

Newsletter

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DG's Message



Dr. Ajay Mathur Director General, ISA

"ISA is working towards mobilizing USD 1 trillion of investment for a massive deployment of solar energy technologies and for expanding solar markets. Our goal is to enable solarisation of the world to bring up solar in the priority of all political decisions in every country across the globe. It is widely recognised that solar energy can be used vastly to capitalize on its benefits, help lift people out of energy poverty, and drive the transition to a lowercarbon economy. Trillions of dollars in investment need to be mobilized and the right policy frameworks need to be put in place for the same. This

would help achieve a clean energy transition; enable energy access and energy security; and deliver a new economic driver for all countries.

Through the power of solar and other renewables, and our collective efforts, we believe we can build and support a transition away from fossil fuels to a cost-effective solar future and open up affordable, renewable electricity supplies to markets that have been historically underserved.

Let us hope that together we can build the world back by adopting a cleaner, greener path."

Global Energy Transition: How ISA is Contributing

The <u>ISA</u> is expediting interventions for energy transition during the time when the need for combating climate change is more urgent than ever. The global economies are witnessing compounded negative impacts of climate change along with the pandemic. The countries are ramping up efforts through their national plans for moving towards a 'Low-Carbon' economy. 102 countries from across the world have joined the ISA to adopt Solar as a solution for Energy Transition. But, the pledges by governments to date are still falling short of what is required to limit the global temperature rise to 1.5 °C.



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Scientists and Climate experts have warned against the consequences of this shortfall on emission reduction targets and the irreversible negative impact it might have on nature and environment. In the Tonga Archipelago, the world has recently witnessed vicious cycles of global climate change events in the form of under the sea volcanic eruptions and as a result an adverse impact on economies and people in the adjoining island state.

The ISA envisages support to the LDCs and SIDS member countries. It is a proven fact that decentralised solar applications can prove to be highly suitable in when people are facing grid uncertainties. ISA has been operational in providing programmatic and capacity building support to all developing member countries and is trying to reach out to the focal points in the pacific rim to provide immediate support. The ISA is committed to establishing solar as a shared solution to address climate exigencies, and also in formulating energy priorities across geographies in the long term. The ISA's theory of change indicates at facilitating Energy Access at the local level, Energy Security at national levels Energy Transition at a global level.

At ISA we know that the global energy transformation would require radical changes in how the global population produces, transports, and consumes energy. Providing access to modern energy for roughly 700 million people who are currently unserved will require new power capacity and infrastructure expansion in countries with limited means. Rising populations and economic growth are going to put additional demand for energy services. To meet these challenges, a collective effort is required for the transformation of the energy sector. Taking a holistic view on the issue, the ISA is working at various levels to expedite Energy Transition. ISA is forging partnerships to transform the global electricity infrastructure to allow for increased use of variable RE sources, system flexibility, and electrification of new services. At COP 26 climate conference in Glasgow, the International Solar Alliance (ISA), India Presidency of the ISA, and the UK COP Presidency launched the first international network of global interconnected solar power grids, known as the Green Grids Initiative - One Sun One World One Grid (GGI-OSOWOG).

The announcement was accompanied by the One Sun declaration, which stated that, "Realizing the vision of One Sun One World One Grid through interconnected green grids can be transformational, enabling all of us to meet the targets of the Paris Agreement to prevent dangerous climate change, to accelerate the clean energy transition, and to achieve the Sustainable Development Goals. These efforts can stimulate green investments and create millions of good jobs. By sharing the sun's energy, we can help to build a more peaceful and prosperous world." The declaration has been endorsed by 80 ISA member countries.

The GGI-OSOWOG will bring together a global coalition of national governments, international financial and technical organisations, legislators, power system operators and knowledge leaders to accelerate the construction of the new infrastructure needed for a world powered by clean energy. The initiative is widely seen as a big and bold move to realise a global solar transition roadmap and will go some way towards realising its vision for a solar energy future.

