

**Report of the
2nd Meeting of International Steering Committee (ISC) of
International Solar Alliance (ISA)**

Held on 18th January, 2016 at Abu Dhabi, UAE

The Steering Committee of the International Solar Alliance, open to all member countries, held its second meeting on 18th January 2016 at the Abu Dhabi National Exhibition Centre (ADNEC), Abu Dhabi, UAE. India, represented by Mr Upendra Tripathy, Secretary, Ministry of New and Renewable Energy (MNRE), Government of India, chaired the meeting. Ms. Sylvie Lemmet, Director, European and International Affairs, French Ministry of Ecology, Sustainable Development and Energy, Government of France was the Co-chair.

2. Thirty countries including India and France attended the meeting. List of country representatives is given at *Appendix-I*. Observers and potential partners who attended the meeting are listed at *Appendix-II*.

3. The agenda items were taken up in the following order:-

Agenda Item 1: *Opening remarks by the Chair*

4. Mr Upendra Tripathy, Secretary to Government of India, Ministry of New and Renewable Energy, in the Chair, welcomed all the participating Countries and thanked them for joining the 2nd ISC meeting of ISA. He thanked the Ambassadors and High Commissioners of prospective member countries located in New Delhi who have been of great help in ensuring speed, skill and scale in the process that has made it possible to have two ISC meetings in a time span of 49 days, since ISA was launched in Paris. He briefly apprised the members about the political Declaration, enclosed with the joint invitation letter from the Hon'ble Prime Minister of India and the President of France, that brought together in Paris on 30th November 2015 representatives from around 70 countries including more than 30 Heads of State Government, 500 high level representatives from government and international organizations, and 50 representatives from the industry. He thanked Government of France for their continued support and cooperation in the formation of the Alliance and in organizing the 1st ISC meeting in Paris immediately thereafter. He also thanked all the countries who participated in the International Steering Committee meetings held at Paris and at Abu Dhabi. The chair gratefully acknowledged the help of IRENA and Government of UAE who facilitated the second ISC meeting at such a short notice.

5. Thereafter the Chair apprised the members about the follow up activities, since the first ISC meeting in Paris-

- i. An Interim Administrative Cell (IAC) of ISA (*hereinafter referred as 'ISA cell*) has been made functional in the Ministry of New and Renewable Energy, India. This cell will “coordinate ISA activities and programmes”, as stated in the Report of the first ISC meeting, paragraph 5, under the guidance of the ISC and in consultation with prospective ISA countries;

- ii. On 21st December 2015 discussions were held with ISA countries' resident diplomatic missions, United Nations, World Bank, Exim Banks, New Development Bank, United Nations Asia Pacific Centre for Technology Transfer (APCTT), and also with the corporate sector for developing ISA programme of activities and the Statute, which had been circulated earlier;
- iii. After the participation of Secretary General of the UN in the Paris launching event, the United Nations has offered to have an MOU with ISA as a strategic partner in developing a Centre within ISA which would be dedicated for solar technology applications in ISA member countries. The centre would also facilitate implementation of ISA programmes and projects by way of letting ISA to utilise existing official UN infrastructure in 121 member countries;
- iv. In order to facilitate investment for the solar energy projects and programmes in ISA countries, contacts were established with the New Development Bank, formerly known as BRICS Development Bank. The Bank indicated its plans to earmark more than 15 percent of its credit for renewable energy in general and solar in particular. In order to minimize the hedging risk, the Bank also has plans to examine the prospects of sharing the hedging cost by the lending banks and the borrowing country. These initiatives will reduce the cost of fund for solar projects in ISA countries. This will be an exemplary step as this will ensure a road map of opening of credit facilities for solar projects and programmes in ISA member countries. Contacts with other bilateral and multilateral banks will also be established for facilitating investments in solar energy space ;
- v. In order to develop modalities for establishing a corpus fund, discussions were held with Soft Bank and ENGIE, France. This is in the context of India's proposal to create corpus of 1000 Million Dollars which includes 500 Million Dollars contribution from governments and public sector and 500 Million Dollars from private sector companies. A campaign will be launched to seek contribution and/or commitment pledge from the companies for augmenting ISA corpus (endowment) fund. It will be with the understanding that the corpus (endowment) fund will not be spent and only the interest earned thereon will be utilized for undertaking/facilitating projects and programmes in ISA member countries. This corpus fund would be deposited, in a Bank chosen by the ISC, in perpetuity and interest amount would be utilized for ISA activities;
- vi. From the available options, the website domain for ISA was selected as www.intsolaralliance.org which was going to be made shortly operational as a common source for information on ISA member countries;
- vii. The chair also informed that India, as the host country, was considering offering of another five acres of contiguous land if required by ISA to have a bigger complex; and was ready to transfer US \$ 16 Million to the initial corpus of ISA and US \$ 4 Million towards building and annual secretarial expenses for 2016-17, once ISA was an international legal entity;

- viii. India, in consultation with ISC and subject to its approval, was even prepared to launch a pilot action plan for 2016-17 of more than US \$ 16 Million (involving both grants and lines of credits) as this will help ISA to start working more effectively and efficiently soon after its establishment;
- ix. The Chair informed that United Nations, World Bank, Exim Banks, New Development Bank, YES Bank, Soft Bank; UN-APCTT with whom IAC is engaged in discussions will make presentations on different aspects of cooperation for achieving ISA objectives in the ISC meeting today;
- x. The Chair also invited all Member countries present for the event on the 25th of January, 2016 in the campus of the National Institute of Solar Energy, India, where H.E the President of France and the Honourable Prime Minister of India would be laying the foundation stone of the ISA Headquarters and inaugurating the interim Secretariat of the ISA which can start working as soon as ISA is an international legal entity; and
- xi. The Chairman stated that while moving forward on the issues presented during 1st ISC meeting, the views expressed by Australia, Bolivia, Chile, China, Dominican Republic, Ethiopia, Grenada, Maldives, Mauritius, Seychelles, The Netherlands, Uganda, United Arab Emirates, United Kingdom, and Vietnam will be completely kept in view and followed. He particularly referred to views expressed by the Chile and the Netherlands on proposed governance structure of ISA which was circulated as part of the agenda of the 1st ISC meeting (paragraph 8 of the first ISC report).

Agenda Item No.2: *Opening remarks by the Co-chair*

6. Ms. Sylvie Lemmet, the Co-Chair, appreciated initiatives taken by India for the launch of ISA. She informed that the Heads of States and Government will sign CoP-21 Agreement in New York during April 2016 and the signing register will remain open for one month. As ISA was a product of COP 21 in Paris, she suggested that possibilities for signing on the same occasion the 30 November Paris Declaration of ISA, together with the document(s) establishing the first Programme(s) in pursuit of the objectives of the Declaration, may be explored. This measure would also ensure that concrete Programmes implementing the Paris Declaration start at the earliest.

7. The Co-Chair stated that concerted actions undertaken in the context of the Alliance should focus on realizing the objectives enshrined in the Paris Declaration, which included: bringing our efforts together to reduce the cost of finance for solar energy and mobilize up to 1000 billion USD investments by 2030, and: developing new, cost efficient and reliable solar technologies and applications. As stated in the joint invitation letter sent to Heads of State and Governments, the Alliance will be a “global partnership” of “countries joining hands to accelerate the deployment and development of solar power”; therefore, the Alliance must focus on replication and diffusion of best practices and policies, aimed at pooling and better harmonizing the demand from solar-rich countries. The Alliance should function as a platform from which different Programmes will be launched on a voluntary basis. She also suggested that ISA develops a motto of minimum duplication, with niche areas that international initiatives and

institutions in the renewable space are not currently focused on, as stated in the Report of the first ISC, paragraph 11.i. These niche areas should be promptly identified through consultations with prospective member countries and with the help of think tanks (to be identified with inputs from ISA countries), IRENA, IEA etc. She further emphasized that a Programme for reducing cost of financing for solar projects shall be launched as a part of effort to mobilize over 1000 billion dollars of investments upto the year 2030. She underlined the need of finalizing a slim and dynamic governance structure for the Alliance, tailored for the needs of the specific Programmes that will be developed as a first step.

