it into two seas, the Arabian Sea on the west and the Bay of Bengal on its east. The landmass of India has an area of 3.28 million kilometers². India's total area accounts for about 2.4% of the total geographical area of the world. The Indian landmass has a central location between East and West Asia. India is a southward extension of the Asian continent. The trans-Indian Ocean routes, which connect the countries of Europe in the West, Central Asia and the countries of East Asia, provide a strategic central location to India. It is noteworthy that the Deccan Peninsula protrudes into the Indian Ocean, thus helping India to link close contact with West Asia, Africa and Europe from the western coast and with Southeast and East Asia from the eastern coast. No other country has a long coastline on the Indian Ocean as India has and indeed. It is India's eminent position in the Indian Ocean, which justifies the naming of an Ocean after it. Since the opening of the Suez Canal in 1869, India's distance from Europe has been reduced by 7,000 kilometers. India's contacts with the world have continued through ages but her relationships through the land routes are much older than her maritime contacts. The various passes across the mountains in the north have provided passages to the ancient travelers, while the oceans restricted such interaction for a long time. These routes have contributed to the exchange of ideas and commodities since ancient times. The ideas of the Upanishads and the Ramayana, Mahabharata and the stories of Panchtantra, the Indian numerals and the decimal system thus could reach many parts of the world. The spices, muslin and other

merchandise were taken from India to different countries. On the other hand, the influence of Greek sculpture, and the architectural styles of domes and minarets from West Asia can be seen in different parts of our country. India occupies a crucial strategic position in South Asia. In India, there are 28 states and 9 Union Territories. India shares its land boundaries with Pakistan and Afghanistan in the northwest, China (Tibet), Nepal, and Bhutan in the north. India has had strong geographical and historical links with its neighbors. India also shares three big oceans like the Arabian Sea, the Indian Ocean, and the Bay of Bengal.

It implies that India is a country whose land and sea connectivity is very developed. Not only that, India is a country which can communicate well with all the countries of the world. Because India has both remarkably developed sea and land route network. To be very specific the attempt here is made to present the aspect of energy demand and supply oriented discussion from the Indian perspective.

In the present century, for India, the Caspian Sea region, particularly Turkmenistan, will play a significant role in fulfilling India's huge energy requirement. Turkmenistan has huge potential to address India's energy requirement. However, the distance from Turkmenistan to India is 3500 kilometers; the distance is a concern for both India and Turkmenistan as they do not share borders. Again, it is easy to connect with Turkmenistan through Iran via the Arabian Sea. In terms of energy imports, Turkmenistan is closer to India than any other energy-exporting country. For this reason, Turkmenistan is one of the key states for present energy research. The Indian higher officials of the government and private sectors of oil and gas are a keen interest in establishing direct connectivity with this country. For these two countries, one of the best efforts is the TAPI gas pipeline project and the INSTC project. However, these two countries are currently facing various challenges. If India can beat all these challenges and set up direct contact with the Caspian Sea basin, particularly with Turkmenistan, as well as with Kazakhstan, then it will be an achievement for India in its energy security context. Not only this, it is pertinent to mention that India is a medium that can ensure the connectivity of South Asia with Central Asia. If the TAPI gas pipeline project can be extended to New Delhi, India, it can be assumed that it will be able to link with Southeast Asia through Bangladesh in the future. Through this two direct effects can be noticed namely, the land link of Central Asia with Southeast Asia and secondly, the shutdown of the swap system. As a result, ship-centric high-

cost energy imports from West Asia and Central Asia will be reduced excessively. Therefore, in this way, it is possible to think that India will be able to overcome its future energy deficit as much as possible. To make this discussion fruitful, the thesis is divided into five chapters (without introduction and conclusion).

The first chapter is on '**India's Energy Needs and Domestic Supply**' that focuses on the internal demand and supply of India's energy resources. As shown, India's internal energy production, the status of domestic and foreign companies involvement, industrial drilling method, internal connectivity network (road, rail, sea, and pipeline system, etc), supportive and non-supportive factors in connectivity paradigm, energy production-centric challenges, public-private joint venture, energy demand, and supply gap and the possibilities of import and their various data, charts, diagrams are being highlighted. Not only that, the present status of energy security in India has been shown by presenting the interview data, formal discussions among high officials, newspaper reports, governmental and industrial annual reports, and the discussion on the security of India's energy resources has been analyzed by highlighting officials of different private sectors. The first chapter analyzed India's deficit energy security. India has an energy deficit of more than 70% of its energy resources. As a result, India needs to import huge quantum and adequate energy resources. However, this import is never possible in a country far away from India. Therefore, there are two challenges in the hand. Firstly, improving maritime security, and secondly, energy imports routes are too long, these are very much costly for Indian money investment. This is why in India's foreign policy; various energy resource import methods with neighboring countries have been adopted. For this energy import and also fulfill the energy vacuum in India, the 'Connect Central Asia' policy has been adopted in the present era.

