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Economic Cooperation between India and ASEAN+3: A Study of the Trade Potential of India's Energy Sector Products[1]

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Abstract:*The Association of Southeast Asian Nations (ASEAN) established on 1967 by the member countries namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Initially five member countries formed ASEAN and later other five countries joined in different year. Brunei Darussalam then joined on January 1984, Viet Nam on July 1995, Lao PDR and Myanmar on July 1997, and Cambodia on April 1999 making up the ten Member States of ASEAN. ASEAN+3 cooperation initiated in 1997 with an informal Summit among the members of ASEAN and their major counterparts of world namely China, Japan and Korea. At different ministerial meeting ASEAN plus three (APT) which focused on track 1.5 initiative and different dialogues initiated for regional integration and external cooperation that lead to the advantageous for increasing regional integration and external cooperation among different member counties of ASEAN+3.*

The primary objectives of our study are to identify major tradable products of the energy sector of India and cluster them as per their trade potential and identify the scope of trade and welfare creation if formation of RTA established among ASEAN+3 member countries. In this study, the scope of energy sector has been kept confined to products and equipment directly associated with energy access. Energy security has been kept outside the purview of this present study. Using 6-digit Harmonized System (HS-codes) of classification for both renewable and non-renewable energy, a list of 270 products and major equipment, associated with renewable and non-renewable energy sector, have been identified for preliminary analysis of India's trade potential of energy sector products in the this region. Various clusters of products and equipment associated with energy sector have been formed. The clusters have been made on the basis of seven different parameters which are commonly used for analyzing trade date. For each product, values for these seven parameters have been estimated using past trade data (2009-13). Primarily, WITS data has been used. And to understand intra-industry trade (IIT), the Grubel-Lloyd index has been used.FK index has been used to understand the trade creation and trade diversion potential of the trading partners. SMART package has been used to estimate welfare gains for ASEAN member countries.

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[1]The study will only remain focused on major tradable products. Energy services have been kept outside the purview of the present study.

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I. Introduction

South & East Asia has become a critical and important part of the world trading system since last couple of decades and it has emerged as the world's fastest-growing economy. The 'Look East Policy (LEP)', initiated in 1991 by the government of India, has marked a strategic shift in India's perspective of the world. In pursuance of India's look east policy, Indo and ASEAN trade in goods (TIG) agreement signed in 2009, operationalized in 2010 and signed an FTA on service and Investment in 2014 among ASEAN countries. When ASEAN, china, Japan and Korea included in trade ambit of India as a part of extended look east policy, India's overall gain in trade particularly in energy trade increased. Selected domestic and external macroeconomic indicators for the 10 ASEAN member countries and china, Japan and Korea are given in table1

Table1: Few basic economic indicators among ASEAN+3 members

Country	GDP at Market Price(Billion current US $)	Population	Annual GDP growth (%)	GNI per capita(current US$)
Brunei	3.094	10800000	4.66	260
Cambodia	16.77	15300000	7.14	1020
Thailand	404.8	67.73 million	0.95	5780
Laos	11.72	6690000	7.46	1640
Philippines	284.78	99100000	6.13	3500
Singapore	306.35	5470000	3.48	55300
Myanmar	64.33	53.44 million	8.5	Data Not available
Indonesia	890.49	2.54E+09	5.02	3630
Malaysia	338.11	29900000	5.99	11100
Vietnam	186.2	90700000	5.98	1900
China	10.351 trillion	1.364 billion	7.35	7400
Japan	4.596 trillion	127000000	0.65	41900
Korea	1.411 trillion	50400000	3.31	27000
India	$2.049 trillion	1.295 billion	7.30	1570

Source-world Bank (2014)

Objectives:

Different think tanks of ASEAN+3 agreed to establish an "East Asian community" with long-term objective and affirmed the role of ASEAN+3 as the main vehicle for economic integration through bilateral and multilateral free trade agreements (FTAs). Idea for creating an "East Asian Community" had been proposed by the East Asia Vision Group (2001) primary aims relating to economic, trade and investment integration can be summarized as:

- Establishment of an East Asian Free Trade Area (EAFTA) and liberalization of trade.
- Expansion of the Framework Agreement on an ASEAN Investment Area (AIA) to all countries of East Asia.
- Promotion of development and technological cooperation among regional countries, to provide assistance to less developed countries.
- Realization of a knowledge-based economy and establishment of a future-oriented economic structure.

Trade in Energy Products and Services

For decades, trade in energy has been treated as a special case of international trade, different from other trade sectors and products. In fact, it is safe to consider the energy trade sector as one of the most significant trade sectors for a variety of reasons, including its unique characteristics and the unprecedented challenges confronting it. Trade in energy encompasses various aspects and issues like trade in energy goods, trade in energy service, investment matters, intellectual property and subsidies etc. However, the most predominant "line" of trade in energy, both historically and currently, is trade in fossil fuels, oil and gas.

