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# Enabling Sustainable Energy Security in Syria

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There is a frantic period every day in Damascus: The hour (or, if you are lucky, two hours) when electricity is available.

Every single member of any household is on full alert. With temperatures rising to 50° Celsius (122° Fahrenheit) in the summer, water is already scarce. So, the water pump must be turned on, as well as the washing machine and any other appliance for household chores that depend on electricity. Charging all batteries and all phones is another “must.” Otherwise, there is no light and nothing to do in the evenings.

Refrigerators are almost of no use in the city. Yes, there is food scarcity and skyrocketing

prices for what you can buy, but any stored food will go to waste.

A solar panel system might be a solution, with the added byproduct of protecting the environment, but there are obstacles to obtaining one. Therefore, a panel is a prized possession. As *New York Times* reporter Ben Hubbard observed in 2021: “A family in the non-governmental control area in northern Syria began new lives as refugees, leaving behind their house, farmland, and television. Among the belongings they kept was one prized technology: the solar panel now propped up on rocks next to the tattered tent they call home.”<sup>1</sup>



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This essay addresses the issue of energy security in Syria, with a particular focus on the electricity sector. Syria's electricity sector has faced significant challenges as a result of the war, with far-reaching implications for people's daily lives, livelihoods, the economy, humanitarian aid operations, and overall security. The scarcity of oil and natural gas also has severely limited the capacity to meet the electricity demand required by households, the economy, and service sectors.

These difficulties underscore the necessity of adopting renewable energy sources and enhancing energy efficiency. The alternative energy source offered by solar panels initially appeared to be a potential solution. However, the high expenses that accompany obtaining and using solar panels put them beyond the financial capabilities of individuals with limited incomes, particularly in the midst of ongoing economic and present life challenges they are enduring.<sup>2</sup>

Trade dynamics have further exacerbated this energy security situation. Imbalanced power dynamics favor traders who exploit high demand and import low-quality equipment. They also continuously manipulate prices, leaving the most vulnerable populations in Syria behind.

While the desire for renewable energy resources emerged from a necessity for survival, increased demand and utilization of these resources can also play a pivotal role in driving the much-needed transition towards a greener future. This transition cannot happen through only raising awareness alone; it is also acquired via first-hand experiences. (And one also cannot overlook the role of climate change in the outbreak of the 2011 war in Syria.)

Localizing and advancing renewable energy technology through research and manufacturing holds significant importance for both current and future energy security and sustainability in Syria. Moreover, this endeavor will open fresh employment prospects for both experts and young workers.

This paper offers a project proposal by establishing a way to manufacture solar panels in Syria in the short run on a humanitarian basis. Establishing this manufacturing would provide direct relief to individual households suffering from a lack of electricity, especially the poorest and most vulnerable populations. It will assist and facilitate essential humanitarian aid operations. This proposal will also create incentives for higher quality and better-priced panels in the marketplace, creating job opportunities.

Furthermore, giving Syrians the capacity to manufacture solar panels is an effective policy for the long term. It could be a foundation for sustainable and renewable energy security that could raise the standard of living in the country and diminish the migratory pressures that generate conflict in the neighboring countries, and along established migration routes to Europe.

## **Insufficient Access Feeds Humanitarian Crises**

The electrical power sector in Syria has faced significant challenges due to the impact of a war, which has included attacks on critical infrastructure: oil and gas facilities, power plants, and electricity transmission and distribution networks. An economic blockade on the country exacerbated these issues. As a result, the availability of primary energy sources decreased drastically, dropping from 24 million tons of oil

equivalent (toe) in 2011 to approximately 10 million toe in 2021.<sup>3</sup>

Syria's demand for electricity is expected to rise persistently. However, the existing deficit in electricity supply—which stood at 15.4 billion kWh in 2021—remains a pressing concern. This state of affairs underscores the urgent need for substantial investments and efforts to rehabilitate and expand the country's electricity infrastructure in order to bridge the gap between demand and supply and ensure stable and sustainable access to electricity for the population.

Ensuring access to electricity in Syria is also a vital humanitarian concern. The 2022-2023 Humanitarian Response Plan (HRP) includes plans to enhance the availability of energy resources within communities. This involves the distribution of solar systems and the restoration of fundamental electricity networks. Furthermore, the provision of energy systems is increasingly integrated into early recovery and resilience efforts throughout the HRP. This is particularly the case when essential services and community productive infrastructure such as healthcare facilities, educational institutions, irrigation systems, markets is targeted. Securing funding for these activities is of utmost importance.<sup>4</sup>

## Assessing Current and Future Demand: Case Studies

There are several instances that highlight the current and future demand for renewable energy solutions in Syria—especially the need for solar systems equipment.