Central Asia, particularly the Caspian Sea region, is not far from India. It is land and sea connectivity with India are noticeable. Not only that but now the Caspian Sea basin has served as one of the world's largest energy source. A structural explanation and political involvement of the Caspian Sea basin is shown in this second chapter, on '**Energy Potentiality of the Caspian Sea Basin: its Legal Status and Implications**'. The potentiality, proven reserves, etc. of the adjacent countries' energy resources located in this northern, middle, and southern sea basin are shown in this chapter. However, the second chapter has been divided into two parts. The first volume highlighted the energy quantum of reserves of the five littoral states like Iran,

Azerbaijan, Federal Russia, Kazakhstan, and Turkmenistan in the Caspian Sea basin which is shown data wise; and the second part has been highlighted, the political rivalry between the littoral states of this basin. Various territorial challenges and water boundary disputes for energy exploration have the prime factor of these states- which tried to emphasize and analyze in scholarly behavior. In this chapter, on the one hand, there have been shown the date of energy reserves in this Caspian Sea basin, and on the other, there have been shown the interests and challenges between the adjacent countries for its water boundary disputes. For that reason, energy exploration and energy export policy is facing various hindrances. This challenge depends on the interpretation of the next following chapters.

The third chapter is on **‘India’s Energy Security Strategy in the Caspian Sea Basin’** emphasizes India’s interest in the Caspian Sea region and its various challenges facing stage by stage. Not only that, but there is a detailed explanation of how much India is interested in importing energy from the Caspian Sea region, and what major steps have been taking now. This chapter has divided into three parts. The first part envisages that India’s link towards this region in a yearly manner and India's foreign policy in Central Asia’s countries and its import-export trade volume by highlighted several line charts. Not only has this, but India’s relations with Iran have also been analyzed. In the third part of this chapter, there has shown the interests of India’s private sector energy companies, like ONGC Videsh Ltd (OVL), Indian Oil Corporation Limited (IOCL), and Bharat Petroleum Corporation Limited (BPCL) in Central Asia, particularly in the Caspian Sea region’s energy blocks. In this stage, the big powers rivalry, Chinese intervention towards this region and great game politics has been made to highlight it in a special approach. The last part of the third chapter mainly focuses on the various strategies of connectivity towards the Caspian Sea basin with India, such as the INSTC and the swap deal system, etc. In the present era, India’s foremost focuses on the INSTC project to connect this landlocked energy resource region rapidly, because, there are several numbers of factors that create numerous challenges to make Swap system adequately. For that reason, the Indian government is trying to focus on the direct connectivity link and to ignore the swap deal system as soon as possible. This system needs a lot of capital investment, time, and high security of maritime zones adequately for import energies from this Caspian Sea region’s states. Not only that, the INSTC connects each country of Central Asia, but the Swap system is not transparent, as India needs to make its bilateral and multilateral relations updated and apparent for each countries’ of Central Asia,

which makes a challenge for India's foreign strategic policy. The reason is obvious, that I mentioned it early. The great power game and big powers rivalry is the heart of Central Asia's event. Not only that, a detailed explanation has been provided how many foreign country's involvement and energy sharing companies are involved in this energy production and sharing of this region. For that reason, the connectivity issue like pipelines and seabed linkages are trying to explore in the end of this chapter. Lastly, the year-wise trade-related import-export data is highlighted by line graph with India along with the Caspian Sea basin's states respectively.

Turkmenistan is the forthcoming largest natural gas producing country in the Caspian Sea region vis-à-vis in the world. A case study of Turkmenistan has been highlighted in the fourth chapter on **'Energy Issues in Turkmenistan's Foreign Policy'**. Since India and Turkmenistan are located in a belt, on one land, it is very essential to develop the relationship between the two countries in a special way. But at first, before entering Turkmenistan's energy reserves and export policy, it needs to focus on the country's geology, structural elements of various segments, plate levels, and geographical position, etc. Thus, this third chapter has also been divided into two parts for the convenience of understanding. As shown in the first phase, the location of Turkmenistan in the world and its geographical views, and geology of stratigraphy, etc. has shown. The position of crude oil and natural gas reserves has been painted by showing geological diagrams and figures. Not only that, the quantum of energy in a basin is analyzed in detail. Through this, a context has been shown about the strategy adopted by different presidents of Turkmenistan year wise. Not only that the various export policy, production policies, and experimental strategies, etc. which were adopted by the Turkmen government have been highlighted based on primary data and interviews of the high officials.