We are formulating strategies to design and develop our advocacy efforts to convey to the member countries that massive efforts will be needed for expansion of renewable energy for power supply and direct use within and across regions. We also realise that the roadmap for international effort for achieving clean energy transition must be fair and inclusive, leaving no one behind for which we are trying to convene global dialogues engaging stakeholders from all geographies.

The ISA is trying to bring international development community, governments, and policymakers together to ensure that developing economies especially the least developed countries receive the financing and technical know-how they need to built robust solar energy systems to meet the needs of their expanding populations so that their economies thrive sustainably. We realise that any global pathway for drastically scaling down emissions would need careful consideration of strategies for addressing the critical energy issues, i.e., Energy Access, Energy Security and Energy Transition. Global electricity demand has increased considerably owing to economic development on path to recovery post covid-19. This is expected to create a huge demand for electricity. To meet the growing demand, most of the countries are encouraging adoption of new technologies, especially solar. In developing countries where energy access is an issue, the declining costs of solar modules is an important factor in providing affordable electricity to millions through grid connected solutions, solar mini grids and through off-grid solutions.

Developed and developing countries strongly promoting solar as an alternative to conventional energy sources across the globe is positively contributing to the market's growth. According to ISA's Global Solar Market analysis 2021 report by Ernst & Young, to meet the rising electricity demand, the global electricity generation is expected to grow at CAGR of 2.4% and 0.7% in the Rapid Growth and Mature markets (Europe, Oceania and the US) respectively by 2050. Solar PV and wind additions is expected to account for nearly 50% of the new generation capacity additions by 2040. Global average annual investment in solar PV capacity is expected to be around US\$ 120 billion through 2050 with around two thirds of this flowing to rapid growth markets (Latin America, Gulf Cooperation Council, China and India).

Solar PV has experienced exponential growth in recent years, with global installed capacity increasing ten-fold from 2010 to 2017. The private sector has been a major driving force behind this, contributing to nearly 90% of solar investments in ISA member countries. ISA is developing a focused private sector engagement (PSE) strategy to deliver the global agenda and its goal is mobilising USD 1 trillion for solar by 2030. Each component of this strategy – designing more effective policy, catalysing funding, and sharing new data – comprehensively addresses industry bottlenecks, leading to additional installed solar capacity and more reliable, clean, and affordable power for individuals and households. Companies and public enterprises are doing their bit by installing RE plants and focusing on ecofriendly power generation solutions to reduce their carbon emission. The market is also likely to be enhanced from increased government spending on technological research and development.

Among the market segment based on key solar application, the utility segment held a leading market share in the past years. Growing adoption of rooftop solar and customer awareness about usage of eco-friendly sources are projected to boost the residential and non-residential grid connected segment growth between 2021 and 2030. Asia Pacific held the dominant share of the global market and is projected to grow at the highest pace till 2030. The EU was another major market for solar power in 2020. Increased Investment, supportive regulations, RE targets contributed to the growth of the Market. The Middle East & Africa are set to contribute significantly in the coming years.

ISA envisions a thriving solar industry that grows in line with SDG 7 and 2050 NetZero targets by supporting the development of enabling policy frameworks and catalysing investments. The private sector seeks greater clarity and consistency across policy areas relating to project preparation, execution, and post implementation services. Policies that reduce risks pertaining to land access, taxation, offtake, and grid integration will expand the pipeline of viable, bankable projects. Meeting these challenges to spur the development of grid-connected projects will kick start market growth.

The <u>ISA</u> is on a mission to establish solar energy as a preferred solution for governments to achieve Energy Transition. The ISA is working towards fulfilling this mission by tapping massive market opportunities and making use of geographic and socioeconomic advantages and at the same time identifying and mitigating the technological and investment gaps amongst geographies in harnessing solar power.