The Co-Chair also highlighted the long and strong friendship that exists between India and France and promised all support to make ISA a success as ISA took birth from the COP 21 in Paris at a time when the objectives of the Alliance are of critical importance to address issues of global warming and social poverty. The Alliance should be the driver of the “change of scale” which is indispensable for deploying solar energy in line with needs and with the effective implementation of the Paris Agreement on Climate Change.

Agenda Item No.3: Confirmation of Report of the 1st meeting of the International Steering Committee (ISC) Meeting

8. Tentative Agenda along with Report of the First Meeting of ISC held on 1st December, 2015 at Paris, France was circulated to all member states of ISA through mails, with copies to local Embassies in New Delhi. Comments received from Bolivia were suitably incorporated in the report. Since no questions were raised or comments made by any other country, the Report of the First Meeting of International Steering Committee (ISC) was confirmed.

Agenda Item No.4: Adoption of Agenda for the 2nd ISC meeting

9. The Chair opened the 2nd meeting of the International Steering Committee (ISC) and requested for comments on the structure of Agenda. On consensus, the agenda for the 2nd ISC meeting was adopted.

Agenda Item No.5: Presentations

10. The presentations made in the 2nd ISC meeting are summarized as under:

- I. **United Nations:** The presentation was on prospective cooperation with ISA. The highlights of the presentation are as follows:
 - a) UN could support ISA through UNDP, UNEP and UNIDO currently. Some more UN agencies may join later;
 - b) Capacity Building (skilled manpower and technical expertise);
 - c) Knowledge Management (help in establishing e-portal, knowledge generation & sharing);

- d) Strategic Partnerships and Networking for Technology Transfer, Innovation and Manufacturing Hubs (CTCN, ISEC, Cleantech Innovation, R&D, Industrial Manufacturing Hubs, Incubators, IPR and so on);
- e) Synergy with Ongoing Projects and Programmes (Synergy of ongoing UN projects with ISA);
- f) Funding Mobilization and Programmatic Support (Multilateral Banks / Mechanisms, Bilateral Agencies, Financial Institutions, Private Sector and more); and
- g) UN could participate through MOU between UN and ISA and will help in preparing Roadmap through 2030 and will also help in attaining the key activities and milestones set for ISA for the year 2016.

The UN initiative was appreciated by the Chair.

The presentation is enclosed at Appendix-III

- II. **Joint presentation made by YES Bank, India, World Bank, and Infrastructure Development Finance Company (IDFC):** The presentation, made by YES bank, detailed the opportunities towards mobilizing 1 Trillion US Dollars for ISA solar projects. The actions suggested were: a) Green mandates by key Developmental Financial Institutions / Sovereign Funds / Funds which will facilitate availability of investments for solar projects in needy ISA member countries; b) Green Commitments from Sovereign Wealth Funds (SWFs)/ Pension Funds/ Endowment Funds / Foundations etc. need to be explored; and c) Sharing of Global Best Practices, Teaming-up with Global Multilaterals / DFIs, Collaborate with Global Initiatives – like Sustainable Energy for All (SE4All), RE100 (commitments from businesses for Renewable Energy) etc. would help in increasing investment flow to Solar Energy Sector in ISA member countries.

The Chair appreciated the presentation as it highlighted that mobilization of US \$ one Trillion for solar sector was not an impossible task. Global investors' meets that could bring Governments, Corporates and Banks together will go a long way in facilitating green innovative financing in ISA member countries.

The presentation is enclosed at Appendix-IV.

- III. **Terawatt Initiative:** The presentation underlined the need to bring together selected global solar Energy companies, investors and power users to interact with government, international agencies and IFIs for designing new market and implementing the right legal and financial tools and vehicles, which will minimize the perceived risk and will optimize returns. Emphasis should be given towards standardizations of large scale development, Cash-flow aggregation and De-risking of large solar portfolios. The Chairman requested Terawatt Initiative to email 10 action

points that ISA should consider as priority action areas to promote mutual partnership.

The Chair appreciated the presentation.

The presentation is enclosed at Appendix-V.

- IV. **APCTT:** It mentioned about the possible synergy between their on-going efforts in technology transfer in developing countries and ISA mandate. It was informed that APCTT can support ISA through capacity-building, technology facilitation, knowledge-sharing activities and creating a solar energy technology facilitation platform. In this context, establishment of a framework agreement between ISA and UNESCAP was proposed.

The Chair appreciated the presentation.

The presentation is enclosed at Appendix-VI.

- V. **Joint Presentation by NISE, India and NREL, USA:** The presentation detailed on the possible areas for research and development under ISA.

The Chair appreciated the presentation.

The presentation is enclosed at Appendix-VII.

- VI. **Joint Presentations by Exim Banks of India and China:** Suggested ways to promote 10000 MW of solar projects in ISA member states and also the roles and responsibilities of Exim Banks of India, Australia and China. The EXIM banks and other related agencies could play a big role in attracting bilateral aid and project linked concessional finance to member countries.

The Chair appreciated the presentation and thanked Australia, China and India for having taken trouble of sending their Exim Banks to the ISC meeting of ISA .

The presentation is enclosed at Appendix-VIII.

- VII. **IRENA:** DG, IRENA appreciated India's efforts for establishing ISA and stated that ISA initiatives would lead toward scaling up of solar energy in a big way. He assured that IRENA would work closely with ISA and extend all possible help and cooperation.

Agenda Item No.6: The discussion on Tentative Action Plan 2016

11. The Chair recalled a recommendation made in the 1st ISC meeting held on 1st December, 2015 that reads “*Make the proposed projects and programs in the road map more focused which can be discussed in the subsequent meetings of ISC*”. He informed about the initial exercise and the proposals presented in the Agenda. He further suggested that in order to start the activities, Solar Network Groups of ISA member countries could be constituted for developing plans and initiatives for ISA member states. He also recommended that as a part of Action Plan for ISA, Global Investment meet could be organized in various regional zones to attract financial investments. He clarified that the activity relating to Solar Park and other proposed programmes

would be initiatives taken from ISA member countries, on the basis of best practices sharing, with a view to pooling and better harmonizing the demand from solar-rich countries.

12. The Chair informed that India proposes to take the following activities as a part of ISA Annual Plan 2016 by way extension of country grants:-

- a) Formulate projects and programs through pooling and harmonizing the demand from solar rich countries, through concerted actions, aggregation of demand and best practices sharing to translate into action, what Hon'ble Mr P. Javadekar, Indian Minister of Environment, Forests, and Climate Change has said : "organize a buyers" market for reducing costs, scaling up investments, and deployment of solar applications etc.
- b) Trainers Training support for 450 officers from ISA member countries at the National Institute of Solar Energy;
- c) Financial support of approximately US\$ 15 million to ISA member countries for demonstration projects for solar home lighting, solar pumps for farmers and for other solar applications;
- d) Facilitate organization of 3 Investor Meets, in member countries of ISA. These meetings will inter-alia also be connected to the programme for "affordable finance at scale" to be undertaken by a national or an international agency in order to meet this larger and better structured demand.

13. The Chair requested other member countries, in a position to do so, to support activities under ISA Annual Plan. Thereafter, he invited the members to deliberate on the Action plan as proposed in the Agenda.

Agenda Item No.7: Discussion on Work Plan 2016

14. The Work Plan 2016 was circulated but not discussed due to lack of time. Hence deferred.

Agenda Item No.8: Inauguration of ISA Interim Secretariat and laying of ISA Head Quarters foundation stone Ceremony

15. The Chair informed about inauguration of the interim Secretariat and laying of foundation stone of the ISA Headquarters in National Institute of Solar Energy (NISE), on 25th January 2016, jointly by Shri Narendra Modi, Hon'ble Prime Minister of India and H.E. Mr Francois Hollande, President of France. He invited all the Member countries to participate in the ceremony and informed that invitations had been dispatched through diplomatic channel.