In a globalized world, energy services are now an important component of international trade as it plays a vital role in the development of any economy. To sustain the economic growth of the South & East Asian Nations, concomitant growth in the infrastructure, especially in the energy sector, is of paramount importance. The rapid growth of energy consumption in Asia is expected to continue in the next few decades. IEA has forecasted that the energy consumption of developing Asia will double over the period of 2006-2030, from 3,227 Mtoe in 2006 to 6,433 Mtoe in 2030, while the world's energy consumption will increase by 1.5 times, from 11,741 Mtoe to 17,721 Mtoe over the same period. As a result, developing Asia's share of global energy consumption will increase from 27.5% in 2006 to 36.3% in 2030. Major economies of the South & East Asia, who are important participants in global energy markets, would be increasingly confronted with challenges like energy access, energy security, cleaner energy supplies etc.

ASEAN+3 and Energy:

ASEAN Centre for Energy (ACE), established in 1999 is an independent intergovernmental organization within 10 ASEAN Member States' (AMS) interests in the energy sector. The Centre accelerates the integration of energy strategies within ASEAN by providing relevant information and expertise to ensure the necessary energy policies and programmes are in harmony with the economic growth of the region. Formation of 'Regional Energy Policy and Planning (REPP)'for strengthening regional collaboration in energy sector and to promote deepens relationship in a productive and meaningful manner to address the key issues, challenges of energy sustainability in the long-term.

Before going into details about trade, we examine the important energy indicators of individual members of ASEAN+3. Table2 indicates that population wise total primary energy supply (i.e TPES/population and final consumption) is much higher in china than that of other countries in ASEAN+3. But energy intensities are higher in Myanmar followed by China, Thailand, Vietnam and Cambodia.

Table 2: Few energy indicators among ASEAN +3 members

Indicator	Brunei	Cambodia	Laos	Philippines	Thailand	Singapore	Myanmar	Indonesia	Malaysia	Vietnam	China	Japan	Korea
TPES(Mtoe)	NA	5.97	NA	44.6	134	26.1	16.6	213.6	88.98	59.9	3.01 thousand	454.65	263.83
Total final consumption(Mtoe)	NA	5.22	NA	25.8	95.8	19.7	15.3	162	54.07	51	1.94 thousand	311.41	167.84

Total energy production(Mtoe)	NA	4.09	NA	24.5	78.1	0.64	23.2	460	94.63	69.3	2.57 thousand	27.96	43.6
Energy Intensity(TPES/GDP)(toe/thousand 2005USD)	NA	0.56	NA	0.29	0.58	0.13	0.79	0.47	0.43	0.65	0.62	0.1	0.22
TPES/Population(toe per capita)	NA	0.39	NA	0.45	2	4.83	0.37	0.85	2.99	0.67	2.21	3.57	5.25

Source-IEA (2014)

**Mtoe- million tons of oil equivalent, toe-tonneofoil equivalent, TPES-total primary energy supply,NA- Not Available in IEA database*

II. Literature Review:

Arpita Mukherjee etal (2009) pointed out that with liberalization and privatization, energy services became an important component of international trade and allied trade agreements. The paper examined India's opportunities and constraints to trade in energy services within the GATS' framework. Dr Rafael Leal-Arcasetal(2014) pointed out WTO law governs and regulates trade relationships among WTO members. Within the scope of the WTO, energy trade is one of the most significant trade sectors, as it constitutes the largest primary commodity of global trade in terms of volume and value.

Yong Sarah Zhou (2013) pointed out the post-crisis investment recession has been mainly concentrated in the nontradable sector, and hypothesizes that the slowdown is because firms operating in that sector are financially constrained. Empirical results based on macro and firm-level data from Indonesia, Malaysia, and Thailand (ASEAN-3) support this hypothesis. Hitoshi Sato (2014) revealed that ASEAN regional integration will depend on how it affects the labour market and therefore how it improves the quality of life of women and men in the region. Kiki Verico (2013) attempted to analyze the stability and sustainability of economic integration of the ASEAN+3.Horst Loecheletal (2006) analyzed if and how the experiences of European integration can be used for the progress of East Asia integration especially of the ASEAN+3 countries in the context of new endogeneity approach of monetary integration for East Asia.

ChandrimaSikdaretal (2011) revealed that impact of liberalization, both on the external sector and on domestic macroeconomic variables in India and ASEAN through GTAP and different simulation model. B.P. SarathChandran (2012) pointed out impact of India ASEAN agreement on the prospects of bilateral trade is done with special reference to fishery sector through some econometrics model. Xunpengshi, Cecilya Malik (2013) highlighted different strategies forformation of blueprint of ASEAN Economic Community (AEC) and the ASEAN Plan of Action of Energy cooperation (APAEC) 2010–2015. Sangeeta V. Sharma (2014) revealed that geographical proximity, gaps in energy supply versus demand, and different socio -economic conditions ---that are conducive to energy cooperation between India and its neighbors. Philip AndrewsSpeedetal (2013) pointed out key political economy factors that may assist or constrain energy market integration anywhere in the world, particularly in case of ASEAN market. BiswaNathBhattacharyay (2009) discussed on the need to enhance ASEAN infrastructure cooperation towards achieving the ultimate vision of Asia-wide connectivity and integration. Francoise Nicolas (2009) highlighted critically evaluates ASEAN's

achievements in the area of energy cooperation, and its future prospects as well as possible limitations of further cooperation.