The last and fifth chapter is on **'Energy and India-Turkmenistan Relations'** shows the present context and strategic position of India-Turkmenistan bilateral relations. First of all, what exactly does a bilateral relationship mean? Bilateral relation takes place in various issues and prospects that communicate and connect the two countries in their interest. For instance, cultural, political, educational, business, trade, technologies, food, scientific mechanism, and energy exchanges are concerned. India always deems interest to connect itself with foreign countries and international organizations. But as India is one of the developing countries in the world and has adopted the 'smart business strategic interests' towards the global power; it has a proper need to build up

more trade and energy security for its economic and social development. But since, this largest country in the world has its huge energy deficiency; the country needs 70% of its energy import for fulfilling its energy vacuum. For this reason, India is connected to itself with South East Asia and Middle East Asia for its energy import is concerned. But there are lots of challenges behind this policy. That has been discussed in this chapter. The several high officials' meetings and ministerial visits, agreements, and oil companies' involvement have occurred but all the necessary steps are at only the pages remain. Energy cooperation between these countries is at stake because of their cross-border connectivity. India and Turkmenistan although have their one territorial location but there are three-four countries to connect these countries. For that reason, all the countries' consent is very vital. In this chapter, I have tried to focus on the two country's bilateral relations and foreign exchange in every sphere. But as Turkmenistan is a newly emerged and vast energy potential state, so it tries to keep its policy in secret. For that reason, there are very difficult to the researchers and others expert to direct VISA link and investigation. Not only this, in this chapter, the TAPI project highlighted in a significant manner as Turkmenistan and India have taken a case-study in this research. This TAPI initiative is the only way to connect India's energy security interest. However, the project is at loggerheads due to the aggressive influence of Pakistan and China. In 2019, this project has completed its connectivity in Afghanistan. But in 2020, India's two major connectivity, the INSTC project and TAPI project has stopped during this pandemic situation. At the end of 2020, Kazakhstan offered India in a video conference that all countries of the NSITC (North-South International Transport Corridor) project should take part in one umbrella. Kazakhstan proposed to the members (Uzbekistan, Turkmenistan, India, and Iran) of the project to develop the Iranian port of Chabahar to connect the Caspian Sea state to the sea gateway.¹ For a better understanding of these relations of India and Turkmenistan, several economic trade data has been shown in different chapters of this research work by using various line-charts, tables and diagrams. But there are various supportive and non-supportive factors behind this relationship. The basic research questions that were put forward in my research work are based on the qualitative-quantitative methods (correlational research method) of Quantitative market research which is

¹ The Article is available on Zee News, "Kazakhstan envoy Yerlan Alimbayev bats for Chabahar port, says process underway for use via Caspian Sea", January 2021. This article is available at: <https://zeenews.india.com/india/kazakhstan-envoy-verlan-alimbayev-bats-for-chabahar-port-says-process-underway-for-use-via-caspian-sea-2334339.html/> (Access on 7th January 2021).

the demand of the time. These factors are used in this concluding chapter by highlighting the research questions:

First: what are the strategies adopted by India in meeting its growing energy requirements?

Second: what is the domestic potentiality in meeting India's energy demands?

Third: what is India's energy import prospect in the Caspian Sea basin particularly from Turkmenistan?

Forth: what are the supportive and non-supportive factors influencing India's strategies in Turkmenistan?

Fifth: what are the obstacles in India's energy import from the region?

There are different determinants or yardsticks of international relations which makes the linkage between two or more nations practically possible.

What are the strategies adopted by India in meeting its growing energy requirements?

The first question of my research is answered by the first chapter which is on '**India's Energy Needs and Domestic Supply**'. It has been shown, the effectiveness of the five major energy sectors in India. All these energy companies are trying to meet India's huge energy needs and goals. A descriptive analysis of it is given in the first chapter. These five energy sectors have been highlighted in different phases as the five energy sectors are decentralized from each other. The energy demand in India is increasing tremendously which has been shown through various charts, graphs, or figures in this chapter. In answer to the first question, it must be said that the government has given complete liberty to the joint venture companies in the production of India's three major energy resources, such as coal, crude oil, and natural gas sectors. But in some cases, the government's control over these sectors has always there. The government tries to give them an annual production target. However, in many cases, for example, Tata Steel Company or ONGC and ONGC Videsh Ltd produce energies according to their targets. However, the Central Government of India records all these production data or information every year and every time. Each of which is published separately on the government's official site. However, the supply of energy volume is not the same as the huge population of India. As a result, over 70% of the