Agenda Item No.9: Country interventions

16. The Country interventions were as under:-

- a) Yemen stated that procedure for applications seeking support by the Member countries under ISA to be made available to all member states;

- b) UAE suggested that a business plan on how to convert the proposed work plan into actions may be developed with analysis and elaboration. It also suggested that ISA should associate with Clean Energy Ministerial (CEM) and Mission Innovation for increasing its outreach;
- c) The Kingdom of Netherlands asked that all Agenda and proceedings be uploaded on the web site; and
- d) Maldives said that information regarding financial support to the ISA and ISA plans for member countries may be circulated at the earliest.

Focal Points

17. The following way forward is proposed:-

1. The Interim Administrative Cell of ISA (ISA cell) will share with prospective member countries a set of papers, including the following papers jointly prepared by India and France, as agenda for the next ISC meeting:-
 - i. ISA concept and how it is innovative, new and ensure no duplication of existing international entities;
 - ii. assessment of solar applications and barriers to be addressed by the Alliance;
 - iii. examples of programmes which demonstrate the transformative value of the Alliance;
 - iv. proposal for common guidelines and methodology for programmes to be submitted by prospective member countries; and
 - v. proposal for working methods of the ISC.
2. India and France will invite prospective ISA member countries for a side-event to be organized on 22nd April in New York in the margins of the signing ceremony of the Paris Agreement;
3. To initiate the activities of the Alliance, a beginning could be made with the Government of India's proposal for training and support of 450 officers from ISA countries at the National Institute of Solar Energy. India also offers for providing financial support of approximately US\$ 15 million to ISA member countries for demonstration projects on 100 % grant basis for solar home lighting, solar pumps for farmers and other such solar applications for the year 2016-17. Other countries in a position to offer support were invited to start identifying programmes focussing on specific goals to promote ISA objectives;
4. ISA cell will engage in discussions with relevant stakeholders such as the Association of African Countries, Global Solar Council, International Solar Energy Society, Terawatt Initiatives and other such associations, organizations including for raising investment required and facilitating flow of low cost capital into member countries in order to create a global buyer market;

5. ISA cell will engage in discussions with the member countries and firm up plan for organizing Global Investment meet in various regional zones during 2016-17 in connection with specific programmes to be launched. These events could be entrusted to a specific and global grouping of private stakeholders interested in ISA activities, on a transparent, global and open basis, including but not limited to Confederation of India Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI). A calendar for organizing these meets will be informed to all Members by email/posting at the website. ISA cell can hold discussions with host countries concerned;
6. The ISA website created by IAC shall be made interactive where latest information about ISA could be made available;
7. As discussed in the first ISC, all the countries agreed to designate a focal point for coordinating ISA activities. In this context the decision point of the 1st ISC meeting of 1st December 2015 was reiterated wherein all the countries were requested to inform details of the identified focal point to the ISA Cell, Ministry of New and Renewable Energy, Block 14, First Floor, New Delhi, 110003. (secy-mnre@nic.in) Fax: 00 91 11 2436 7329; Phone + 91 11 2436 2772. It was also decided that a copy of all correspondence, should also be marked to the local resident diplomatic missions in New Delhi, who would act as alternate nodal points; and
8. An Interim Administrative Cell of ISA has been set up in New Delhi and will take all measures in follow up of the discussion of the 2nd ISC meeting and will keep ISC and prospective ISA member countries informed.

Agenda Item No.9: Any other Business

18. No other business or agenda point was discussed.

Agenda Item No.10: Closing of the Meeting

19. The Chair and Co-chair thanked delegations for their commitment and time, which provided productive feedback and guidance for the future activities of the Alliance, and closed the 2nd meeting of the ISC.

Appendix-I

List of Participants attended 2nd Meeting of International Steering Committee (ISC) of International Solar Alliance January 18, 2016 at Abu Dhabi

S.No.	Country	Name & Designation		E-mail
1	Republic of India	Mr Upendra Tripathy, Secretary, MNRE	Chair	Secy-mnre@nic.in
2	France	Ms Sylvie Lemmet	Co-Chair	Sylvie.lemmet@development-durable.gouv.fr
3	Antigua and Barbuda	Mr Conrod C Hunte		
4	Commonwealth of Australia	Mr Bruce Murphy, Australian Government		bruce.murphy@dfct.gov.ac
5	Bangladesh	Embassy of Bangladesh, UAE		
6	Bolivia	Mr Ajaji Y james		Jamesajaji49@gmail.com
7	Brazil	Mr Luis Carnacho, Embassy of Brazil		luisfelipe.carvalho@itamarty.gov.br
8	Republic of Chile	Mr Marcel Silva Gamboa, Ministry of Energy		msilva@minenergia.cl ; telosg@gmail.com
9	People's Republic of China	Mr. Liu Jran		mergan.liu.uae@gmail.com
10	Dominican Republic	Mr Amerelkadi, Embassy of the Dominican Republic		assistant.drebassayuae@gmail.com
		Mr Joggenao, National Energy Commission		jgorti@cdr.gov.do
11	Egypt	Mr Maha Mostafa, Ministry of Electricity and RE,		mahamostafa_moce@hotmail.com
		Mr Ali Ahmed Ali, Ministry of Electricity & RE		mnet8999@hotmail.com
		Mr Amr Mohamed Mosa, Ministry of Electricity & RE		amr_mosa@hotmail.com
		Mr Ehab Ismail		ehabu768@gmail.com
		Mohamad Evkhayat		mohamad.elkhoyat@yahoo.com
		Mr Mohamed Omran		omransoa@gmail.com
		Mr Amir Ahmed		elachidi@yahoo.com
12	Republic of Fiji	Ms Paula Katirewa, Director of Energy		Paula.R.Katirewa@fdeo.gov.fj
		Hon. Vijay Nath, Ministry of Infrastructure and Transport		Vijay.nath@govnet.gov.fj
13	France	Mr Rogor Siman		
		Mr Guy-Cédric		guy-cedric.werlings@diplomatie.gouv.fr
		Mr Arnald Dubrac		dubraca@afd.fr
		Mr Malbranche Philippe		philippe.mallmanche@cea.fr
14	Ghana	Mr Wisdom Ahiataku Togobo		watogobo@gmail.com
15	Republic of India	Mr T.P. Seetharam, Ambassador of India to UAE		
		Mr Tarun Kapoor, JS, MNRE		
		Ms Neeta Bhusan, DCM, Embassy of India, Abu Dhabi,		