Hubler and Keller (2009) highlighted the influence of FDI inflows on energy intensities for developing countries. Plummer etal (2010) in their book 'Methodology for impact assessment of free trade agreement' discussed various methodologies for impact assessment of FTAs for the researchers and policy makers. Hamanaka (2013) attempted to identify the relevant methodologies for assessing the use of FTAs. Rahman (2007) used different trade indices, such as Regional Orientation Index (RTOI), Grubel-Llyod Index (GLI) and Trade Intensity Index (TII), to suggest that huge potential existed for trade and investment complementarities among BCIM countries. By conducting SMART simulation exercise, he illustrated the scope of regional integration and quantified the potential impact among BCIM countries.

VeenaJha (2009) deals essentially with trade flows and barriers to commercially-available renewable energy generation technologies and their associated goods. It also identifies and examines the role of various market and trade drivers, including tariffs in the uptake of these technologies. A, Ahmed etal(2012) pointed to create a strong regional cooperation which includes bilateral and multilateral energy trade between the states and a generalized energy policy which can provide a guiding principle for energy security in the future. Ram C. Acharya (2008) pointed out disaggregates product data in to HS code and compute RCA values among that product code. KaliappaKalirajanetal (2007) pointed feasibility study of FTA between India and Japan, to measure the impact of 'behind the border' constraints on bi-lateral trade between India and Japan, to simulate the gains due to various preferential trade agreements (PTAs), and FTA between these two countries, and finally, what policy conclusions can be drawn as inputs into the policymaking process of FTA.

III. Research Problem

Cooperation on energy was one of the thrust areas of discussions in the different ASEAN Energy Minister's Conference. ASEAN Centre for Energy (ACE) has an important role to play as a regional centre of excellence that builds a coherent, coordinated, focused and robust energy policy agenda and strategy for ASEAN+3.

To fuel this growth, the demand in primary energy is expected to grow by an average of 4.7% per year from 2013 to reach 1,685 Mtoe in 2035, according to the ASEAN Centre for Energy's (ACE) 4th ASEAN Energy Outlook (AEO). Addressing this growing demand for energy, which is driven by both economic and demographic growth, has been a major challenge for ASEAN ahead of the AEC. Main strategic area of energy cooperation under APAEC are establishing ASEAN centralized power grid, trans ASEAN gas pipeline across different members of ASEAN countries, energy efficiency and conservation policy, technology and regulatory aspects particularly of nuclear energy, coal and clean coal technologies etc. Collectively, ASEAN member countries are developing the necessary trade, legal, fiscal and policy frameworks towards the realization of the trans ASEAN energy grid to meet the long-term energy requirements in the ASEAN region. This Sector is led by Myanmar and Current important projects in the energy sector are the development of regional hydrocarbon and hydropower, energy infrastructure (natural gas), energy information centre and energy trading network between members.

The primary objective of our study is regional energy market integration, particularly between Myanmar and part of the ASEAN+3 and India. Currently these countries can provide more strategic and sustainable energy supply to India. In this context our study evaluates how India's existing Look East policy can be strengthened the process, help diversify its energy supply portfolio mainly natural gas and improve its energy security.

Being a major economy of ASEAN+3 and India's energy sector is expected to play an important role in south East Asian market. But there are significant scopes to widen and deepen such avenues of cooperation among member countries of ASEAN+3.

Hypothesis:

There will be much welfare gain for India and other ASEAN+3 member countries through free trade of energy sector products in the region.

IV. Methodology

The following methodologies have been adopted in this study.

a) For defining the scope of energy sector and to prepare the list of tradable products associated with it, published literature on this topic has been used.
b) And to understand India's trade potential of these energy sector products and to suggest appropriate strategy,
(i) Energy sector products have been segregated into four categories and two clusters. These categories and clusters have been made on the basis of different parameters which are commonly used to analyze trade date.
(ii) For each product, values for the parameters have been estimated using past trade data (2009-13). Primarily, WITS data (provided by the World Bank) has been used. The detail descriptions of the parameters have been made in Annexure A.
(iii) To understand intra-industry trade (IIT), the Grubel-Lloyd index has been used. FK index has been used to understand the trade creation and trade diversion potential of the trading partners.

c) SMART package has been used to estimate welfare gains among ASEAN+3 member countries.

Structure of the paper:

The paper is divided into four sections.
Section 1 defines the scope of energy sector and identifies major tradable products associated with energy sector.

Section 2 analyzes five years' (2009-13) export and import trends of the energy sector products of India. Based on RCA values, this section segregates the products into four broad categories namely three stars (***), two stars (**), one star (*) and no star.

Section 3deals with other parameters and calculates their values to address the third objective of this study. This section analyzes the comparative advantage/disadvantage of different Indian products vis-a –vis ASEAN. It also compares RCA values of Indian and Indonesia's products for 2013, and the applied tariffs (AHS) imposed by India and Indonesia on their imported products.