In the town of Sargaya, the Syrian Ministry of Electricity is developing a 100-kW solar power plant, which is expected to be completed in

2023. At the same time, a private company is also undertaking the construction of a 50-kW solar power plant in Sargaya, with plans for it to become operational by 2024.<sup>5</sup>

UOSSM (Union des Organisations de Secours et Soins Médicaux), one of the largest medical aid NGOs within Syria, envisions a future in which every hospital relies on clean and abundant solar energy. This organization has already initiated two solar energy projects in a hospital in Northern Syria and Arkabat Hospital, with a third phase aiming to extend renewable energy solutions to all accessible healthcare facilities across Syria.<sup>6</sup>

Collaborative efforts between the Syrian Ministry of Electricity and a group of UAE companies are set to establish a significant photovoltaic power plant in the Damascus countryside, boasting a capacity of 300 MW.<sup>7</sup> Meanwhile, the Syria Recovery Trust Fund (SRTF) has approved two new electricity projects designed to promote sustainable and reliable sources of energy in the Northeast and Northwest regions of Syria.<sup>8</sup>

Furthermore, the United Nations Development Program (UNDP) has launched a vital electricity and energy support project in Syria. This initiative prioritizes the provision of solar systems to support economic recovery, bolster climate resilience, and elevate humanitarian conditions.<sup>9</sup>

Syria's ongoing crisis remains a significant driver of the world's largest displacement crisis, with far-reaching consequences for both humanitarian and development efforts. Notably, ecological degradation and climate disruption have emerged as influential factors shaping the response to this crisis. These efforts are encapsulated within the framework of the Regional

Refugee and Resilience Plan in Response to the Syria Crisis (referred to as 3RP). Within the 3RP countries, a substantial population of approximately 7.1 million comprises refugees, asylum seekers, and stateless individuals. Crucially, an observable connection exists between ecological degradation and the refugee crisis in these nations, impacting displaced populations and host communities relying on natural resources for their livelihoods. As a result, enhancing resilience, mobilizing new financial resources, building capacity, and promoting environmental protection have assumed essential importance in addressing the complex challenges posed by this crisis.<sup>10</sup>

Further demand for renewable energy solutions—and particularly solar energy equipment—is evident through the ambitious goals outlined in the Syrian Ministry of Electricity’s 2021 report, which lays out a vision that extends until 2030. These goals encompass several key objectives, including the continued construc-

tion of power stations utilizing renewable energy sources via government-led initiatives, often supported by concessional financing. Alternatively, they aim to promote projects invested by the private sector, allowing for the sale of electricity to major consumers or the Establishment of Transmission and Distribution of Electricity and its companies in the governorates.

Additionally, the Ministry is committed to advancing legislation that fosters energy efficiency across various sectors, encourages the utilization of renewable energy, and facilitates investment procedures in this domain. These efforts include meeting electrical demand directly from renewable sources, as well as facilitating the establishment of stations while integrating renewable energy into the public grid. According to the Syrian Electricity Ministry’s plan, this is the environmental impact of renewable energy in numbers:<sup>11</sup>

Regardless of any possible political changes in Syria’s future, it is clear that the demand

Year	2021-2025	2026-2030	2021-2030
Photovoltaic Energy Produced (millions kWh) (1600 hours annually)	4,546	14,892	19,438
The amount of unburned fuel from producing electricity from photovoltaic panels (million tons)	1.137	3.723	4.859
The value of unburned fuel from producing electricity from photovoltaic panels (million dollars)	454.603	1,489.156	1,943.759
The amount of avoided CO2 emissions by using photovoltaic panels (million tons)	3.410	11.169	14.578
The value of avoided CO2 emissions by sing photovoltaic panels (million dollars)	170.476	558.434	728.910

for solar panels will increase—not only at the household level but also on larger levels: governmental and non-governmental organizations, the private sector, as well as in humanitarian and development agencies.

## Can Solar Panels Be the Solution?

This research suggests that a proposal to establish the manufacture of solar panels in Syria might help meet present and future energy demands. This project would focus on producing parts for the panels or creating factories where the finished panels would be produced from imported parts and materials.

One factor that might portend success for such a project is Syria's recent reinstatement to the Arab League. Another element that might bring success is that many manufacturers and wholesalers in the MENA region can provide various kinds of solar panels. A.R.E. Group in Egypt,<sup>12</sup> Aurasol in Tunisia,<sup>13</sup> Cleanergy Morocco,<sup>14</sup> and DuSol Industries in Dubai, UAE,<sup>15</sup> are just a few examples.

In this context, there are two pathways to create solar panel manufacturing in Syria. One is through the direct importation of materials and parts, which might be facilitated by the easing of restrictions among the Arab countries and Syria. Manufacturers in these countries could constitute a regional supply chain that incorporates a Syrian solar panel manufacturer. There is also the possibility of cooperation via lesson-drawing and providing the know-how to support a solar panel project.