		Dr D K Khare, Director (IR), MNRE		
		Mr Jagjeet Singh, 2 nd Secretary (Pol., E & C) Embassy of India, Abu Dhabi,		
16	Indonesia	Mr Maritje Hudapea		yosi.tantrians@gmail.com
		Mr Yosi Dir Tantri Aw		
17	Republic of Maldives	Mr Ahmed AG, Director General		
		Mr Abdul Mohamed, Minister of State		
18	Mali	Mr Seyni Nafo		mimikaseyni@gmail.com
19	Republic of Mauritius	Mr Pradeep Roopun, Minister		attroop@gmail.com
20	Nigeria	Ambassador Sola Enikanolaiye		sobanikanolaiya@yahoo.com
		Mr Ajaji Y. James		
21	Peru	Mr Carlos Tavers		consulgeneral@peru.ac
22	Saudi Arabia	Mr Ahmed M Al Sadhan, Head International Cooperation		a.sadhan@energy.gov.sa
		Dr. Fahad S. Abu Mouti, Director of the Renewable Energy Sector		habumouti@energy.gov.sa
23	Sierra Leone	Embassy of Sierra Leone, UAE		
24	Singapore	Mr Prashanth Shamu		shanemahal@gmail.com
25	Democratic Socialist Republic of Sri Lanka	Mr A.S.K. Senaveruthe, DCM, Sri Lanka Embassy		sisiraaks@yahoo.com
26	Thailand	Mr Donrawee Waronan		donrawee@yahoo.com
27	The Kingdom of Netherlands	Mr Kees Rade		kees.rade@minibura.nl
28	Republic of Uganda	Mr Godfrey Ndawula		gndawula@energy.go.ug
29	United Arab Emirates	Dr. Thuni Ahmed		balzayandi@inofa.gov.ac
		Mr Saket S		dixtsaket@gmail.com
		Mr Mohammad Bastaki		m.bastai@mofa.gov.ac
30	United Kingdom	Mr Paul Durrant		paul.durrant@deccawi.gov.ac
		Sir Dand King, UKFCO		dk@camkas.co.uk
31	United States of America	Mr Rob Sandoli		Robert.sandot@ee.doe.gov
		Mr David Turk		david.turk@hig.dor.gov
		Mr John P. Smirnon, Global Solar Council, Washington DC,		jsmirnow@globalsolrcouncil.org
		Mr Mark Rechhardt, US Department of Energy		mark.reichhardt@ee.doe.gov
32	Republic of Yemen	Mr Abdullaha Al. Akaq		akwzz@gmail.com
		Mr AmaniAllaudhaar		allaudharamani@yahoo.com

List of Resource Partners

S.No	Country	Name & Designation
1	International Renewable Energy Agency (IRENA)	DG IRENA
2	International Renewable Energy Agency (IRENA)	Henning Director
3	International Energy Agency (IEA)	Siman Mueller
4	Association of African Countries	Chairman
5	CEEW	Dr. Arunabha Ghosh,

Strategic Partners

S.No	Organization	Name & Designation
1	UN	Mr Yuri Afamasian, , New Delhi
2	UNESCAP /APCTT	Dr. Nagesh Kumar,
3	NREL, USA	Ms Sarah Kurtz, Mr Jean-Pascal Pham- Ba

Country Partners

S.No	Country	Name & Designation
1	Germany	Mr Martin Sophe Ms Cornelia Marschel Mr Johenney Uki

Institutional Partners

S.No	Institution	Name & Designation
1	NIWE	Mr. K.Bhupathi
2	Global Solar Council	Mr Bruce Douglas Mr Pranav R Mehta

Corporate Partners

S.No	Organization	Name & Designation
1	Soft Bank India	Mr Manoj Singh
		Mr Chetan Agarwal

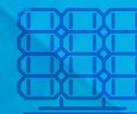
Financial Partners

S.No	Organization	Name & Designation
1	Exim Bank India, China, Brazil	Mr Hirna Mamtera
		Mr Rahul Mazumdar
		Mr Debasish Malik
		Mr Prasun Kumar Das
2	Yes Bank	Mr Pawan Kr. Agrawal,

Appendix-III



UNITED NATIONS



UN as Strategic Partner of ISA

Role of the UN System



Role of the UN

UN assists International Solar Alliance in bringing complementarity and synergy with



- Existing global programmes like SDGs, SE4ALL and the UNFCCC
- Institutions/centres supported by UN like UNDP policy centres, UNIDO technology centres, UNEP networks and so on
- Other Institutions like International Renewable Energy Agency (IRENA), Renewable Energy and Energy Efficiency Partnership (REEEP), Bilateral partners and more
- Programmes and projects ongoing through UN offices in ISA member countries (e.g. UNDP alone implements more than 30 projects of the whole range of solar technologies for more than \$ 1 billion in value)
- South-South and trilateral cooperation (UN has dedicated south-south cooperation centre with regional representatives in the ISA focus regions)

All proposed 121 ISA Countries are the members of the United Nations!



Partnering UN Agencies

UN will support ISA through UNDP, UNEP and UNIDO, currently [some more UN agencies may join]



- **UNDP:** Global / Field Presence, Technical Cooperation (Global / National RE Projects and Programmes), Capacity Building, R & D, PPPs, Civil Society and Networks, UNDPs Global Policy Centres (6)
- **UNEP:** Hubs and Networks - Climate Technology Centre and Network (CTCN) together with UNIDO, Copenhagen Centre for Energy Efficiency (the SE4ALL EE Hub), Host of REN21 Secretariat, Financial Instruments, Knowledge Management and Global Conventions
- **UNIDO:** Technology & Regional Centres - (UNIDO International Solar Energy Centre for Technology Promotion and Transfer-ISEC, ICREEE), Manufacturing Industrial Hubs, IPR, and Strategic Partnerships, Global Network of Regional Sustainable Energy Centres (ECOWAS, EAC, SADC, Caribbean, Pacific and MENA region)

UNDP's Global Policy Centres





Proposed UN Support

- **Capacity Building** (skilled manpower and technical expertise)
- **Knowledge Management** (help in establishing e-portal, knowledge generation & sharing)
- **Strategic Partnerships and Networking for Technology Transfer, Innovation and Manufacturing Hubs** (CTCN, ISEC, Cleantech Innovation, R&D, Industrial Manufacturing Hubs, Incubators, IPR and so on)
- **Synergy with Ongoing Projects and Programmes** (Synergy of ongoing UN projects with ISA)
- **Funding Mobilization and Programmatic Support** (Multilateral Banks / Mechanisms, Bilateral Agencies, Financial Institutions, Private Sector and more)



Proposed Way Forward

- MOU between UN and ISA
- Roadmap through 2020
- Key activities and milestones for 2016



UN Working Group



Working Group lead: Mr. Yuri Afanasiev, UN Resident Coordinator and UNDP Resident Representative, India
yuri.afanasiev@undp.org



Mr. Mark Radka, Chief, Energy, Climate and Technology Branch, UNEP
mark.radka@unep.org



Dr. Pradeep Monga, Director, Energy and Climate Change, UNIDO, Vienna
P.MONGA@unido.org



Mr. Clarence Smith, Director, Regional Office, UNIDO, Bangkok, Thailand
E.ClarenceSmith@unido.org



UN Working Group



Mr. Lucas Black, Regional Technical Adviser on Energy, Infrastructure, Technology and Transport, UNDP, Istanbul
lucas.black@undp.org



Ms. Marina Olshanskaya, Regional Technical Adviser on Energy, Infrastructure, Technology and Transport, UNDP Istanbul
marina.olshanskaya@undp.org



Dr. S N Srinivas, Programme Analyst, UNDP India
sn.srinivas@undp.org

Appendix-IV

2nd Meeting of International Steering Committee of International Solar Alliance (ISA)

“Mobilizing USD 1 Trillion for ISA Solar Projects”

Joint Presentation By:

The World Bank

YES Bank

IDFC Bank

Presented By:

Pawan Kumar Agrawal

President- Corporate Finance, YES Bank

Abu Dhabi, 18th January, 2016



THE WORLD BANK



AGENDA

1. **International Solar Alliance (ISA)** – *Target, Objectives and Focus areas*
2. **Channelizing USD 1 Trillion** – *Is it really a big target?*
3. **Immediate Actions Steps**
4. **Long Term Action Steps** – *Way Forward*



THE WORLD BANK



YES Bank- A Remarkable Growth Story

Key Awards and Recognitions



Strongest Bank in India by Balance Sheet The Asian Banker Awards Singapore - 2015



First Indian Company to be on the Carbon Disclosure Leadership Index for four consecutive years 2015, 2014, 2013, 2012, 2011

First Indian Company to be a Signatory - Since 2007



Ranked 2nd best Globally for Innovative Customer engagement through Social Media. International Best Practice Competition, Abu Dhabi - 2014



First and Only Indian Bank included in Dow Jones Sustainability Index New York - 2015



Best Private Sector Bank (Asset Class) 2014
Best Private Sector Bank (Priority Sector Lending) 2012
Best Private Sector Bank 2011
Dun & Bradstreet - Polaris Software Banking Awards



