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Ease of Doing Solar 2020 In ISA Member Countries

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Foreword

With increased economic growth, there will be an exponential rise in demand for amenities owing to increased human consumption. This, in turn, would place an enormous demand on the resources of countries around the globe including that on the electricity or power sector. Therefore, the imperative is not just to meet the growing demand but meeting it in a sustained and efficient way.

The 2030 Agenda for Sustainable Development and the widely adopted Sustainable Development Goals (SDG) present a roadmap for sustainable, climate-conscious development for the ISA member countries. Among these, is the goal of a low-carbon future that necessitates resources with least or no carbon footprints quintessential in the energy mix. Solar, an abundant resource, holds the key here and is the most suitable alternative. However, large scale solar deployment would require vast scale investments across all solar rich countries and primarily a deep level of interest from the Investors worldwide.

Governments must navigate a complex maze of policy preparedness, technical feasibility and financial robustness to bring in the best solar technologies in the country. Investors, globally, would be attracted to a transparent and infrastructure ready regime supported by an investor friendly market. It is, therefore, essential for countries to assess their existing preparedness for solar investments and suitably adopt successful global learnings.

In 2019, the International Solar Alliance (ISA) felt the need of a publication that can address the areas of concern in the matter and decided to prepare the Ease of Doing Solar report as a demonstration pilot for consideration by the second General Assembly of the ISA. With a grand success of the first edition, the ISA decided to expand this initiative to cover the 80 member countries.

The ISA, with an assistance from Ernst & Young LLP (EY), has conceptualized a framework for evaluating countries on seven key indicators (macroeconomy, policy enablers, technical feasibility, market maturity, infrastructure, financing ecosystem and energy imperatives) and came up with a report that can be used by Governments and Investors to identify key challenges and drivers. The EoDS report is expected to serve as a ready reckoner for Governments to understand the policies, regulations and their effectiveness among the member countries and to build a robust and sustainable solar energy ecosystem in their home countries.

We hereby present this report to the Honourable members of Third Assembly of the ISA for consideration. My heartiest congratulation to the ISA Secretariat for bringing out this document.




Upendra Tripathy

Director General

International Solar Alliance

Glossary

Abbreviation	Full Form
BU	Billion Unit
1 BU	1 Terawatt-hour
Ckt km	Circuit Kilometer
COP	Conference of the Parties
CUF	Capacity Utilisation Factor
EoDS	Ease of Doing Solar
EU	European Union
FDI	Foreign Direct Investment
FY	Financial Year
GDP	Gross Domestic Product
GHG	Green house gases
GHI	Global Horizontal Irradiance
GW	Gigawatt
GWh	Gigawatt-hour
IPP	Independent Power Producer
km	Kilometer
kV	Kilo Volt
kW	Kilowatt
kWh	Kilowatt-hour
Mn.	Million
MU	Million Unit
1 MU	1 Gigawatt-hour
MVA	Million Volt Ampere
MW	Megawatt
MWh	Megawatt-hour
NPA	Non-performing asset
PV	Photovoltaic
RE	Renewable Energy
sq.	Square
SEIN	Sistema Eléctrico Interconectado Nacional
SHS	Solar Home Systems
TWh	Terawatt-hour
T&D	Transmission & Distribution
UNFCCC	United Nations Framework Convention on Climate Change
US\$/ USD	United States Dollar
VAT	Value Added Tax
NFP	National Focal Points



Executive summary

1. Overview

The ISA aims to undertake joint efforts to reduce the cost of finance and the cost of technology and mobilize more than US\$ 1,000 billion of investments by 2030 in the solar sector. The ISA's aim is to provide a dedicated platform for cooperation among solar-resource-rich countries through which the global community (including governments, bilateral and multilateral organizations, corporates, industry, and other stakeholders) can contribute to help achieve the common goal of increasing the use and improving the quality of solar energy in meeting energy needs in a safe, convenient, affordable, equitable and sustainable manner.

The Ease of Doing Solar 2020 Report, for the ISA members, is a continuation of the pilot study conducted for 4 member countries in 2019 and is now expanded to cover 80 ISA member countries with a refined evaluation framework. The report intends to provide a compendium, to the governments, on current progress and best practices for adoption across enabling parameters for solar across member nations. Further, it is expected to act as a reference to the Financial Institutions investing in solar. The ISA intends to publish this report on an annual basis by undertaking evaluation framework design, data collection, collation, analysis and the dissemination of the outcomes among member countries.

