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## ***ABOUT US***

WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal provided dedicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

# **TRADE DEFICIT AND INDIA'S SOLAR ENERGY GOALS- IMPACT AND SOLUTIONS.**

AUTHORED BY - KUSHAGRADHI BISWAS

## **INTRODUCTION-**

“The future is green energy, sustainability, renewable energy.”- Arnold Schwarzenegger. <sup>1</sup>

The above opinion by a known political personality speaks highly on how promising solar energy seems to be in making the world achieve sustainability.

India also recognizes the potential of solar power as a ***long-term and sustainable clean energy type from an economic as well as ecological context. The nation's leadership has also pushed the solar agenda forward with initiatives which are inclusive of new policies, incentives and schemes for the stakeholders involved. The civilian population has also shown immense interest in adopting solar power as an alternate and reliable type to meet the energy needs of the society.***

The formation of the **International Solar Alliance** is a testimony to the fact that ***India aims to not just be a part of the global solar power revolution but also lead and influence that for the better.***

Yet, from a financial perspective, **India's trade deficit problem** has persisted for quite some time and it can ***potentially hamper the nation's future decision-making and policy initiatives and reforms when needed.***

## **LITERATURE REVIEW-**

In the paper titled- **“An overview on balance of payments in India”**<sup>2</sup>, it was discussed that how the **condition of balance of payments of a nation demonstrates about its economic and financial position. It also gains importance in the fact that it gives a perspective on the country's changing position in the global economy and also the prospects that it holds in the short-term.**

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<sup>1</sup> *Renewable quotes*, Brainy Quote, <https://www.brainyquote.com/topics/renewable-quotes>.

<sup>2</sup> Dr. TG Uma, *An overview of balance of payments in India*,3(2),125, 125, (Asia Journal of Management and Commerce), 2022.

In the paper titled, **“Russia’s invasion of Ukraine: Impact on Indian economy- Strategies to mitigate and sustain”**,<sup>3</sup> where it was discussed on how the **geo-political conflict and instability along with sanctions on Russia led to rise in oil prices. As India imports more than it exports to Russia and with transportation hampered amidst the war, pricing and costs related to logistics will also see an increase. It also raises the issue of how inflation affects the price of energy purchases and its further impact on the economy of the nation.**

It can be well-understood on how being reliant on fossil fuels is not a long-term solution to ensure the energy security and requirements of the country. This is where the discussion about renewable energy, especially solar power comes into light. Yet, implementation of solar plans and projects hasn’t been very simple amidst various problems and hindrances which has been stated in the paper titled- **“Assessment of India’s energy dynamics: Prospects of solar energy”**<sup>4</sup> where **not just trade-policy, technological, finance related factors were discussed, but also infrastructural issues and how all of them affects the progress towards the energy goals were also understood. It also sheds light on the concern that when the energy demand and consumption are both increasing, such abovementioned issues still impact the working and slows down progress.**

Thus, it can be said that **strong and sound financial health of a nation plays an important role in ensuring and enabling long-term energy stability and security. In current times, there is an orientation to shift to renewable energy and India needs to strategize certain crucial aspects that are related to the nation’s energy ecosystem.**

## **RESEARCH QUESTIONS-**

- What is trade deficit and why and how is India affected by it?
- How does it impact India’s solar energy plans and ambitions?

## **RESEARCH OBJECTIVE-**

- ✓ How can **solar energy help India in dealing with the trade deficit problem?**
- ✓ How India needs **to go ahead with solar energy initiatives?**

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<sup>3</sup> Dr.B.Nagarjuna, *Russia’s invasion of Ukraine: Impact on Indian economy- Strategies to mitigate and sustain*,8(3), 204, 206, (International Journal of Multidisciplinary Research), 2022.

<sup>4</sup> Muhammad Irfan, Zhen-Yu-Zhao, Muhammad Ikram, Naeem Gul Gilal, Heng Li and Abdul Rehman, *Assessment of India’s energy dynamics: Prospects of solar energy*, 12, 1,8, (Journal of Renewable and sustainable energy),



## **RESEARCH METHEDODOLOGY-**

The research methodology type used **here is doctrinal research.**

## **ANALYSIS-**

Trade deficit signifies the **net overall amount by which a country's total imports exceeds its total exports. It epitomizes a scenario where a nation imports more than it contributes to the global economy with its exports.**

India has faced this **problem of trade deficit** primarily because its dependence on **imported petroleum and crude oil and other important commodities. This problem has further aggravated especially after the Russia-Ukraine war where not just fuel prices, but also there were supply chain disruptions. Yet, all of it happened at a time when India's exports have not been able to steadily and consistently keep up with the rising import bills.** The merchandise trade crossed **\$1 trillion** in 2022 where the **exports share stood at \$450 billion while imports at \$723 billion.**<sup>5</sup> This speaks a lot on how India faces the trade deficit issue.