In section 4 identifies clusters, based on the following criteria,

- Cluster 1 (C1) is a cluster of products which have RCA<1 and ROI>1. In short run one can gain from these products' exports due to 'trade diversion' but in long run these products may not survive the competition.
- Cluster 2 (C2): This cluster comprises of products which have RCA>1 and ROI<1. These products have 'scope for trade creation'.

Section 1:

Defining the energy sector and scope of this study

The energy sector is complex. Each industry of the sector has its own specific features which require special attention. Thus the constituent industries tend to be highly technical in nature, requiring some understanding of the underlying process and techniques. Moreover, this sector is influenced by interactions at different levels- international, national and local. At the global level three major influences could be observed: (a) energy trade, (b) international institutional influences (of WTO, IMF, the World Bank, UN et al) and (c) interaction among countries- co-operation, competition and conflicts. This paper will focus only on the first and third influences, as above, on Indian energy sector. On trade, the focus will remain confined to trade in goods not services though trade in energy services plays as a major influencing factor in energy sector. And on interaction among countries, the study will be restricted to ASEAN member and china, Japan and India only.

As the energy sector is composed of different industries/sub sectors, each with different technical and economic characteristics, its spread is very wide. For example, it uses inputs from various other sectors like iron and steel, machine tools, transports, electronics et al. Energy is also a key input for most of these sectors. Moreover, the generation and distribution process, of the renewable and nonrenewable conventional energy, differs substantially.

In this study, the scope of energy sector has been kept confined to products and equipment directly associated with energy access i,e (a) energy products itself, say, petroleum, coal, natural gas et al. and (b) critical inputs (say uranium ore) and equipment needed to generate, transmit and distribute energy- both renewable and non renewable types. For examples730419 –'Line pipe of a kind used for oil/gas pipelines' has been considered. The list also includes HS 220720 –'Ethyl alcohol & other spirits, denatured, of any strength', as this is a major component of bio-fuel. But goods and equipment related directly to energy consumption, conservation, emission reduction and environment protection have been kept outside the purview of this study. Bio fuel inputs like corn etc. are also excluded.

Major tradable products and equipment associated with energy sector

Using 6-digit Harmonized System (HS-codes) of classification for both renewable and non-renewable energy, a list of 270products and major equipment associated with renewable and nonrenewable energy sector, have been identified for preliminary analysis of trade in energy products among ASEAN+3 countries. However Electrical Energy (HS code 271600), though mentioned in the list, has not been taken into consideration for analysis as this paper focuses only on equipment and products related to energy sector only. In this energy table, the products related to renewable energy sources (RES) have been included from the lists prepared by Jha (2009) and Exim Bank (2011). Though Jha, in her list titled 'HS Codes for Renewable Energy Technologies and Components', had identified more than 60 odd items, in our study we have used 53 items as identified by the Exim Bank list titled, '6-digit HS Codes for Goods related to New Renewable Energy Sector'(actually this is a sub set of Jha's list). For non-renewable sector, the items have been identified using ITC and WITS data base.

It should also be noted that analyzing international trade in specific technologies/products and their components on the basis of HS codes has serious limitations. As common HS numbers for products exist only up to the 6-digit level for most of the developing countries, comparing and

analyzing international trade flows can only be done at a rather aggregated level. However, in this process many goods that are not related to energy sector may get included. For example, the 6-digit level classification for "other gas turbines" (HS 841181) includes gas turbines that may be used in airplanes. List of 270 products and major equipment related to energy sector consider for our study.

Section 2

Overall trade balance of energy sector between India and ASEAN+3: -

The paper observe that India's aggregate trade balance in all energy sector products with ASEAN+3 regions were negative in last five years and negative gap highest in 2009. From 2010 onwards negative trade gap decreased and in 2012 gap again increased and 2013 it decreased. From the data of trade balance table it is clear that India imported more energy sector products (than it exported) from ASEAN+3regions.

Author observed that India's export to some member countries of ASEAN+3regions has increased and some member countries decreased during 2009-13. Though its export share to Singapore, Japan and China have increased significantly during this period, and export share to other countries namely Korea, Philippines, Indonesia, Malaysia, Vietnam, Thailand etc. have declined.

From analysis of paper it indicates that during the same period, the number of exported products (6digit code) had decreased from 242 to 222. Out of all these energy sector products, products under categories 27, 73, 84, 85, 89 and 90 contributed around 92% of the exported value in 2013 compared to around 95% in 2009.

Author also observed that India's import from some member countries of ASEAN+3regions has increased and decreased during 2009-13 from some member countries. Though its import share from Brunei, Indonesia and Malaysia have increased significantly during this period, and import share from rest of countries of ASEAN+3 namely Laos, Philippines, Singapore ,China, Vietnam, Thailand, Korea and Japan etc. have declined.

From the research paper it indicates that import from ASEAN+3 during 2009-13 had decreased from 221 to 217. However, import of some item under category of 73,74,84,85 and 90 more or less same during this period as a result percentage of total imports value in 6 digit codes decreased from 76.43 percent to 75.50percent.