energy vacuum is seen that the energy sector is not being able to meet. However, various sector wise reasons in this regard have been highlighted in the first chapter through case studies and field works. Not only that, since energy is now the main spine of a country, the adequate level of energy production and distribution has been taken seriously by the government of India. To maintain transparency to this strategy, efforts have been made to bring all the energy industries or institutions or organizations under one umbrella. Not only that, various government schemes have been taken up at the village level. This supply policy has been taken for the appropriate energy distribution from the energy resources field. This strategy of communication is connected from the Prime Minister's office and it's under bureaucrats department to the various grass hood level, like, village head (Pradhan) and Panchayat Samities of India. There are such agreements which is made with the state government, not only that but also through, government's central and state's joint departments are being directly involved in trying to solve energy-related challenges. To emphasize hydropower and renewable energy, the government works with several important NGOs. Not only that, they have formed various important strategies and awareness teams to stand by the people and make them aware of the waste of energy. To make proper use of energy resources, the government is consolidating large companies as well as small ones and forming joint ventures respectively. The term of all these companies is being fixed. Seeing the fact and data of their annual effectiveness, they are being given tender again. Thus, government departments of energy resources in India continue to try to control the extraction, transportation, supply and formulate the reasons behind the wastage of energy resources which is highlighted in every annual report of energy statistics data in India. Through all these strategies, the government and the public-private sector undertakings have been working with each other every year, that their strategies are analyzed sector-wise in the first chapter.

What is the domestic potentiality in meeting India's energy demands?

The second question is also situated in the first chapter. India's domestic potentiality is discussed in detail in the first chapter. Through the analysis of each energy sector, India's energy resource has been highlighted data wise. Not only that, the annual potential of coal, crude oil, natural gas and hydropower has been highlighted. Attempts have been made to present this analysis through statistical data and reports presentation. For this reason, the combination of social science with natural science can be noticed in my research method. When trying to find the answer to this

question through fieldwork, different obligations are found. This is because India has a total of five major sectors, whose energy potentiality and energy production has been fluctuating in every year. But these sectors are facing various challenges. We have five main energy sectors like, electricity, coal, crude oil, natural gas and renewable energy sources. But its potentiality and production are different. Not only that, India generates electricity from all kinds of energy sources, such as, water, coal, oil, gas, nuclear energy and renewable energy. Water and coal are the most widely used to produce electricity in India. For this, water is widely used than coal in India for power generation. This is because of the inexhaustible supply of water according to the geographical diversity of India. It is obvious to say that the electricity production is very high than the demand of India's population. However, since it is not easy to supply the electricity in every region, massive wastage of electricity occurs. As a result, India sometimes has to depend on neighboring countries for power supply. Therefore, coal came up as the subject of this next discussion. The discussion of coal has been highlighted through various fieldwork and case studies method in this research work. Since India has a good abundance of coal, but in most cases, it is of low quality. In India, there is much steam inside the coal, for that reason, more steam is emitted in power generation. This will obviously hinder the process of electricity generation from thermal sectors. Again, to be low quality coal, in most cases of India, coal is used as cooking fuel in tribal and rural areas. However, the coal demand in India is getting very high. For that reason, coal-producing companies are drilling coal according to their own target. But as the demand for coal is getting high every year; the production of target ratio is always being higher than the previous year's coal production. Although, the coal-producing companies are facing various challenges to meet their target goal, that has been discussed in the first chapter. For this reason, to meet the goals, India has to import high-quality coal from abroad. This is because the industries need more high-quality coal, which is almost non-existent in India. Afterward, Crude oil and natural gas are discussed in its next stage. The supply of these two vital energy resources is very low in India. As a result, India has to be largely dependent on foreign countries. India has about 70 per cent of its crude oil and natural gas reserves. For this reason, India has to focus on importing substantial quantities. This is why various high-level meetings and research exploration have gained importance in energy-centric discussions. However, the Government of India has emphasized research on the exploration & production of domestic energy production sectors to reduce the dependence on substantial imports. Various examples of

which are given in this first chapter. However, India is currently focusing on various refinery companies. Depending on which the various petroleum exports and refine oil and gas exports have increased; because, this is the main way for India to earn foreign money. However, according to research, India is not able to meet its huge oil and gas demand every year. After discussing all these energy resources, a brief analysis of renewable energy has been done at the end of the chapter. However, in most parts of India, the awareness of this energy is seen, but the awareness in the production and supply of this energy is not seen in the grass hood level in the same way. For which, despite having a lot of renewable energy resources according to the geographical location of India, it is unable to meet the daily energy needs of the people due to a lack of proper utilization and efforts.