Only Indian Bank to be an active Signatory Since 2009

Significant achievements during last 11 years since inception as a Greenfield bank

Balance Sheet size of INR 1,448 Bn (US\$ 22.3 Bn)*
(grown faster than any other Indian bank during the corresponding period in their lifecycle)

Market Capitalization of INR 283 Bn (US\$ 4.3Bn)**
(Delivered stock return of more than 1300% since its public listing in July 2005 thereby creating value for investors)

Existing relationships with all major corporates in India
(Relationship based, rather than transaction based approach to banking)

Knowledge Sector Focused Bank
(Focus on key growth sectors of Indian economy
Dedicated knowledge teams for each respective knowledge sector)

Complete suite of Financial Products
("One bank" approach providing all banking solutions under one roof)

Ranked # 1 by numerous reputed publications for fastest growth / best credit quality
(Continued focus on sustainable, profitable growth)

Excellent Human Capital
("Professionals Bank of India" led by arguably the best management team in the country)

Backed by Pedigree Investors
(Key institutional investors include LIC, Franklin Templeton, Fidelity, Bajaj Allianz, Coronation, Birla Sunlife, Vanguard, Fullerton, among others)

*As on Sep 30, 2015

**As on Jan 15, 2016



THE WORLD BANK



IDFC Bank

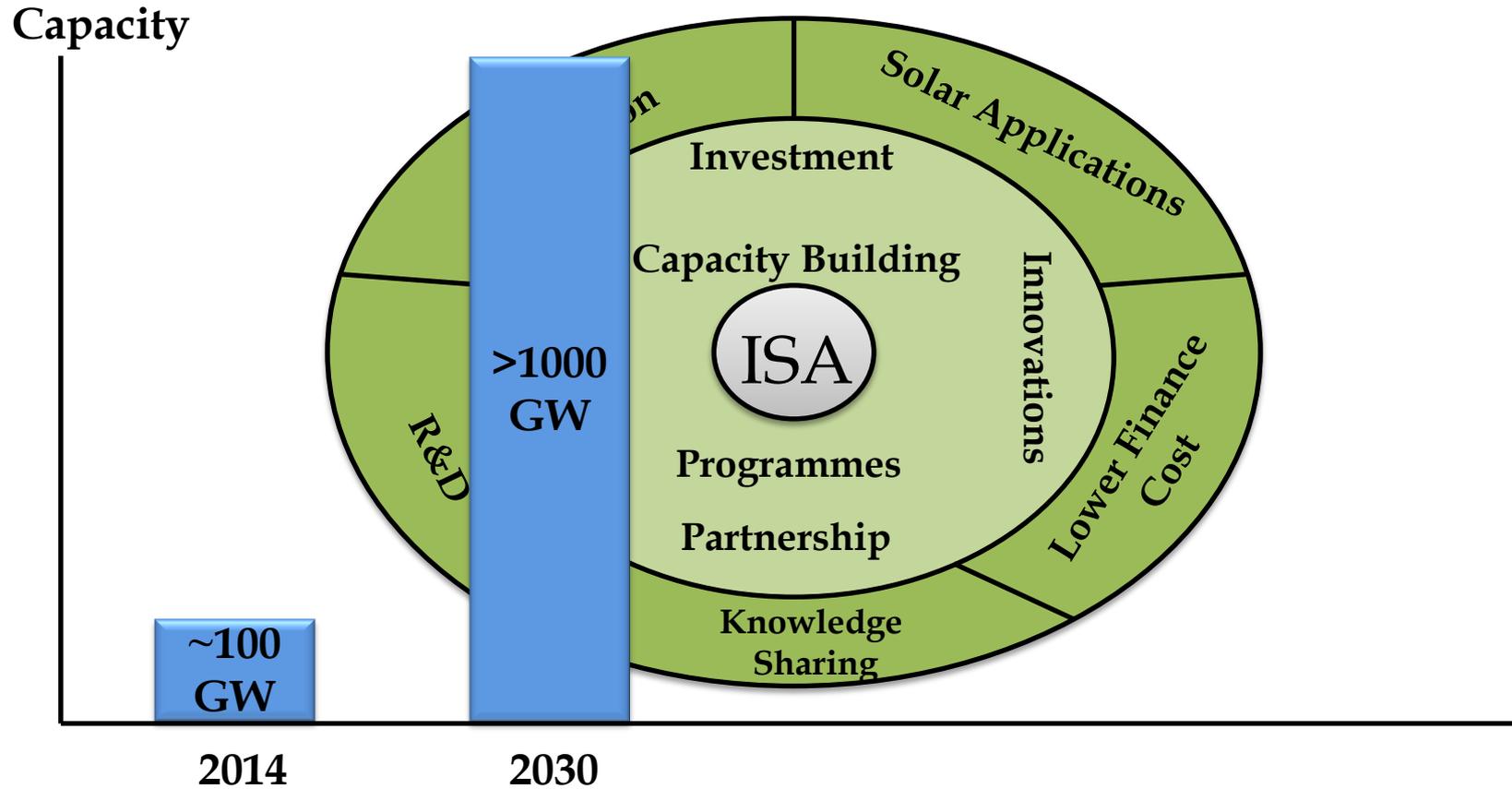
- IDFC Bank is a subsidiary of India's leading integrated infrastructure finance company, IDFC Limited, and offers financial solutions through its nationwide branches, internet and mobile.
- IDFC Ltd. was formed in 1997 as India's first specialized infrastructure financing intermediary with a specific mandate to build the nation. Since then, IDFC has successfully led private capital flows into commercial viable infrastructure projects.
- IDFC Bank was granted a banking license by RBI in 2015 and was inaugurated by Prime Minister Shri Narendra Modi.
- The Bank started its journey with a balance sheet of INR 734.47 Bn (~USD 11 Bn) and a networth of INR 133.22 Bn (~USD 2 Bn).
- IDFC Bank provides customized solutions to individuals, entrepreneurs, small and micro-enterprises, corporates, FIs and the government. Its reach and 24/7 service proposition is anchored in technology.
- A bank with a public purpose, IDFC Bank is reaching out to segments of the population that are currently excluded from the banking fold. It is set to 'simplify digital' for the masses so that they can integrate into the larger digital revolution initiated by the government.



THE WORLD BANK



International Solar Alliance



Source: IRENA



THE WORLD BANK



Is USD 1 Trillion a big target? – *Some Facts*

- ✓ **USD 60.8 Trillion** : Asset Under Management of top 400 global funds; 1/4th with top 8 funds (Source: Investments & Pensions Europe; as on December 31, 2014)
- ✓ **USD 3.4 Trillion** : divestments/commitment to divest of corporations & institutions from fossil fuel investments
- ✓ As per OECD estimates:
 - **USD 0.96 Trillion** - new contribution into global pension funds annually
 - **USD 1.84 Trillion** - global life insurance premiums annually
- ✓ **USD 149.5 Billion** : Global solar investments in 2014 (REN21); >55% of total RE investments
- ✓ **USD 100 Billion** : Green Bonds issuance till date (USD 41.8 Bn in 2015)



THE WORLD BANK



Immediate Action Steps

- ✓ In-depth study of Investment Mandates of key Developmental Financial Institutions/Sovereign Funds/Funds with Green mandates
- ✓ Facilitate investments in ISA member countries, in compliance with the Investment Mandates

Example: Green Climate Fund (GCF)

- *Operating entity of financial mechanism of the UNFCCC established at the COP16 in 2010, headquartered in Korea*
- *Promoting investments in developing countries for low-emissions and climate-resilient development pathways*
- *USD 10.2 Bn pledged so far out of USD 100 Bn p.a. target by 2020*
- *Funding through instruments like equity, debt, grants, soft/concessional loans, credit enhancement structures for eligible projects*