Webinar on "Institutionalisation of Backward and Forward linkages of Solar Irrigation"

27th January 2022

The ISA conducted a webinar on "Institutionalisation of Backward and Forward linkages of Solar Irrigation" on 27th January 2022 in collaboration with International Water Management Institute (IWMI). Experts from the World bank, IWMI along with ISA-NFP Ethiopia and Togo participated in the webinar and shared their key insights on global Solar Irrigation scenario and challenges in Sub-Saharan Africa. The discussion highlighted the existing opportunities across the value chain of solar irrigation which can be leveraged for improving the financial viability of solar irrigation, leading to improved adoption and expansion of solar irrigation in Sub Saharan Africa. These insights would be useful for practitioners, policy makers and financial institutions from ISA Member Countries for not only to effectively design their programs and schemes but to make better decisions going forward for sustainably scaling solar irrigation in their respective regions.



Solar Irrigation in Ethiopia

Blog by:

Dr. Frehiwot Woldehanna, PhD NFP Ethiopia and Senior Advisor Ministry of Water and Energy, Federal Democratic Republic of Ethiopia

Ethiopia's economy is based mainly on agriculture, including crop and livestock production, which contributes to 45% of the national Gross Domestic Product (GDP), more than 80% of employment opportunities and over 90% of the foreign exchange earnings of the country. However, the Ethiopian economy, particularly agricultural development is extremely vulnerable to external shocks like climate change, global price fluctuations of exports and imports and other external factors. Irrigation is one of the key pathways to build resilience towards climate change eventually leading to poverty reduction and key development goals.



Ethiopia - Horn of africa



Ethiopia has 12 river basins with an annual runoff volume of 123 billion m³ Surface Water and 36-40 billion m³ Ground Water potential. Just five percent of arable land is currently under irrigation, and the country's reliance on rain-fed agriculture limits productivity and increases the vulnerability of farmers to droughts and the effects of climate change. The national government has set a goal of increasing the use of Solar irrigation in the country.

Ethiopia – river basins

- 12 river basins
 - » 123 billion m³ Surface Water
 - » 36-40 billion m³ Ground Water

Irrigation potential of Ethiopia is estimated to be 5.3 million hectare. The agricultural sector is the leading sector in the Ethiopian economy, comprising 47.7% of the total GDP, as compared to 13.3% from industry and 39% from services. Though agriculture is the dominant sector, most of Ethiopia's cultivated land is under rain fed agriculture. Due to lack of water storage and large spatial and temporal variations in rainfall, there is not enough water for most farmers to produce more than one crop per year and hence there is a frequent crop failure due to dry spells and droughts which has resulted in a chronic food shortage currently facing the country.







For Government of Ethiopia irrigation development is a priority for agricultural transformation. The **objective of irrigation development is to** ensure food security at household and national levels, production of raw materials for agro industries, and production of crops for export earnings.

Solar irrigation has proven to be an effective strategy to expedite agricultural transformation in Ethiopia. It provides opportunities for small-scale private farmers to reduce out-of-pocket production costs and irrigation development in areas with slightly deeper groundwater that cannot be accessed by fuel-powered suction pumps.

SGWM-Achievements so far

234,772 km2, 103"% of the target, has been mapped, with command area Of >3 mil ha

Issues	Result Obtained	Overall SGWM areas
Quantity of shallow ground water	 27.27 bm³ water is available at a depth of less than 30 m • Well Spacing are defined based on annual recharge rate 	SEW Magging errais in Ethiopic 5 9 5 9 2 0 1 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5
HH and command	 3,088,395ha of land can be irrigated 6,176,898 beneficiary households on 356 woredas 169 navigational tools procured & SGWM output uploaded 267 SGW Atlases are produced, published & distributed to 193 woredas Training on the use and operation of navigation tool on shallow groundwater development was provided to286 regional and Woreda experts of the four main regions Additional training and experience sharing at Prague conducted for ATA staff area definition 	Recently completed and Atlas publishing Atlas development for Chancho- Mehale meda, Kofele-Goba, Adigrat - Abergele and Harai region on progress

Small scale solar irrigation are under demonstration through the project 'Shallow Ground Water Irrigation Development' executed by the Ethiopian Agricultural Transformation Agency (ATA). While the application of household and small-scale irrigation has been increasing in Ethiopia, the large scale solar irrigation activities are not common. There are two basic reasons; first is requirement for large size PV systems and second is reduction of significant irrigable area for installation of the large solar array.