Section 3

Observation based on RCA values of the energy sector products of India:-

RCA values of Indian energy sector products have been calculated for the year 2009 and 2013 and four lists have been generated.

a) A list of 154 products whose RCA values have improved between 2009 and 2013. It shows that in a gap of five years, competitive advantage of over 56% of the identified products has increased. These products have been marked with a single star "* ".
b) A list of 64 products (23.7% of the 270 identified products) whose CA values in 2013were greater than equal to one. These products are marked with double stars "** ".

c) Only 31 products whose RCA values in 2013 were greater than one and between 2009 and 2013 the RCA values had improved by more than 0.50. These products have been marked with triple stars"*** ".
d) 116 products whose RCA values have deteriorated between 2009 and 2013.

The paper also highlighted 5 year (2009-2013) time series export trend among ASEAN+3 country of Indian Energy Sector products whose slope 'b' was positive and slope 'b' negative.

Author also shows the correlation coefficient 0.1012 between RCA values (2013) of Indian 270 energy sector products and their corresponding export trend (during 2009-13) i.e. 'b' values. It also shows the correlation 0.08236 between 154 products, for which the RCA values have improved in the period of the study, and their corresponding 'b' values. Though a higher value of positive correlation is expected for 154 products, the finding exhibits a weaker correlation, indicating the possibility of trade diversion and absence of a coherent policy to promote these products in the ASEAN+3region.

Observations based on comparison of RCA values among ASEAN+3 member countries:

RCA values (2013) of Indian products>1 and also RCA of corresponding Japan, China and Korea products: - A lists 64 such products. As India's competitive advantage is higher for these 64 products, ideally the trade balance for these products should be positive. Interestingly, out of the five years' trade balance (2009-13) chart paper have analyzed, India's positive trade balances is highest in 2013. We also analyzed trade balance with ASEAN+3 vis a vi Korea in 2013 and result is positive in both cases.

RCA values (2013) of Korean energy products>1also RCA of corresponding Japan, China and Indian products: A lists 149 such products indicates Korea's trade balance (2009-13) were positive in all the five years, increased up to year 2012 the falls.

Intra –Industry Trade (IIT)*:*

The sectorial intra-industry trade (IIT) is a measure of the degree to which trade in a particular sector represents intra-industry trade (based on scale economies and/or market structure). By engaging in IIT, a country can reduce the number of similar goods it produces, and benefit from scale economies. Higher IIT ratios suggest that these sources of gains are being exploited. It may also indicate that adjustment costs would be lower with trade expansion.

The index ranges from 0 to 1, with zero indicating pure inter-industry trade, and one indicating pure intra-industry trade. Grubel-Lloyd index indicate the extent of IIT for 270 energy sector products. Paper also indicate that the intra-industry trade between India and ASEAN+3, though not very significant till now in energy sector except2010, its importance is growing steadily but from year 2012 then index value falls. Research paper, indicates that between Korea and ASEAN+3, and from inters industry trade for energy sector products are moving towards intra industry trade.

Author also considers consolidated values of 270 energy sector products' export share to ASEAN w.r.t world, 5 years (2009-13) export trend values and RCA, RSCA, ROI, RTA, TII, TCI (2013) values.

From TCI values among India and ASEAN+3 are greater than one. So both the countries are natural trading partners in the sense that what one country exports overlaps with what the other country imports. From the TCI values it is clear that formation of a regional trade agreement on energy products among India and ASEAN countries is justified. Value of TII among some energy

products between India and ASEAN countries are close to zero which indicates energy trade, particularly export is very low; though on some products India has positive RSCA values. Paper also indicates that in some products, RTA value is higher in which India's RCA value is greater than one. But is in some products, though India's RCA value is greater than one, corresponding RTA value is negative. For these products, further study is required to explain the statistical observation.

Applied tariff imposed by Members of ASEAN+3

Paper mentions the simple average tariff imposed by Korea on those Indian energy sector products whose RCA were >1. Out of 64 such products, India exported only 29 products to Korea in that particular year. This highlights that India could not exploit the export potential some of the remaining products across Korea which already enjoyed comparative advantages. The Comprehensive Economic Cooperation Agreement (CECA) between India and Singapore was signed on 29th June, 2005 and operational with effect from 1-8-2005. Science among different member counties of ASEAN percentage of export is higher in Singapore and CECA between India and Singapore is already been signed as a result effect tariff rate imposed by Singapore is almost to 0 percent. The average tariff imposed by Korea on 26 products ranged between 0-10 percent. The weighted average tariff was 5.24%. Paper summarizes the tariff data. The average tariff does not look that high and majority lies within 0 to 5 % level.

Remaining 35 energy products, on which India already enjoyed comparative advantage over corresponding Korea products, Korea did not import those products from India. In table 27we have depicted the average tariffs which were imposed by Korea on these products imported from rest of the world. The weighted average tariff was 6.44%.

Paper also mentions the simple average tariff imposed by India on those Korean energy sector products whose RCA were >1. Out of 149 such products, Korea exported only129 products to India in that particular year. This highlights that Korean could not exploit the export potential some of the remaining products across India which already enjoyed comparative advantages. The average tariff imposed by India on 129 products ranged between 0-10 percent. The weighted average tariff was 6.35%. The average tariff does not look that high and majority lies within 5.1 to 7.5 % level.