Any such project should also aim to be nonpolitical and serve all Syrian areas and citizens without discrimination. Indeed, the project should be funded with humanitarian and development aid in the short run.

## How Would the Project Work?

Ownership is one key element. According to the Evaluation of the Paris Declaration, development aid should support country ownership in order to strengthen national autonomy and to eliminate dependency on the aid in the future.

Another approach is for donors to keep direct control over themselves, assuming this strategy will reduce risk. Yet both the evaluation and other careful assessments find that this assumption is actually an illusion. Excessive donor control is no safer, costs more, and undermines long-term development benefits.<sup>16</sup>

Nevertheless, Syria's specific (and highly conflicted) political situation could recognize the necessity of implementing the latter approach in the short run to avoid the politicization of development aid. Yet this step should only occur within a "broad consultative process" and "dialogue with donors and encouragement for the participation of civil society and the private sector."<sup>17</sup> What the Paris Declaration called for is recommended in this context, especially when the donor country has close ties with both government-controlled and nongovernment-controlled areas. The UAE is a very good example in this regard.

This approach will enable the donor to set up the project within international development and humanitarian aid standards. This will also allow for control over implementation, management and distribution while guaranteeing no harm, transparency, and anti-corruption principles.

Implementation of the project should not undermine the Syrian government. However, the government should have a power limited only to approving and implementing the project through diplomatic channels. This is feasible

not only within the current political changes in the region but also with the need for the Syrian government not to jeopardize its new regional relations—especially with the UAE. It would represent a workaround for political deadlock rather than legitimizing the Syrian government. Ultimately, that remains a national issue for only Syrians themselves to decide.

Ownership in this form should be limited to five to seven years, after which efforts will run as an international direct investment, with an opening in the ownership structure for the participation of Syrian investors. Operational details are another key element. During the first five to seven years, solar panel manufacturing will be run as both a profit and a nonprofit organization. The profits from selling the products to governmental and non-governmental organizations and the private sector (in both government and non-government-controlled areas, as well as from other countries) will be used to cover the humanitarian nonprofit aspects of the project: supply to individual households and humanitarian –aid organizations.

Setting up a solar panel manufacturer requires several working parts, including: 1. Research & development of solar panel technology. 2. Machinery & equipment for solar panel manufacturing. 3. Licensing & permits. 4. Raw material acquisition. 5. Facility lease/purchase. 6. Hiring & training of employees. 7. Marketing & advertising. 8. IT infrastructure & security, and 9. Legal & accounting services.<sup>18</sup>

It will also require an initiation of cooperation with UNDP and other development and humanitarian aid organizations that operate all over Syria on several levels. First, because these organizations need solar panels, they will

contract with the manufacturer at cost. These organizations can also identify those with the greatest humanitarian need and ensure they receive panels.

The cooperation would run even deeper. Based on previous projects and experience,<sup>19</sup> manufacturers associated with the project would collaborate with the UNDP to design training programs in renewable energy. These courses incorporate training in the manufacture, installation and maintenance of solar power systems and encourage gender equality and the participation of women in all areas of the programs. The collaborations should also ensure that projects are aimed at rehabilitating the grid and allowing solar power plants to feed into the grid.

### **What Would Success Look Like?**

The proposed solar panel project has the potential to make a significant impact on various fronts.

First, it would address the pressing issue of electricity scarcity in individual households by offering high-quality electricity at cost prices. It also would strive for inclusivity by providing free access to clean energy for the poorest segments of the population. Additionally, the project could play a crucial role in assisting humanitarian aid operations.

It also would have other pervasive effects. It could act as a catalyst for market improvement, particularly given recent developments like the Syrian Investment Agency's approval of a solar panel manufacturing project in Adra Industrial City. The initiative also promises to generate job opportunities, particularly for the younger generation, thereby reducing the inclination towards illegal migration via perilous routes.

But beyond its socioeconomic contributions, the solar panel project is poised to bolster the overall economy and combat ecological degradation in the 3RP countries. Promoting renew-

able energy usage will also contribute to the global fight against climate change, which, in turn, can help alleviate climate-induced conflicts.

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Through her scientific study, artistic work, and academic training in public policy, **Nour Barakeh** strives to understand society from different viewpoints and to communicate complex topics. Her Master of Arts in Public Administration from Central European University emphasized the Sustainable Development Goals (SDGs) and environmental policies to combat climate change. She previously studied at the Higher Institute of Dramatic Arts in Damascus and graduated from the Faculty of Pharmacy at Damascus University. A sought-after speaker on the SDGs, refugee, and migration issues, Nour Barakeh is also an accomplished playwright aiming at post-conflict peacebuilding.

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