Major components of the small-scale project with specific objectives

- 1. Scaling up Shallow Ground Water (SGW) mapping and regulating SGW use which focuses on providing accurate information on the availability of SGW potential and regulate SGW use and targets mapping of SGW potential over 200,000 km
- 2. **Promotion of business groups around SGW development** that aims to strengthen the supply chain for irrigation technologies and services, increase adoption of technologies and increase well drilling service availability.
- 3. **Promotion of high value crop production and marketing** promotes HVCs production and marketing using irrigation by facilitating access to seeds, financial products, market and infrastructure
- 4. **Promotion of energy efficient and water saving technologies** to identify and recommend energy efficient and water saving technologies for farmers, including female farmers
- 5. Enhance project management, coordination and evaluation to develop capacity of the implementers for effective project management, coordination and evaluation during and after the project timeline

Solar pumped drip irrigation system in Ethiopia





The Current status of the Solar powered irrigation demonstration projects in Ethiopia:

- The Four regions Oromia, Tigray ,Amhara and SNNP Regions 14 wored as installation of solar powered drip irrigation completed and site handover conducted
- 32 ha of land cultivated and covered by High Value Crops
- In addition, cost effective and better performing solar pumps(Sun culture) demonstrated at 10 farms in Oromia region.
- High value crops production and marketing promoted
- Household Irrigation Sector Strategy developed with 17 systemic bottlenecks across the value chain have been identified, to be addressed by 26 strategic interventions.
- National Small hold irrigation and drainage development strategy
- High value crops (HVCs) assessment tool is developed to define the most feasible crop for HHI and is under national use
- Excel based local cropping calendar development tool developed to address the basic economic





questions of what to produce, when to produce, how much to produce and for whom to produce.

Ethiopian Conformity Assessment Enterprises and MoA supported to enforce mandatory pump standards through pre-shipment testing arrangement. As the result 75 National pump standards are set of which 13 standards are endorsed as mandatory standards .

There is a need for **Backward and Forward Linkages for Successful Dissemination of Small-Scale Solar Irrigation.** Backward Linkages which includes availability of resources (water, land, agricultural input, access to finance, equipment tax exemption, knowledge and skills for system management) and Forward Linkages which includes market for the crops, private sector engagement for equipment and spare part supplies and service.

The opportunity offered by solar irrigation for sustainable development, emissions reduction and climate resilience makes it a preferred contender for climate financing. As a result, solar-powered water technologies are increasingly facing interest amongst donors and NGOs, as they can provide a clean and potentially cost-effective solution to increase agricultural production.



Blog by:

Mr. Abdoulaye Robil NASSOMA,

NFP Togo and Director General, Togolese Agency for Rural Electrification and Renewable Energy (AT2ER) Togolese Republic

Togo is a country in West Africa. Togo covers 56 600 km. Togo is divided into 5 administrative regions. The regions are subdivided into 39 local governments. The Population of Togo estimated 7.9 million of which 60% in rural areas. Togo is one of the largest agriculturally rich nation in Africa, with agriculture accounting for 41% of its GDP. The agriculture sector accounted for approximately 40% of the country's GDP in 2018.

Climate change is a major concern in Togo. On the one hand, there is the phenomenon of erosion in unprotected coastal areas and on the other the vulnerability to climatic hazards. The scarcity of wood and biomass resources and the reduction in the supply of ecological services from forests leading not only to land degradation, a loss of biodiversity but also to the drying up of water bodies and the regression of wetlands, etc. The late arrival and irregularity of the rains in particular have affected the agricultural sector, one of the most important sectors in Togo which contribute about 42% to the gross domestic product (GDP) of the country. The contribution of this sector to economic growth fell sharply between 2014 and 2015.