Section 4

In addition to the above categories of products, as identified in previous Section, 270 products have been segregated into two different clusters namely Trade Diversion Cluster (C1) and Trade Creation Cluster (C2)

Trade Diversion:

Trade diversion means trade is being diverted from more efficient exporter to less efficient one by forming FTA among those regional trading blocs. The welfare effects of trade diversion may be negative, since less efficient regional producers capture market shares from more efficient outsiders: the possible gains in consumer welfare and producer surplus within the FTA must be weighed against the losses made by the outside producers.

The concept of trade diversion is very much related to patterns of comparative advantage and regional orientation. To distinguish between these cases and to examine whether there is trade diversion, it is necessary to define the comparative advantages of the integrating region. The situations where regional integration (ROI>1) is potentially harmful for the global economy occur

when efficient producers located outside the integrating region lose market shares to less efficient regional producers (RCA<1) with privileged access to the regional market.

Cluster 1: C1is a cluster of products which have RCA<1 and ROI>1 (2013). This Cluster is not sustainable in long run. It is a vulnerable cluster. In short run one can gain from these products' exports due to 'trade diversion' but in long run these products may not survive the competition.C1 is basically a trade diversion cluster. 52 products out of 270 products belong to this cluster.

The research paper indicates that the trade balance figures for this cluster were negative among five years. Negative trade balance had reached its highest level in 2011 and lowest in 2013.

Author observes that trade diversion has mainly occurred between India and Japan by comparing among ASEAN, China, Korea and rest of world. Very low value (almost close to zero) of Finger-Kreinin (FK) index also justifies the same observation. The paper indicates that the structure of trade between India and ASEAN+3 was moving closer to VIIT (Vertical Intra Industry Trade)-indicating trade diversification.

Trade Creation*:-*

Trade creation takes place when domestic consumers in member countries import more goods from other members. As import prices fall due to a removal of tariff and quotas; production will shift to lower cost producers. Trade creation refers to the increase in economic welfare from joining a free trade area or a customs union. Trade creation will occur when there is a reduction in tariff barriers which lead to an increase in consumer surplus and economic welfare

Cluster 2: C2 is a cluster of products which have good export potential but the potential has not been exploited properly. There exists opportunity or scope for trade creation. Products of this cluster have RCA greater than one but Regional Orientation Index (ROI)between India and ASEAN+3 region is less than one (2013). 43 products out of 270 products belong to this cluster.

Author observes that the trade balance figures of the energy products of this cluster. The positive trade balance increased from year 2009 and reached highest level in 2013. But in 2012 percentage of export to ASEAN+3 members country is lower by comparing with 2011 and 2013 value.

Trade Creation and Welfare gains*:-*

Trade creation takes place when domestic consumers in member countries import more goods from other members. As import prices fall due to a removal of tariff and quotas; production will shift to lower cost producers. Trade creation refers to the increase in economic welfare from joining a free trade area or a customs union. Trade creation will occur when there is a reduction in tariff barriers which lead to an increase in consumer surplus and economic welfare. A list of 43 Indian energy products and their RCA, ROI values between India vs ASEAN+3.

Authors have also analyzed country specific data on trade creation, trade diversion and welfare gains for these 43 products. These have been estimated at 0%, 5% and 10% tariff across ASEAN+3. Paper summarizes the same for India vis-à-vis ASEAN+3. The table indicates that, while there is scope for trade creation for 43 identified Indian energy products (C2) due to reduced tariff, scope of trade diversification is also very high. The welfare gain is that substantial high at 0% level.

Research work contains trade creation and diversion and welfare effect of India among other ASEAN+3 members with different tariff level among 270 energy products. If member country decided to down tariff at zero percent level then India's trade creation are highest.

From research work it's clear that if member country decided to down tariff at zero percent level then India's trade creation and welfare creation are highest in ASEAN+3 region among all other members.

The paper clearly indicates that compared to other countries, India would gain in43 energy products substantially low level at zero tariff regimes. India may create very negligible 2.24% of its total potential of welfare gains at zero tariff level out of total potential for 270 products whereas 3.64% of welfare gain is possible at five percent tariff level and 3.98% at ten percent tariff level.

Research paper also analyzed country specific data on trade creation, trade diversion and welfare gains for these 149 products of Korea whose RCA>1 but ROI between Korea vs ASEAN+3 <1. Trade creation, trade diversion and welfare gains have been estimated at 0%, 5% and 10% tariff across ASEAN+3. The paper summarizes the same for Korea vis-à-vis ASEAN+3. The paper indicates that, while there is scope for trade creation for 149 identified Korea's energy products (C2) due to reduced tariff; scope of trade diversification is also very high. The welfare gain is that substantial high at 0% level.

The papers also contain trade creation and diversion and welfare effect of Korea among other ASEAN+3 members with different tariff level among 270 energy products. If member country decided to down tariff at zero percent level then korea's trade creation are highest Japan followed by China then India. From research work it's clear that if member country decided to down tariff at zero percent level then Korea's trade creation and welfare creation are highest in ASEAN+3 region among all other members.