When there is a rising trade deficit, its effect can be felt at various aspects of the economy. It reduces the value of the currency and this is already seen with **India's rupee where it has depreciated over 11% as with against the dollar.**<sup>6</sup> When the rupee is not doing well, **purchasing power in the global markets gets a serious setback. It gets more expensive to import different products and services. High import bills amidst a situation where the currency is depreciating is financially unsustainable and impacts the economic productivity and performance of the nation.** When the **currency is not doing good and its unable to maintain a certain level of stability, investor confidence also gets affected if the situation is not well-managed.** The Saga of Lebanon's financial crisis demonstrates well on **how the currency losing 90 percent**<sup>7</sup> **of its value, soaring inflation and an overall crippling economy has brought investor confidence to its lows.**

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<sup>5</sup> Shreya Nandi, *India's merchandise trade crosses \$1 trillion mark in 2022*, Business Standard, (January 17<sup>th</sup>, 2023, 23:23 IST),

<sup>6</sup> PTI, *Rupee falls over 11% in 2022-worse since 2013*, The Economic Times, (January 1<sup>st</sup>, 2023, 12:38 PM IST), <https://economictimes.indiatimes.com/markets/forex/rupee-falls-over-11-pc-in-2022-worst-since-2013/articleshow/96660078.cms>.

<sup>7</sup> Kareem Chehayeb, *Lebanon: US Dollar saves fear they'll foot crisis bill*, Al Jazeera, (February 3<sup>rd</sup>, 2022), <https://www.aljazeera.com/economy/2022/2/3/lebanon-us-dollar-savers-fear-theyll-foot-crisis-bill>.

Hence, trade deficit leads to economic issues that **impacts currency, inflation and also the business ambience if not managed well.**

When it comes to solar power generation, **the primary device that plays a pivotal role are solar panels. Solar panels are made up of constituent materials like a layer of silicon cells,<sup>8</sup> metal frame, glass casing and wiring to enable flow of current from the cells.** The cells that are **installed in the panels play a crucial role in the generation of electricity.** The **presence of the non-metal silicon and its conductive properties<sup>9</sup> play an important role in absorbing the sunlight and its further conversion to electricity.** Thus, it can be said that silicon is one of the important, if not the most, important constituent material of solar panels.

Polycrystalline<sup>10</sup> silicon, also referred as polysilicon, is the silicon type which is high-purity form and is **an essential element as far as the solar photovoltaic (PV) manufacturing** industry is concerned. From a supply chain context, China has a major dominance and is a prominent player now where **the processes that convert polysilicon into ingots, wafers, cells and solar panels where it accounts for a share of as high as over 80<sup>11</sup> percent of global capacity in each and the top 10 suppliers of solar manufacturing materials and equipment are also Chinese<sup>12</sup>.** **Such is the control of China over the process, that its estimated by 2025, it will be responsible for 95 percent of the entire manufacturing process.**<sup>13</sup> This gives China a leverage in the global market especially when it comes to doing business with nations that are trying to shift towards renewable energy.

When it comes to trade with China, India has been in **trade deficit and it widened to as high as \$101 billion, surpassing the 2021 figure of \$69.4 billion.**<sup>14</sup> **While Chinese exports to India**

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<sup>8</sup> Emily Jackowitz, *The 5 key components of a solar panel system*, Green Solar Tech, (November 23<sup>rd</sup>, 2020), <https://www.greensolartechnologies.com/blog/5-key-components-solar-panel-system#:~:text=A%20standard%20solar%20panel%20consists,and%20convert%20sunlight%20into%20electricity.>

<sup>9</sup> Ibid.

<sup>10</sup> *Polysilicon for solar PV manufacturing*, Targay, <https://www.targray.com/solar/solar-silicon/virgin-polysilicon>.

<sup>11</sup> Lydia Powell, *China's dominance of the solar photovoltaic value chain*, Observer Research Foundation, (November 23<sup>rd</sup>, 2022), <https://www.orfonline.org/expert-speak/chinas-dominance-of-the-solar-photovoltaic-value-chain/#:~:text=Out%20of%20the%20top%2010,of%20global%20capacity%20in%20each.>

<sup>12</sup> Ibid.

<sup>13</sup> Seema Prasad, *China to dominate 95% of solar panel supply chain*, Down To Earth, (July 11<sup>th</sup>, 2022), <https://www.downtoearth.org.in/news/energy/china-to-dominate-95-of-solar-panel-supply-chain-83651>.

<sup>14</sup> *India's trade deficit with China hits \$100 bn for the first time*, The Times of India, (January 14<sup>th</sup>, 2023, 8:09 IST), <https://timesofindia.indiatimes.com/business/india-business/indias-trade-deficit-with-china-hits-100bn-for-first-time/articleshow/96979850.cms#:~:text=The%20trade%20deficit%20in%202021,reach%20%2428%20billion%20in%202021.>

rose to as high as \$119 billion, Indian exports to China dwindled to \$17.5 billion.<sup>15</sup> With such soaring deficit, it gives China more negotiating power when it comes to doing business and trade of solar materials and products.