Agriculture is vital to Togo's economic development, food security and labour market.

Farmers in Togo rely largely on rainfall to irrigate their crops but as the population grows and with the adverse effects of climate change, farmers need an alternative to irrigate their crops and meet the growing demand for food. Togolese smallholder farmers are not protected against climate-related crop losses and have limited access to the finance they need to adapt their production to the changing climate.

With 32% of the population living below the poverty line, major efforts need to be made towards sustainable agriculture practices in Togo.

The key constraints of the agriculture sector are as follows:

- Inefficient output-coping strategies, resulting in low productivity and weak integration with upstream and downstream activities, thus limiting economic potential
- Lack of processing industries

- Inadequate research and development, limiting adoption of new technology
- Limited funding for agricultural water development
- Natural factors such as variable climate and poor soils.

The productivity of Togolese agriculture is highly susceptible to climate change.

In light of these challenges, Togo made strong commitments to contribute to the achievement of the objectives of the UNFCCC to limit temperature rise to 2 ° C by 2030.

In its NDC submitted to the UNFCCC in September 2015, Togo stated the following measures to reduce the emission of greenhouse gases:

- Strengthen actions in favour of energy efficiency and low-carbon technologies;
- Promote integrated and sustainable water resources management;
- Strengthen the resilience of agricultural production systems;

- Strengthen the capacity of human settlements (buildings and cities) to adapt to climate change; and
- Protecting the coastal zone.

In March 2019, the Government of Togo introduced subsidies to Togolese households to help with the cost of off-grid solar power systems. This subsidy will cover the high installation cost of the solar systems, with the objective to increase the adoption of solar home systems. UK based company BBOXX won a tender to provide electricity to 300,000 households that do not have connection to the national grid using solar kits. A similar tender was given to a company named Soleva in August 2017. Under this program, the Government will provide monthly vouchers to households operating a BBOXX or Soleva system to finance the system. A total of 100,000 households will be equipped with solar kits in 2020 and approximately 550,000 households by 2030.

To date, many programmes have been launched to boost the country's agricultural production.

In line with this commitments, the Togolese government is undertaking numerous initiatives; among them are the integration of renewables energies in the energy mix of the country (which extends to the Agricultural sector)

Listed below are some of the Government initiatives with respect to solar irrigation pumps:

 With funding from the African development Bank, the Government of Togo via the Ministry of Mines and Energies have developed a program to deploy 3000 solar pumping systems for irrigation based on a reliable distribution model for solar pumps with the support of the private sector and the Ministry of Agriculture. Funding currently available will allow the acquisition of approximately 600 pumps in the first year. A REVOLVING mechanism which will be put in place together with the implicated stakeholders will make it possible to finance new pumps until the target is reached.

- 2. The Ministry of Agriculture in partnership with a private operator BBOXX launched a program in 2020 to distribute 5000 solar pumps to agricultural farmers. The pumps distributed in the framework of this program benefit from a 50% subsidy from the Government of Togo. To date 3,024 agricultural farmers have benefited from the program.
- 3. The German Corporation(GIZ) is financially and technically assisting the Government of Togo in a project denoted "PESoP" (Promotion of Productive-Use Solar equipment). Solar irrigation pump is one of the equipment promoted in this project. The project is based on « RBF » mechanism, where private operators receive a financial incentive after installing a solar pump for irrigation.
- 4. Togo will be benefiting from a USD 50,000 grant from the ISA to implement a solar pump irrigation project. The grant agreement has been signed between the Republic of Togo and ISA. Project implementation on the ground will be starting in the first quarter of this year.