THE WORLD BANK



Long Term Action Steps – *Way Forward...*

- 1. Seek Green Commitments** from Sovereign Wealth Funds (SWFs)/ Pension Funds/ Endowment Funds / Foundations – *even 1% commitment can channelize half of the USD 1 Trillion target*
- 2. Sharing of Global Best Practices** – *Capacity Allocation, Risk Mitigations, Payment security mechanisms, Credit enhancement structures*
- 3. Teaming-up with Global Multilaterals / DFIs** – *facilitate fine-tuning of existing products, development of instruments for non-market risks. DFIs have committed at COP21 to significantly increase climate financing*
 - *World Bank Group - USD 29 Bn p.a. →*
 - *African Development Bank - USD 5 Bn p.a.*
 - *Asian Development Bank - USD 6 Bn over 5 years*
 - *European Bank for Reconstruction & Development – USD 20.5 Bn*
 - *European Investment Bank - USD 110 Bn*
 - *Inter-American Development Bank - USD 3.7 Bn p.a.*



THE WORLD BANK



Long Term Action Steps – *Way Forward...*

- 4. Collaborate with Global Initiatives** – like Sustainable Energy for All (SE4All), RE100 (*commitments from businesses for Renewable Energy*) etc in increasing investment flows to Solar Energy in ISA member countries.
- 5. Solar Investor Facilitation Cell at each country level** – *ISA to coordinate addressing concerns/information gaps/queries for investor guidance*
- 6. ISA to facilitate project formulation & development** – *addressing project development concerns, complex approval processes etc*
- 7. Facilitating development of all segments of solar applications** – *including solar pumps, rooftops, solar lanterns*



THE WORLD BANK



Long Term Action Steps - *Way Forward...*

8. **Develop database of operational project parameters in alliance with IRENA and other agencies**
9. **Facilitating organization of annual Solar Investor Meets and B2B events in ISA member countries**
10. **Encourage member countries to utilize ISA's forums to show-case development/policy initiatives and reach global investor audience**



THE WORLD BANK



Thank You

Presented By:
Pawan Kumar Agrawal
President- Corporate Finance, YES Bank
pawan.agrawal@yesbank.in



THE WORLD BANK

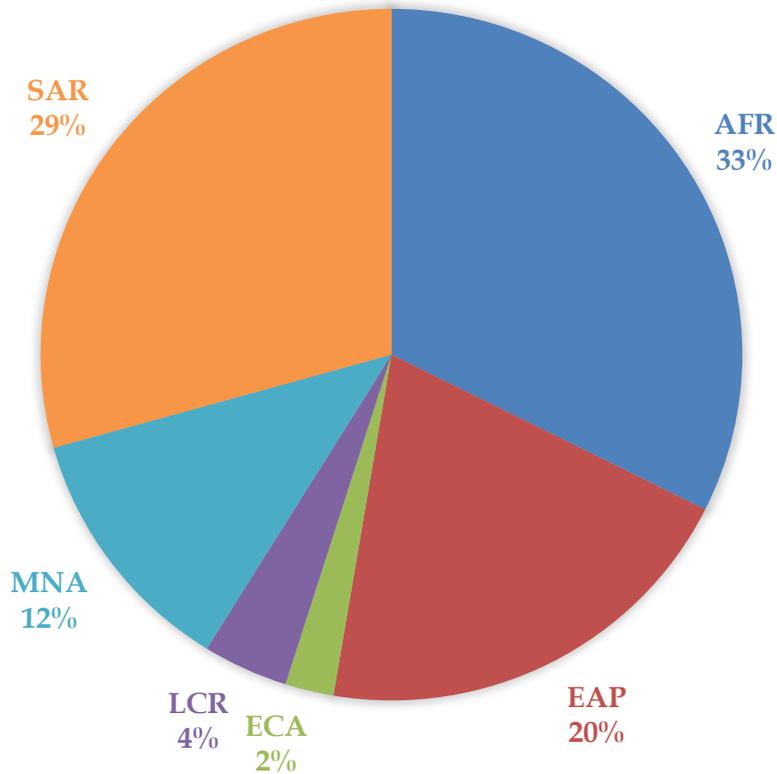


World Bank Commitment on Renewable Energy

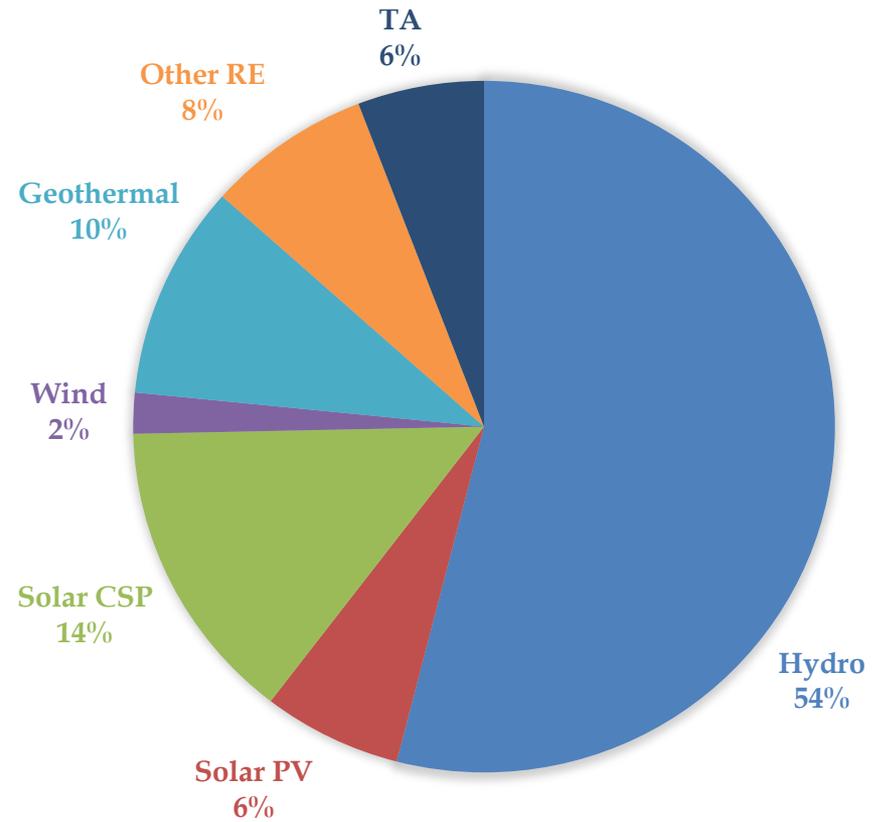
US\$ 8 billion over FY10-15

...which leveraged another US\$ 10 billion co-financing

By Region



By Technology



THE WORLD BANK



IDFC BANK

World Bank's Engagement in Solar Energy in Africa

Climate Business Plan

- Includes 1GW of grid-connected solar PV by 2020, 3GW by 2025
- Mobilizes US\$ 2.7 billion by 2018, including US\$ 500 million by IDA

Scaling Solar Program

- Several WBG instruments brought together under a single product
- Gov't would engage in a single mandate to access the "one-stop-shop"

Generation Investment

- **CSP:** Morocco 500MW Noor complex, South Africa 100MW Eskom
- **PV:** Nigeria 100MW IPP, Senegal 100MW IPP, Zambia, Mali, etc.

Lighting Africa Program

- WBG program to catalyze markets for solar lighting products
- Reached 14 million people in 6 years, 141% of annual market growth

VRE Integration

- To improve grid systems and management for increasing RE mix
- Some African countries, including South Africa, are in early discussion

... and more technical assistance and analytical and advisory works in progress



THE WORLD BANK



IDFC BANK

How can The World Bank support ISA ?

In-kind Support with Setting up the Initiative
(strategy, action plan, capacity building, communication, etc.)

Knowledge Management and Learning
(workshop, south-south exchange, resource assessment, etc. through ESMAP)

Pipeline Development
(pre-feasibility and feasibility study, transaction structuring, etc. for bankability)

Investment Financing
(committing own resources, channeling climate finance, etc.)