With exports to China decreasing but imports from China on an increase, it puts the policy-makers and other stakeholders in a difficult position to make swift changes especially in an industry where the supply chain is still primarily concentrated in a nation with whom there's a large deficit.

It can be understood that the solar industry is prone to supply chain shocks, uncertainties and material shortages and it was observed during the pandemic when the price of polysilicon increased when the production decreased.<sup>16</sup> When the prices become high, the purchase bills also get expensive and this can impact the foreign reserves which have been affected ever since the Russia-Ukraine war started.

Supply shortages and also affect the companies' and enterprises in the projects and assignments which they take up. It stresses them not just in their activities, but also the economic and financial toll is felt where the cash flow and profitability aspects are affected as at times work get stalled causing delays due to disruptions.

## **SOLUTION AND RECOMMENDATIONS-**

To solve the issue of trade deficit and also achieve the solar energy goals, reforms and changes need to be made. Some of them are-

- ✓ Investing in research, innovation and education-

The authorities need to invest into research and innovation especially in arenas like semiconductor structures, technologies and designs, nanotechnology and renewable energy technologies. It can be well-understood that semiconductors have an important role to play in solar electric energy systems. Innovations and new insights on how to develop and implement better semiconductor technologies and designs can be a big game-changer. Yet, to achieve such innovation goals, initiative needs to be taken for investing into study and research of these technologies across various industries. Incentives need to be given to those companies that are into semiconductor and nanotechnology research and solutions.

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<sup>15</sup> Ibid.

<sup>16</sup> Seema Prasad, *China to dominate 95% of solar panel supply chain*, Down To Earth, (July 11<sup>th</sup>, 2022), <https://www.downtoearth.org.in/news/energy/china-to-dominate-95-of-solar-panel-supply-chain-83651>.

**Specific policy-reforms ought to be made that creates research pathways for our scholars and researchers with nations and institutions which have developed innovations in such fields as mentioned above. These pathways will educate them about the best frameworks and systems of study and research that can be implemented to bring better solutions.**

Initiatives also need to be taken **for proper and effective training of staff and the workforce that are in the work of solar panels manufacturing.**

When many of the companies and institutions here will **create devices, services and products with better technologies and high-quality service, it will then attract clients and potential markets and that will help us bring more trade and business. Innovative solutions and path-breaking technology developments will only happen if long-term initiatives are taken.**

✓ **Financial and Tax benefits-**

Solar companies and enterprises, especially those at their initial and early stages ought to be **provided with suitable tax holidays and other financial facilities like easier access to capital especially when it comes to funding innovation and production.**

**Specific changes also need to be made to the taxation structure. GST rates on solar materials and components need to be brought at a rate where the businesses find it conducive instead of being burdened and strained.**

It needs to be understood that for developing a robust domestic solar power business ecosystem, a conducive ambience ought to exist where the **financial policies are clear, flexible, recognizes and addresses the needs of the important stakeholders and also understands the potential of the industry.**

✓ **Improving the implementation of solar roof-top program-**

When it comes to installation of rooftop solar panels, the **uptake and adoption has been slow** and this has affected the progress towards the solar goals.

**Policy and regulatory uncertainties, banking restrictions, net metering limits<sup>17</sup>, supply**

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<sup>17</sup> IEEFA and JMK research, *Rooftop solar lagging: Why India will miss its 2022 Solar Target*, JMK Research & Analytics, (April 2022), <https://jmkresearch.com/renewable-sector-published-reports/rooftop-solar-lagging-why-india-will-miss-its-2022-solar-target>.

**chain issues coupled with basic customs duty on imported cells and modules have all been major reasons that have inhibited the pace of the solar rooftop panel installations. Apart from that, lack of consumer awareness is also an issue.**

Initiatives and policies need to be taken to **educate the people about solar rooftop panels and its benefits. Steps also need to be taken to ensure easier financing of solar rooftop projects. When solar installations become faster, better and more efficient, it will create opportunities for many people.**

**When solar rooftop installation programmes and projects get well-completed, it will give the much-needed financial boost to not just the companies that provide solar panel installation services but also the enterprises that are into manufacturing will see growth. Thus, when the entire business ecosystem sees growth, it will create more avenues for revenue.**

From the solar energy industry perspective, India can **solve its issue of trade deficit by bringing suitable incentives and policies to enable the domestic solar business and research ecosystem create innovative products and services. It will not just benefit the local markets and consumers but also it will create a new avenue of exports and overseas trade and collaborations. When exports see a surge, it does pave way for new possibilities. At the same time, spending must also be kept in check from time to time.**

## **CONCLUSION-**

Solar power has a lot of potential **yet it can only be realised if long-term strategies are well-implemented and improvements are made in making the infrastructure future-ready and efficient with the best systems.**

**For a developing economy like India, energy availability and security both are needed for the development of its people and industries.**

Yet, to ensure long-term stable socio-economic development of the society, one needs to focus on not just planning but also effectively execute and implement the policies and frameworks.