The assessment has been carried out, for each of the 80 member countries, across seven key drivers: macroeconomy, policy enablers, technological feasibility, power market maturity, infrastructure, financing, and energy imperatives. To study and quantify performance of the ISA member countries across these Drivers, various parameters and indicators have been selected under each driver to demonstrate Ease of Doing Solar. The seven key drivers form the bedrock of the EoDS evaluation model with weightages assigned to the drivers, parameters and indicators for a quantitative evaluation of the overall EoDS scores for the countries. Data for this study has been collected from primary and credible secondary sources. The countries have been grouped across four segments, as below, basis the quantification of the total scores across the drivers:.

Achiever

Countries with most favourable technical and commercial conditions for solar and perceived as most attractive for investments in solar.

Influencer

Countries with moderately favourable technical and commercial conditions for solar and perceived as moderately attractive for investments in solar.

Progressive

Countries which are at initial stages in development of a favourable ecosystem in terms of commercial feasibility and investments for solar.

Potential

Countries with untapped potential and at a nascent stage for development of favourable ecosystem.

2. Overview of the results

Owing to strong potential, robust sustainability targets, high solar irradiation and developing power infrastructure, India has emerged as a leading performer among the ISA member countries along with countries like Brazil, Saudi Arabia and United Arab Emirates. The 2020 report focuses on non-OECD member countries of the ISA. Countries have been classified in four categories based on the performance across seven drivers identified under the Ease of Doing Solar concept. The countries are arranged in alphabetical order under each classification.

Achiever

Brazil

India

Saudi Arabia

United Arab
Emirates

Influencer

Algeria

Costa Rica

Jamaica

Peru

Seychelles

Argentina

Dominican
Republic

Maldives

Rwanda

Sri Lanka

Bolivia

Egypt

Mali

Saint Kitts and
Nevis

Tanzania

Botswana

El Salvador

Mauritius

Saint Vincent
and the
Grenadines

Trinidad and
Tobago

Burkina Faso

Fiji

Namibia

Tuvalu

Cape Verde

Ghana

Nigeria

Senegal

Progressive

Bangladesh

Dominica

Madagascar

Palau

Tonga

Benin

Ethiopia

Malawi

Paraguay

Uganda

Cambodia

Gambia

Mozambique

Samoa

Zambia

Côte D'Ivoire

Grenada

Nauru

Saint Lucia

Zimbabwe

Djibouti

Kiribati

Niger

Suriname

Potential

Burundi

Democratic
Republic of the
Congo

Guinea

Myanmar

Sudan

Cameroon

Guinea-Bissau

Papua New
Guinea

Togo

Chad

Equatorial
Guinea

Guyana

Sao Tome and
Principe

Vanuatu

Comoros

Eritrea

Haiti

Somalia

Venezuela

Cuba

Gabon

Liberia

South Sudan

Yemen

3. Regional highlights

Key insights from the assessment of the ISA member countries across 3 regions highlighting the strengths and areas of improvements in each region have been presented below.

Africa (42 Member countries)

- Africa region has 14 Influencer, 12 Progressive and 16 Potential countries in the EoDS 2020 report.
- Owing to higher levels of solar irradiations in the region, countries in Africa are bestowed with large solar potential and technological feasibility. Current low levels of access to electricity in some countries present a significant opportunity for off-grid solar technologies..
- Lead performers in the region have set high and long-term targets up to 2030 and have been undertaking activities towards these goals.
- Most Progressive and Potential countries have had a reasonably better macroeconomic environment but need improvement in areas like infrastructure development and financing mechanisms.
- Aspects related to financing, policies and setting sustainability targets need more focus and offer scope for improvement to develop an effective solar ecosystem in the region.

Asia & Pacific (18 Member countries)

- Asia & Pacific region has 3 Achievers, 5 Influencer, 6 Progressive and 4 Potential countries in the EoDS 2020 report.
- Along with high levels of solar irradiation, enabling macroeconomic and financing aspects are driving the growth of Solar adoption in the region.
- Leading countries in the region have long-term visions related to infrastructure growth ably matching Solar growth and supportive investment ecosystem.
- Progressive and Potential countries of this region are still at initial stage of developing conducive policy environment and developing a robust power infrastructure to make solar more viable.