What is India's energy import prospect in the Caspian Sea basin particularly from Turkmenistan?

The answer to the third question is divided into two parts for convenience. The first part is based on the Caspian Sea region and another part is based on Turkmenistan's prospect for India's interests. However, if I try to emphasize the Caspian Sea basin, this is how the Turkmenistan issues and prospect comes up generally. As South Asia and Central Asia is a landlocked region, therefore, India's interest towards this region is rational, because Central Asia has huge energy reserves to boost up the world's energy usage. However, there are several challenges behind this connection. The first issue that is the Caspian Sea region has mainly emphasized in the third chapter on '**India's Energy Security Strategy in the Caspian Sea Basin**' of my thesis and the next issue about Turkmenistan has emphasized on the fourth and fifth chapter are on '**Energy Issues in Turkmenistan's Foreign Policy**' and '**Energy and India-Turkmenistan Relations**'. In my total research work, I have collected several primary and secondary data and reports which show the Caspian Sea basin's energy reserves vis-à-vis Turkmenistan's energy potentiality. Data reveals that the Caspian Sea basin has huge energy reserves to export its energy to the global market. All the adjacent countries of the Caspian Sea region has very much eager to develop and invest their energy blocks by foreign intervention. But these landlocked countries of this region have control over their energy fields. As the region is landlocked, they want to access the world

market by an accurate and secure route. In an interview, I came to know from a higher official² that the landlocked region's states particularly Turkmenistan are very much willing to invite the foreign countries also India to connect in business. But the energy import prospect for India is very slender. The International North-South Transport Corridor (INSTC) and the Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline project are the two prime ways for communication vis-à-vis connectivity between India's interests in this landlocked region. But all connectivity of this region is under construction. Not only that, India faces several political challenges and non-supportive factors for constructing these projects and bi or multilateral relations towards this region. These will be discussed in the next following questions.

What are the supportive and non-supportive factors influencing India's strategies in Turkmenistan? What are the obstacles in India's energy import from the region?

The fourth question is directly related to the fifth chapter, on '**Energy and India-Turkmenistan Relations**'. Besides, the fifth and final question is almost similar to the fourth question. So, I have tried to answer the two questions together. But according to the fifth question, I have tried to briefly analyze in my third chapter on '**India's Energy Security Strategy in the Caspian Sea Basin**' of my thesis. There are several supportive and non-supportive factors influencing India's strategies in Turkmenistan, particularly energy import prospects and challenges from this Caspian Sea basin. First of all, India's good relations with Iran, Kazakhstan and Turkmenistan can be mentioned as a supportive factor. Not only that, as India is a country with a large population, the demand for hard resources is much higher in India; and these newly emerged countries are very keen to capture this huge market in India for the development of their business. India is very important as the largest diverse country in South Asia. Not only that, India has played a crucial role and priority in places like, regional forums, namely, SAARC, ASEAN and other Southeast Asia forums, for its economic development and its smart business strategic interests with the global market economy. This country has gained considerable importance for foreign investors. Although a developing country, India's capital investment is no less in the world market. The spread of public-private companies in India has gained popularity all over the world. Also, India has always been able to maintain well relations with the major powers. The non-alignment movement adopted in the foreign policy of this country is tremendously achieving

² Mr. Bayram Aganyyazov, the First Secretary of the Embassy of Turkmenistan, New Delhi, India, whom I conducted a formal discussion on May 2018.