The paper clearly indicates that compared to other countries, Korea would gain substantially in 149 energy products at zero tariff regimes. Korea may create 95.07% of its total potential of welfare gains at zero tariff level out of total potential for 270 products. The paper also shows welfare gains of an individual member country with rest of ASEAN+3 countries for 270 energy products. The measures have been made at three different tariff levels. it's clear that China's welfare gains would be highest among all the ASEAN+4 countries if tariff is reduced to zero. The data suggest that all the countries would register higher welfare gain if the tariff rates are reduced to zero. In one of our earlier studies[4] on BCIM (Bangladesh China India Myanmar) and BIMSTEC[5](Bangladesh India Myanmar Sri Lanka Thailand Bhutan Nepal Economic Cooperation)it was observed that India's welfare gain among different regions namely ASEAN+3, ASEAN, BIMSTEC, BIMSTEC+1, BCIM for 270

[4]Kallal Banerjee, DipankarDey "Economy cooperation between India and BCM region: a study of trade potential of Indian energy sector products",
papapers.ssrn.com/sol3/papers.cfm?abstract_id=2545195

[5]Kallal Banerjee, DipankarDey "India and BIMSTEC: A Comparative Study of the Trade Potential of India's Energy Sector products in BIMSTEC and BIMSTEC 1 Region",
papers.ssrn.com/sol3/papers.cfm?abstract_id=2874294

energy sector products at different tariff level. Author observes that at zero percentage tariff level on energy sector products India's welfare gain highest from ASEAN+3 region followed by BIMSTEC+1 followed by BIMSTEC followed by ASEAN and lastly BCIM comes. If we follow same observation from individual major economy we conclude that India's welfare gain is highest from Korea followed by China and lastly Japan comes.

V. Conclusion:

Based on above findings, it may be concluded that proposed India vs ASEAN+3 FTA would benefit the trade of energy sector products in these region and all the concerned countries would likely to gain through this process.

Bibliography

[1]. Bhattacharya, S. K. and Bhattacharyay B. N. (2006), "Prospects of Regional Cooperation in Trade, Investment and Finance in Asia: An Empirical Analysis on BIMSTEC Countries And Japan". *CESIFO*, No. 1725, pp. 1-41

[2]. Dr Rafael Leal-Arcas and Ehab S. Abu Gosh (2014), Energy Trade as a Special Sector in the WTO: Unique Features, Unprecedented Challenges and Unresolved Issues,Indian Journal of International Economic Law, Vol. 6(1). http://ssrn.com/abstruct=2444997

[3]. Bhattacharya, S.K. (2007), "Does BIMSTEC-Japan Economic Cooperation Promote Intra-Regional Trade? The Case for Free Trade Arrangement". *Centre for Studies in International Relations and Development*, Discussion Paper No. 23, pp. 1-49

[4]. Chakraborty, D. (2007), "Trade Performance and Integration Experience of BIMSTEC: A Review of Issues". *Centre for Studies in International Relations and Development*, Discussion Paper No. 30, pp. 1-50

[5]. Bhattacharyya S C (2011)'Energy Economics: Concepts, Issues Markets and Governance, Springer, UK

[6]. By Rene Vossenaar and VeenaJha**,** 2010 'Technology mapping of the Renewable Energy, buildings, and transport sectors: Policy drivers and international trade aspects' ICTSD Programme on Trade and Environment.

[7]. Export –Import (Exim) Bank of India (2011), New Renewable Energy in India: Harnessing the Potential, Occasional paper 143

[8]. Sultan Hafeez Rahman, Priyantha D. C. Wijayatunga,HerathGunatilake, P. N. Fernando(2011), Energy trade in south Asia, opportunity and challenges ,ADB.

[9]. Plummer, Cheong and Hamanaka (2010) 'Methodology for impact assessment of free trade agreement' for the researchers and policy makers.

[10]. Plummer, Cheong and Hamanaka, 2010, 'Methodology for impact assessment of FTA' ADB working paper series.

[11]. Trade statistic in policy making –A commonly use of trade indices and indicator of APTIAD.

[12]. Trade statistic in policy making –A commonly use of trade indices and indicator of APTIAD-Mia Mikic and John Gilbert Trade Statistics in Policy making, a handbook of commonly used trade indices and indicators,

[13]. Prabir De (2011),Trade Facilitation in India: An Analysis of Trade Processes and procedures,Asia-Pacific Research and Training Network on Trade (ARTNeT)Paper Series, No. 95

[14]. Ram C. Acharya (2008) Analyzing International Trade Patterns: Comparative advantage for the World's major economies,Journal of Comparative International Management2008, Vol. 11, No.2, 33-53(printed in Canada)