Expected impacts of these Government initiatives:

- Contribute to reduce climate change and its impacts through the reduction of CO₂ emissions;
- Adaptation of Sustainable agricultural practices and production through the deployment of solar powered irrigation. Improve farmers' resilience to changes in rainfall patterns which is as a result of climate change;
- Contribute to poverty eradication;
- Contribute to hunger and food shortage eradication;
- Job creation
- Improve the economy of the country

Bankers Training Programme

17th - 21st January 2022

4th batch (phase 2) of Banker's Training Program for Asia Pacific Region under ISA's Banking Solar Initiative

With a vision for mobilizing USD 1000 billion till 2030, ISA Secretariat has initiated capacity building of all possible stakeholders which will play a vital role in materializing this vision. One such stakeholder is financial institutions such as local banks that work as a catalyst in the solar value chain. <u>ISA</u> has come up with a unique initiative – Banking Solar Initiative – to train bankers to finance solar projects. The training was conducted online.

The <u>ISA</u> Secretariat conducted 4th batch (phase 2) of Banker's training program for Member Countries from Asia Pacific Region from 17 to 21 January 2022 under ISA's Banking Solar Initiative Region. The

training was inaugurated by H.E Sundaramurthi, High Commissioner of India for Papua New Guinea & Solomon Islands along with Mr. Amit Kaushik, Chief of Unit, PPIC, ISA. Thirty Eight Bankers from 5 Asia Pacific countries participated in the training program. The training was targeted for finance professionals who act like catalysts in the solar value chain. The training programme was focused on the fundamentals of Solar PV technology, risk assessment and mitigation, business models and contracting framework, project costing and financial analysis. It also covered the techniques of evaluating of feasibility reports for solar projects. So far 830 bankers from 49 ISA Members countries have undertaken training across 14 batches.



Dr. Ajay Mathur, DG, ISA, visited the US in January to operationalise the US agreement and to take these strategic partnerships forward and lock in more significant political and funding support.

ISA is effectively accelerating solar adoption at country level and enhancing solar energy's share in global installed capacity mix to drive net-zero emissions. ISA is growing and converting a robust pipeline of solar projects across the world, resulting in sustainable impact. At COP 26 Glasgow, the <u>US joined ISA</u> and signed the framework agreement of the ISA to catalyse global energy transition through a solar-led approach. <u>Global Energy Alliance for People and Planet</u> (GEAPP) and <u>Bloomberg Philanthropies</u> forged strategic partnerships with the ISA for supporting on-ground solarization projects and advocacy activities globally. The <u>UNGA</u> also granted observer status to the ISA.



New York, 24 Jan 2022: Director General ISA Dr Ajay Mathur met Mr Achim Steiner, Administrator – United Nations Development Programme to discuss UNDP & ISA partnership towards Solar for Net Zero.



New York, 25 Jan 2022: Director General ISA Dr Ajay Mathur met with UN Secretary General Mr Antonio Guterres at UN Secretariat to discuss collaborative efforts for achieving SDG's and expedite climate action



New York, 27 Jan 2022: Director General ISA Dr Ajay Mathur met Deputy Secretary U.S Department of Energy (DOE), David Turk and Assistant Secretary for International affairs at U.S Department of Energy (DOE) Andrew Light during his recent visit to the U.S.





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Photo Gallery



Dr. Ajay Mathur, Director General, International Solar Alliance with Deputy Secretary U.S Department of

Energy (DOE), **David Turk** and Assistant Secretary for International affairs at U.S Department of Energy (DOE) Andrew Light during his recent visit to the U.S

Dr. Ajay Mathur, Director General, International Solar Alliance with Deputy Secretary U.S

Department of Energy (DOE), David Turk

Upcoming Events

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- ISA session on "Role of ISA in facilitating Energy Transition " during MNRE event on 17th Feb 2022 at 16:00-17:40 Hrs. IST.
- Webinar on "Grid Integration" on 28th February 2022 at 16:00-18:00 Hrs. IST.
- https://isolaralliance.org/ 🛛 info@isolaralliance.org 🚯 https://www.facebook.com/InternationalSolarAlliance/
 - https://twitter.com/isolaralliance 🖸 https://www.youtube.com/channel/UCenJjENDpDfeCrORy-f6zsg
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