its success today. For this reason, the United States and Russia have joined hands with India in various economic affairs at the present scenario. This has helped India to gain access to Central Asia and the Caspian Sea region which acts as a supportive factor for India's strategic position. Again, India has been given considerable importance in the INSTC project. Towards the end of 2020, Kazakhstan called on India directly to invest in the port of Chabahar, Iran. From where India can easily access the Caspian Sea Basin or Turkmenistan. Turkmenistan has invited India to all meetings till 2018. Every country in the Caspian Sea region, such as Turkmenistan, Kazakhstan, Azerbaijan, Iran, and also Afghanistan is interested in energy exports connectivity to India. Russia has also repeatedly supplied energy to India through the swap system which is one of the supportive factors for India. However, India's connectivity with this region is a significant obstacle or a non-superiority factor challenge. All these factors are much more active because the countries of Central Asia are interested in expanding relations with India. But they have not yet been able to have direct connectivity with India. The reason is the great game politics which is one of the non-supportive factors of this region. As the region is full of energy resources, all the subordinate states of this region have tried to engage the Caspian politics. Turkmenistan is the fourth-largest natural gas producing countries in the world; again, Iran is the second largest. Kazakhstan is the best producer of crude oil and coal. Due to this, almost all the powerful countries of the world like, America, China, and Russia are expanding their political strategies and power over this region. The US wants to control Iran, while China wants to remove Russia and expand its dominance in the Caspian Sea basin. China has already been able to connect itself with Turkmenistan, Uzbekistan, and Kyrgyzstan's energy basins. This aggressive attitude of China poses a challenge to India. China is currently joining hands with Pakistan to prevent India from entering this region. Because China thinks that if any power in the same geographical region can challenge China, it is India. Therefore, India's large market and labour supply are so great; for that reason, all countries are keen to expand relations with India. Chinese diplomacy is always trying to downplay India's foreign policy. On the one hand, just as China, Pakistan is also trying to challenge India by creating a territorial border dispute in the Azad Kashmir region. In the same way, China by applying veto in the Security Council against India, has prevented India's position from becoming a permanent member. Besides, there are many other challenges to connectivity with Central Asia and Turkmenistan. For example, Afghan terrorism, India's political challenges to Pakistan, Pakistan's alliance with China against

India, and the US embargo against Iran, maritime insecurity in the Arabian Sea, Indian investment in Chabahar port, excessive tax in the cross border transit that India is associated with this region. All of these effects fall directly on the TAPI gas pipeline project and also on the INSTC project. While the states of Turkmenistan and the Caspian Sea region are keen and optimistic about expanding relations with India, they have challenged the projects of various political barriers. There is a need for higher official meetings every year for India's connectivity with this region, because, even if a little can be directly connected with Turkmenistan, multilateral treaties and agreements are needed between several countries that fall in the way between India and Turkmenistan. Therefore, it can be inferred that even though Central Asia and India are part of the same territory, India still needs to overcome many hindrances and give time to join the region. In fine, the hypothesis of my research work proves here to be a 'Simple Hypothesis', as the hypothesis resemblance with the final testing mentioned in the concluding chapter.

Communication and Connectivity: In my research work, the main objective is connectivity with India and the Caspian Sea basin particularly Turkmenistan to bring close in position. Therefore, connectivity is one of the most important determinants in today's global system which is being mostly regulated by international business, trade, and global marketing. These two-phase, such as international business and global marketing are self-suggestive. I analyzed and discussed them on a separate occasion. Let us now concentrate on connectivity and how India is looking at it in its international outlook in the time of pandemic and its vision of post-COVID world order. The connectivity paradigm is not a recent addition to international relations. The term 'connectivity' is the postmodern term that is emerging in the theory of international relations. The term 'connectivity theory' comes from the economic-commercial-business field. The term 'communication theory' has been used most of the time in the theory of international relations. Although the word 'communication' is similar to 'connectivity', its theoretical interpretation is completely different. In world politics, 'communication' means 'directly' or 'digitally' linked between states. On the other hand, the term 'connectivity' is used to refer to 'commercial' or 'business-trade' links with two or more states. It stresses both the macro and microelements in the theory of international relations. On the macro level, the paradigm concentrates on the relationship between the rise of contemporary global politics and the larger economic structure and on the role of business and commerce in general. On the micro-level, the

paradigm is concerned with how issues of identity and personal behavior are bound up in particular. The connectivity paradigm offers a specific vision of looking into the different linkages of international relations as associated with new forms of challenges posed by the global pandemic. It presents a distinctive view of the avenues of connectivity in international relations and India-Turkmenistan relations and of the larger sociopolitical environment, of how individuals fit into, respond to, and change the system. However, whether this nascent view qualifies as a cogent and empirically grounded paradigm has been seriously examined.

Although, there are differing perspectives on the practical implementation of connectivity in international relations, a set of core concepts and beliefs can be said to comprise the paradigm. The central claims are, first, that connectivity is a product of the shift to a post-industrial economy and, second, it is unique and, as such, different from other strategies of the industrial age. It is said to be a product of the post-material age while some refer to it as a mature capitalist or post-industrialism phenomenon. It is seen as a fundamentally effective strategy in International relations from the time of the industrial period and demands of different types of connectivity have moved away from the instrumental issues of industrialism to the quality of life issues of post-materialism. However, when broadly related to the most critical issues of a global pandemic caused by the COVID-19, these observations essentially seems inconsistent and we perceive a paradigm shift due to the prescription of social distancing to combat the pandemic but new strategies are ferreted out to tighten up the bonds of connectivity for a better living. One cannot decry the changes ushered in by the global pandemic in every sphere of our life including international relations. Thus new forms of connectivity are the demand of the time for our sustenance and let us understand the approaches of India. In this regard, teaching the global community how to save the life of every citizen in this time of crisis.