Latin America & Caribbean (20 Member countries)

- Latin America & Caribbean region has 1 Achiever, 10 Influencer, 5 Progressive and 4 Potential countries in the EoDS 2020 report.
- Similar to African region, Latin America & Caribbean region has also been bestowed with large Solar irradiation. Besides this, most countries of the region have performed well on aspects related to market maturity and macroeconomy.
- Leading performers in the region have set high and long-term solar targets up to 2050 and have been undertaking activities towards these goals. Leaders also encourage privatization and have long-term visions related to infrastructure growth and associated investment plans.
- For the Progressive and Potential countries, policy enablers and infrastructure development have been identified as key areas of improvement. Leaders in the region have implemented supportive policies like feed-in-tariff, net metering, etc. to encourage participation in the sector.

Note: Results from the assessment of countries across the drivers have been presented in the Appendix 1 of the document

4. Country assessment across drivers

Key insights from the assessment of member countries' across seven drivers drawn have been presented below:

Macroeconomy

- Robust GDP Growth rate and low country risks have been a key differentiators among countries evaluated on Macroeconomy.
- Other key differentiators include Investor protection initiatives and the extent of political stability in the individual countries.
- Most Influencer countries have initiated structural reforms to strengthen economic competitiveness and establishing more favourable environments to promote investments.
- Most Progressive countries have a strong FDI growth trend and with a rising GDP growth trend though the size of the GDP is comparatively lower.
- The Potential countries have low GDP size with the better ranked ones having a comparatively higher GDP growth rate.

Policy enablers

- Robust policy mechanisms to support renewables, sustainability targets and financial incentives are key scoring aspects on policy enablers.
- In addition, countries scoring high have created favourable downstream policy framework for renewable energy such as renewable purchase obligations (RPO), emission reduction targets and tax incentives for solar developers.
- Most Influencer countries may not have demonstrated significant actions on policy front but have mandated clear policies to promote clean energy primarily through private participation
- Progressive countries are in the initial phases of renewable specific policy formulation but have acknowledged the role of renewable energy in the country's developmental agenda.
- The Potential countries have been focussing on introducing favourable policies to promote renewable energy with limited on ground implementation.

Technological feasibility

- High levels of Global Horizontal Irradiance (GHI) and normative capacity utilisation factors are the key differentiators in Technological Feasibility across the four evaluation segments.
- Countries in Africa and Middle East are bestowed with naturally high levels of solar irradiation have scored higher in Technological Feasibility and hence have score comparatively higher.
- Existence of energy storage projects have also helped in improving technological feasibility scores for the leading countries.
- Another key differentiating criterion has been the extent of use of renewable to enhance electricity access in countries that are still not hundred percent electrified.

Note: Results from the assessment of countries across the drivers have been presented in the Appendix 2 of the document

Market maturity

- Countries with high levels of access to electricity, presence of a structured and mature power markets along with a robust share of operational solar projects have scored high in Market Maturity.
- Another key differentiating factor has been the adoption of competitive bidding process for awarding power projects by the countries.
- Most Influencer countries have already achieved a significant level of electricity access and have a strong focus on opening the power market through private participation.
- The Potential and the Progressive countries are differentiated, primarily, with the levels of electricity access and the extent of initiatives to transition towards a comparatively mature power market in future.

Infrastructure

- Looking into the intermittency and other operational challenges related to solar integration with the grid, the need for robust infrastructure is indispensable. The Achiever countries have taken a planned approach towards strengthening the national grid infrastructure with a focus on integrating solar.
- Leading countries have also encouraged private participation in not only solar infrastructure development but also in strengthening grid infrastructure privatisation to fast-track infrastructure development.
- Most Influencer countries have taken concrete steps towards developing a long-term infrastructure development plan with renewables at its core.
- Progressive and Potential countries are in different stages of building and operating a robust, high voltage integrated transmission grid to support better integration of solar in the long run.

Financing

- Low cost of financing, better accessibility to financial instruments and presence of quality banking system are the key reasons for countries which perform better on financing. Extent of private credit, by domestic banks, is also an enabling differentiator.
- Most Achievers have set up specialized institutions to develop targeted incentives for the industry, climate funds, tax incentives, grants, financial programs and cooperation plans to encourage capital flows in the sector.
- Most Influencer countries present a stable financial outlook and a strong financial ecosystem which is moving towards the levels of Achievers.
- The Potential countries are having certain levels of financial institutional setup especially for power sector financing though it is primarily focusing on government financing or from Developmental Financing Institutions (DFIs).
- There is significant dependence on financing from DFIs in most Potential countries. The institutional mechanism for project financing is still in the evolution stage.

Note: Results from the assessment of countries across the drivers have been presented in the Appendix 2 of the document