[15]. ChandrimaSikdar and Biswajit Nag (2011), Impact of India-ASEAN Free Trade Agreement: A cross-country analysis using applied general equilibriummodeling,AsiaPacific Research and Training Network on TradeWorking Paper Series, No 107
[16]. B.P. SarathChandran (2012), Implications of India -ASEAN FTA on India's Fisheries Sector, MPRA Paper No. 38712, http://mpra.ub.uni-muenchen.de/38712
[17]. Xunpengshi, Cecilya Malik (2013), Assessment of ASEAN Energy Cooperation within the ASEAN Economic Community,ERIAPaper Series, ERIA-DP-2013-37.
[18]. Sangeeta V. Sharma (2014), Energy Trade Practices in India: Review of Tariff and Non-Tariff Barriers in Relation to ASEAN, ERIA Research Project Report FY2013, Jakarta: ERIA pp.27-62
[19]. Philip AndrewsSpeedand Christopher Len (2013) , The political economy of ASEAN Energy MarketIntegration,AEMI-Working-Paper-Political-Economy-of-ASEAN-Energy-Market-Integration.pdf
[20]. BiswaNathBhattacharyay(2009), Infrastructure development for ASEAN economic integration,ABDI,http://www.adbi.org/workingpaper/2009/05/27/3011.infrastructure.dev.asean.economic/
[21]. Sebastian Krapohl, Axel Obermeier (2005) ,from ASEAN to ASEAN+3 : a two –level game of regional integration, university of Bamberg
[22]. Horst Loechel and Stefan Baumann (2006), the indigeneity approach of the theory of optimum currency areas -What does it mean for ASEAN + 3, HfB – Working Paper Series
[23]. Francoise Nicolas (2009), ASEAN Energy Cooperation: An increasingly daunting challenge, Ifri research center, ISBN: 978-2-86592-603-9.
[24]. GaneshanWignaraja (2007) ASEAN+3 or ASEAN+6 which way forward? Multilateralising Regionalism by WTO - HEI and Centre for Economic Policy Research (CEPR)
[25]. Kiki Verico (2013), the Economic Integration of ASEAN+3 Stationarity, ECM and Cointegration analysis, MPRA Paper No. 43801, posted 16. January 2013
[26]. Yong Sarah Zhou (2013),Explaining ASEAN-3's Investment Puzzle: a Tale of Two Sectors, IMF Working Paper Asia and Pacific Department
[27]. Asia-pacific Trade and Investment Agreements Database (APTIAD).
[28]. World Bank (WITS) and (TRAINS) data base.
[29]. World Energy Outlook (2013)
[30]. Deng-Shing Huang and Jeen-HwaTu, on the feasibility of Economic cooperation in East Asia: perspective from Trade creation and trade diversion, journal of economic integration, sept1994.
[31]. Padmaja Murthy, SAARC and BIMSTEC Understanding their Experience in Regional Cooperation, CUTS international, 2008.
[32]. AmitaBatra, Zeba Khan (2005), revealed comparative advantage: An analysis for India and china, working paper 168, ICRIER
[33]. BishalThapa, Amit Sharma, Rashika Gupta, (2007). "Prospects for Energy Integration" ,Himal South Asian , April 2007, http://www.himalmag.com/2007/april/analysis_3.htm
[34]. Rajesh Mehta, (2002). " Establishment of Free Trade Arrangement Among BIMST-EC Countries, Some Issues" , Research and Information System for the Non-Aligned and other Developing Countries (RIS), Discussion Papers, January 2002, http://www.ris.org.in/dp23_pap.pdf
[35]. MahfuzKabir, Ruhul Salim(2010), Can Gravity Model Explain BIMSTEC's Trade?, journal of Economic Integration 25(1), March 2010; 144-166
[36]. Trade statistic in policy making –A commonly use of trade indices and indicator of APTIAD.
[37]. Trade statistic in policy making –A commonly use of trade indices and indicator of APTIAD-Mia Mikic and John Gilbert Trade Statistics in Policy making, a handbook of commonly used trade indices and indicators,
[38]. Asia-pacific Trade and Investment Agreements Database (APTIAD).
[39]. World Bank (WITS) and (TRAINS) data base.
[40]. World Energy Outlook (2013

[41]. Kelegama, S (2001): 'Bangkok Agreement and BIMSTEC: Crawling Regional Economic Groupings in Asia', Journal of Asian Economics , Vol 12, pp 105-121
[42]. Rafael Leal-Arcas and Ehab S. Abu Gosh, Energy Trade as a Special Sector in the WTO: Unique Features, Unprecedented Challenges and Unresolved Issues, Indian Journal of International Economic Law, Vol. 6(1), 2014
[43]. Ranjit Gupta (2014) http://www.ipcs.org/pdf_file/issue/SR163-Interview-BIMSTEC.pdf,BIMSTEC Yesterday, today and tomorrow
[44]. http://asean.org/asean/about-asean/overview/ visited on 10/01/2017
[45]. http://www.aseanenergy.org/blog/aseans-need-for-energy-cooperation-and-integration/ visited on 10/01/2017
[46]. http://www.intracen.org/ visited on 10/01/2017 and http://wits.worldbank.org/ visited on 10/01/2017
[47]. 4th ASEAN Energy Outlook report
[48]. http://www.aseanenergy.org/about-ace/introduction/ visited on 10/01/2017
[49]. https://www.hcisingapore.gov.in/pages.php?id=75 visited on 10/01/2017

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