As my research paper has shown how connectivity has become a more significant issue in the present pandemic situation. Nowadays, no development is possible without connectivity. But it seems that internal and external connectivity needs to be improved. In this context, two issues come up centering on the issue of connectivity. Internal connectivity protects the country's market-economy and external connectivity protects trade and energy import-export relations with other countries.

India has largely tried to succeed in making energy supply in terms of internal connectivity. This is because most of the supply of the energies is in line with the domestic energy production system of the country. But, on the other hand, India's internal energy production cannot meet the country's demand to that extent. So in most cases, India has to meet its surplus of energy by maintaining its multilateral relations with foreign countries - that is, by importing energies like crude oil, natural gas, coal, and nuclear elements, etc. A notable example of this is the *Chabahar Agreement*. It has connected India with the huge energy potential of Central Asia particularly the Caspian Sea region's states like Iran, Turkmenistan, Kazakhstan, Russia, and Azerbaijan. But, in this pandemic situation, the connection with most of the bodies in India has been severed. As a result, energy imports from the country and abroad have been greatly reduced. In the COVID-19 situation, this is the negative effect of India in its smart business strategic policy.

Currently, connectivity is one of the biggest concepts. So in this conclusion, connectivity has been highlighted as the foundation of international relations. For this reason, since the arrival of this contagion or Corona Virus, the theory of international relations and the content of politics have changed significantly. Not only that, the concept of globalization has changed drastically in this COVID-19 stage. Not only that, the expansion of relations between India and Central Asia, particularly Turkmenistan has also been highlighted with a focus on trade-economic connectivity directly and digitally. Now, it is noteworthy that communication and connectivity is not the same thing. But most of the time these two words are used as complementary words above. The term 'communication' is widely used in the theory of international relations. The reason is that to expand relations with two or more states, it is necessary to approach them 'directly and digitally'. But according to political-economy experts, the term 'communication' and 'connectivity' is not equivalent. 'Connectivity' is a means of link through which not only human movement, but also various valuable and heavy or liquid products or energy resources can be imported and exported from one country to another. Communication is widely used in the theory of international relations, but in the present century, connectivity is an advanced system and theoretical explanation - by which countries all over the world want to be connected. One of the reasons for this connection is energy demand. For this reason, energy security studies are one of the most important topics in the interpretation of connectivity-theories and political-practices in international relations. For instance, as for example, India and Turkmenistan's government and high officials always communicate to each other for their goals. But repeated communication

does not mean that India-Turkmenistan connectivity prospects, like, TAPI or INSTC and opening up a representative office is succeeding. However, it is noteworthy that connectivity is not possible without communication. Because, communication is possible from a distance even if the higher officials are not directly present, but to connectivity, a direct link must be formed with two or more states. These links include transport links (road, rail, and sea route), pipeline connectivity, and air links, etc. However, one thing needs to be said here that at present many countries of the world are importing and exporting energy and capital flow or share-basket by combining two major elements (communication and connectivity). This valuable link is called the Swap Deal system. However, the only way forward is for India to introduce the theory of connectivity and also energy security in the 'smart business strategy' as the key to defending itself from this pandemic situation. But during COVID-19, all the countries were compelled to block international travel as well as lockdown themselves ultimately hindering the process of connectivity for survival, as the lockdown was considered as the only and significant method of controlling the spread of the epidemic. During this time communication was successful with every country in the world. This communication has been through various online web-miners or video calling. The High officials and journalists of each country were connected through this communication system. Not only that, almost every country had to adopt this method for accurate awareness to prevent the spread of the epidemic and infections but they did it after sacrificing lots of life. This is because the exact treatment of the epidemic has not yet been discovered.

In this scenario, it can be assumed that the India-Turkmenistan and India-Caspian Sea basin's interest is most vital for importing energy from this region. Energy is one of the vital sources that can prevent this challenge. Because, in this pandemic situation, the petrol and diesel prices are significantly reaching high, for instance, the price has crossed the 85 rupees and 80 rupees in Kolkata, India. For this, middle-class people are getting suffered. In this situation, India needs to expand its relations with these energy resource states like Kazakhstan, Turkmenistan, Iran and Azerbaijan very quickly. At present, there are several communication processes, like, video conferences, voice communication, and email has built with India and Turkmenistan's government. But according to the connectivity is concerned, there is a huge gap between the two countries. For that reason, it can be assumed that the TAPI gas pipeline project and the INSTC project are at stake in position.

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APENDIX

যাদবপুর বিশ্ববিদ্যালয়
কলকাতা - ৭০০০৩২, ভারত



JADAVPUR UNIVERSITY
KOLKATA-700 032, INDIA

DEPARTMENT OF INTERNATIONAL RELATIONS

TO WHOM IT MAY CONCERN

This is to certify that Mr. Avishek Naskar, a Ph.D. scholar of the Department of International Relations, Jadavpur University, Kolkata is pursuing his Ph.D. under my guidance. He has completed his BA, MA, and MPhil from this department. He has been a student of this department since 2008. He is a good and intelligent student. He has always been sincere to his works and attended classes regularly. He is very much energetic in the class and interacts with faculty members of the department wherever he faces any difficulty. He successfully completed all his degrees. He has also cleared UGC NET examination. Presently he is a SRF (Senior Research Fellow) in RGNF SC (Rajiv Gandhi National Fellowship in UGC) of the department. His Ph.D. research work titled "India's Energy Interest in the Caspian Sea Region: A case study of India-Turkmenistan Relations". He has collected all the secondary materials for his research work and also interviewed a number of experts and stakeholders. He has almost completed the first draft of his thesis. He is a good academician and he presents paper in different topics on social sciences in different national and international conferences. As my research scholar, I found him more sincere and hardworking. He completes the work in time bound manner. He will be a great asset to any institute where he gets the opportunity to serve.

I wish him all success in his future endeavors.

Thanking You,

DR. BHAGABAN BEHERA, ASST. PROF.

Former Coordinator, UGC sponsored PG Diploma Human Rights Course
Department of International Relations, Jadavpur University, Kolkata

Assistant Professor
Department of International Relations
Jadavpur University
Kolkata - 700 032

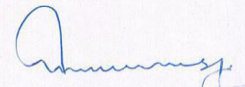
TO WHOMSOEVER IT MAY CONCERN

This is to certify Mr Avishek Naskar Ph D scholar at Dept. International Relations, Jadavpur University visited Tata Steel Jamadoba Dhanbad site on 19 April 18 for field research work.

During that he interacted with various officials at Tata Steel Jharia Division viz. Geologist, Admin Head and coal mine workers.

We wish him the very best for his research project.

Place: Jharia, Dhanbad
20 Apr 2018


(Amitava Mukherjee)

HEAD (ADMINISTRATION)
TATA STEEL LTD.
JHARIA DIVISION



ओएनजीसी विदेश लिमिटेड
ONGC Videsh Limited

टॉवर बी, पंडित दीनदयाल उपाध्याय ऊर्जा भवन
5, नेल्सन मंडेला मार्ग, वसंत कुंज, नई दिल्ली-110070
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दूरभाष/Phone : +91 11 26129344
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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Shri Avishek Naskar, PhD Scholar at the Department of International Relations, Jadavpur University, has visited ONGC Videsh Limited at New Delhi on 2nd May 2018 for field research work.

He has interacted with various officials of ONGC Videsh and discussed about energy related matters pertaining to Caspian region vis-à-vis Indian perspectives.

We wish him the very best for his research project.

New Delhi

2 May 2018


(Dulal Halder)

 **दुलाल हलदर / DULAL HALDER**
मुख्य अभियंता (उत्पादन) / CE (P.)
प्रभारी ई.सी. सेल / Incharge E.C Cell
ओ.एन.जी.सी. विदेश लि. / ONGC VIDESH LTD.
पंडित दीनदयाल उपाध्याय ऊर्जा भवन, वसंत कुंज, नई दिल्ली-70
Pandit Deendayal Upadhyaya Urja Bhawan, Vasant Kunj, New Delhi-70

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DEPARTMENT OF INTERNATIONAL RELATIONS

TO WHOMSOEVER IT MAY CONCERN

I am pleased to place my appreciation of a young, fairly well accomplished academician, Mr. Avishek Naskar a Senior Research Fellow in the department of International Relations, Jadavpur University, Kolkata. I found in him an ardent and passionate scholar who painstakingly contribute in the field of research. He believes in the long term goal of an academician - to transform the beneficiaries into knowledge endowed in the field of International Relations. The beneficiaries' office work attains higher levels of performance than their competitors in today's dynamics of ruthless challenging and complex International Relations. Yet other striking traits of his personality are his simplicity and helping nature.

I wish him a grand success in his career and happiness in life.

Thanking You.

Arup Bhattacharyya 18/4/19

PROF. ARUP BHATTACHARYYA, FACULTY MEMBER
DEPARTMENT OF INTERNATIONAL RELATIONS
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