Developing New, Low-Cost Solar Technology Applications
(e.g. water pumping and purification, rural transport, agro-processing, etc.)



THE WORLD BANK



Appendix-V



TERRAWATT INITIATIVE
GROWING SOLAR POWER TOGETHER



BE THE CHANGE
WE WANT IN THE WORLD



TERRAWATT INITIATIVE
GROWING SOLAR POWER TOGETHER



BE THE CHANGE
WE WANT IN THE WORLD

Designing a global solar common market

The private sector contribution

Abu Dhabi 18 January 2016



Affordable power everywhere

Competitive

- Industrialization, standardization of development, construction and operation
- Innovation in market-based offtake models (PPAs, structured contracts) leveraging on balance sheet and customer base
- Innovation in financing schemes to reduce risks, standardize processes, reduce transaction costs and attract low cost capital (pension funds)

Smart

- Development of platform of standardized and verticalized offers for small and large consumers (solar and other renewables, dispatchable energy sources, demand response, storage, digital information and management systems)
- Systemic approach of local power grids and grid services (smart micro grids)

Local

- The right level for energy distribution: the “territory” (vs country or individual)
- Implementation of local/distributed power system architectures (local loops)
- Innovation in stakeholder management and mechanisms, local partnerships

Terrawatt Initiative, for a solar common market, at scale

Terrawatt Initiative is a **global non profit organization based in Paris** that aims at:

- promoting **competitive mass solar** as a decisive tool to address power needs, sustainable development goals and climate change;
- representing **key-private sector stakeholders** (solar industry, financiers, energy leaders and large consumers) in the dialogue with the Governments and International Organizations to achieve **at scale design and fast implementation of a global common market** of affordable solar power generation worldwide; and,
- promote **actual investment** in solar power generation **assets at the trillion USD scale.**

Make it happen



Bring together a selected number of **global solar and energy companies, investors and power users**

To **interact** with governments, international agencies and IFIs to design a **new market** and

To implement the right **legal and financial tools and vehicles**, minimizing the perceived risk and optimizing returns

to actually raise and invest

Tr\$

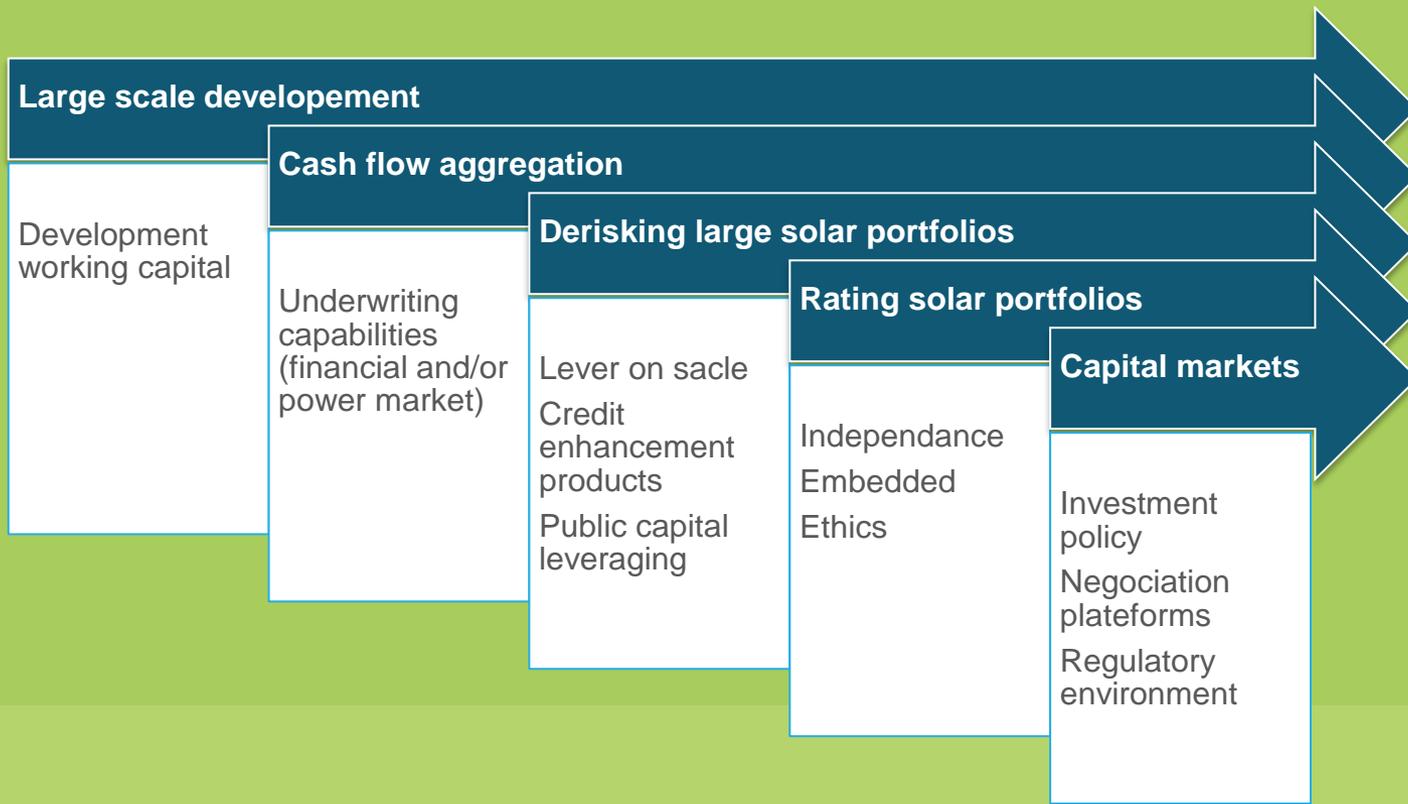
Why solar specific?

Leverage on solar specificities

- Highly capital intensive
- Low tech electronic
- Highly disseminated
- Fast deployment

Business oriented

Standardization



TWI Workshop # 1: Solar friendly regulatory framework

Long Term Objective:

Multiply and standardize the cash flows of local solar power generation assets

- Standardized and simplified solar development processes and legal documentation
- Efficient energy markets mechanisms and supply rules
- Adapted transport and distribution rules
- Standardized asset structuring

Key actions:

- Identify best practices
- Develop smart solar policy-making and impact assessment tools
- Cooperate with governments and international agencies to reach financially optimized frameworks
- Support to governments

Short Term Action Plan:

Identify best practices

Jan16:

- Form the working group with international agencies, developers, lawyers, financiers, technical experts, grid experts, BtoB consumers, employers associations, supply chain experts
- Define the methodology of best practices assessment from a financial market point of view
- Validate the list of assessed regulations

Feb-May 16:

- Assess the item regulations for the core group of countries
- Rate the regulatory practices financial friendliness

June 16:

- Review and Peer review

July 2016:

- Publish of the first Solar Ratings

TWI Workshop # 2: Capital Market based financing

Long Term Objective:

Package local solar asset cash flows in safe and attractive financial products for global capital markets

- Financial products, Master agreements, Structuring
- Warranties & credit enhancement mechanisms
- Markets & technical trading platforms
- Rating, Label, Audit & Ethics

Key actions:

- Solar Financing White Paper
- Market and platform assesment and selection
- Design of the financial instruments and master legal documentation
- Design and implemenation of the warranties and credit enhancement tools
- Assesment of the systemic risks and systemic safety tools

Short Term Action Plan:

Solar Financing White Paper

Jan-Mar16:

- Form the working group with financiers, financial regulators, lawyers, technical experts, employers associations
- Assess the constraints and specificities
- Define target financing schemes

Apr 16:

- Specify the main characteristics of each anticipated scheme and comparative evaluation

May-Jul 16:

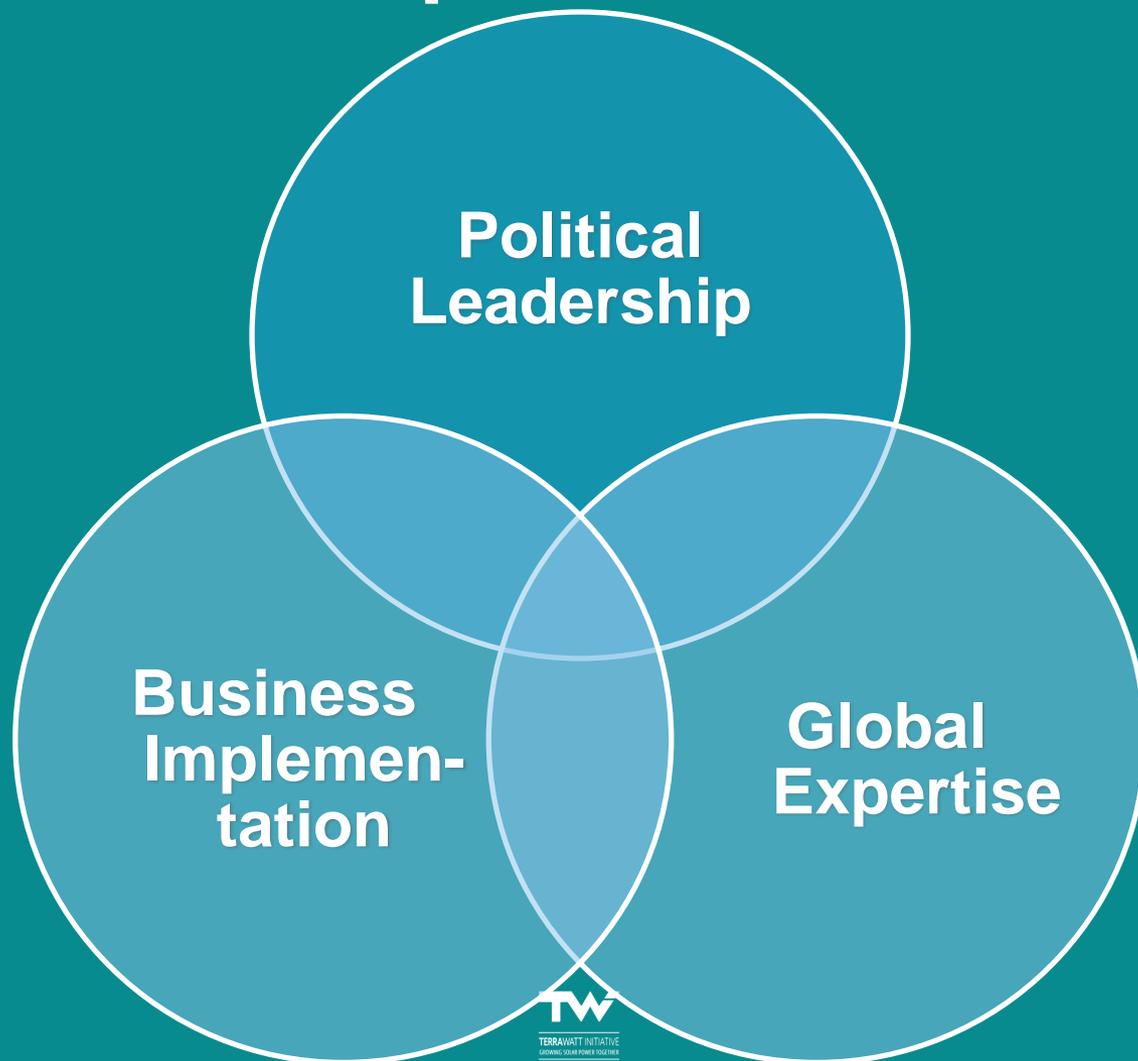
- Drafting of a White Paper
- Review and peer review

Sept 16:

- Publication of the Solar Financing White Paper

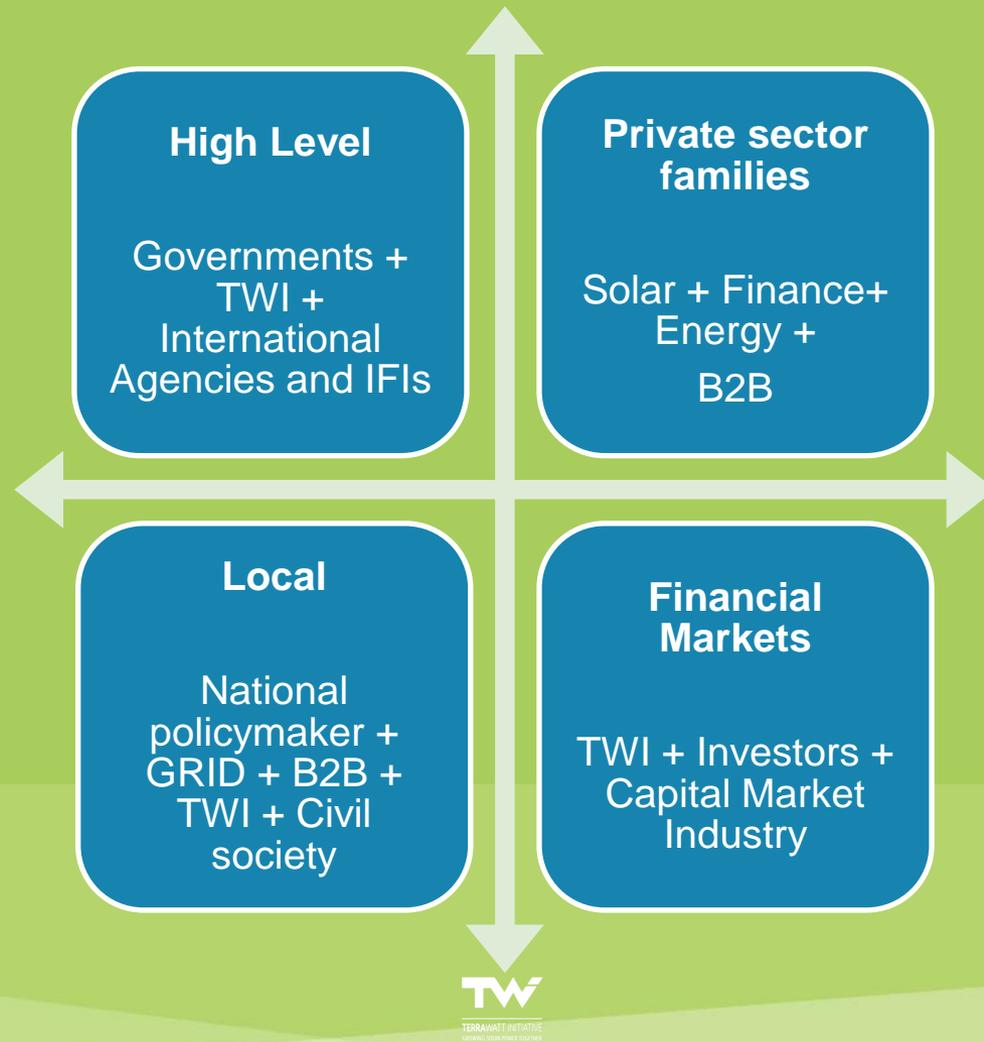
Building mass solar together

Partnership



Multi-stakeholders

Only a close **open** multilevel dialogue can achieve a new, efficient and at scale market design



The International Solar Alliance's 1,000 billions objective: A bold political vision for solar rich countries

1Tn\$ of sound investment

Over 1 TW of new solar capacity in solar rich countries

1.2 Gt CO2 avoided

First at scale implementation of the Paris Agreement



Thank You

Jean-Pascal Pham-Ba
Secretary General

Stay in touch with us

secretariat@terrawattinitiative.org

Terrawat Initiative

6 rue de Solférino

75007 Paris – France

www.terrawattinitiative.org

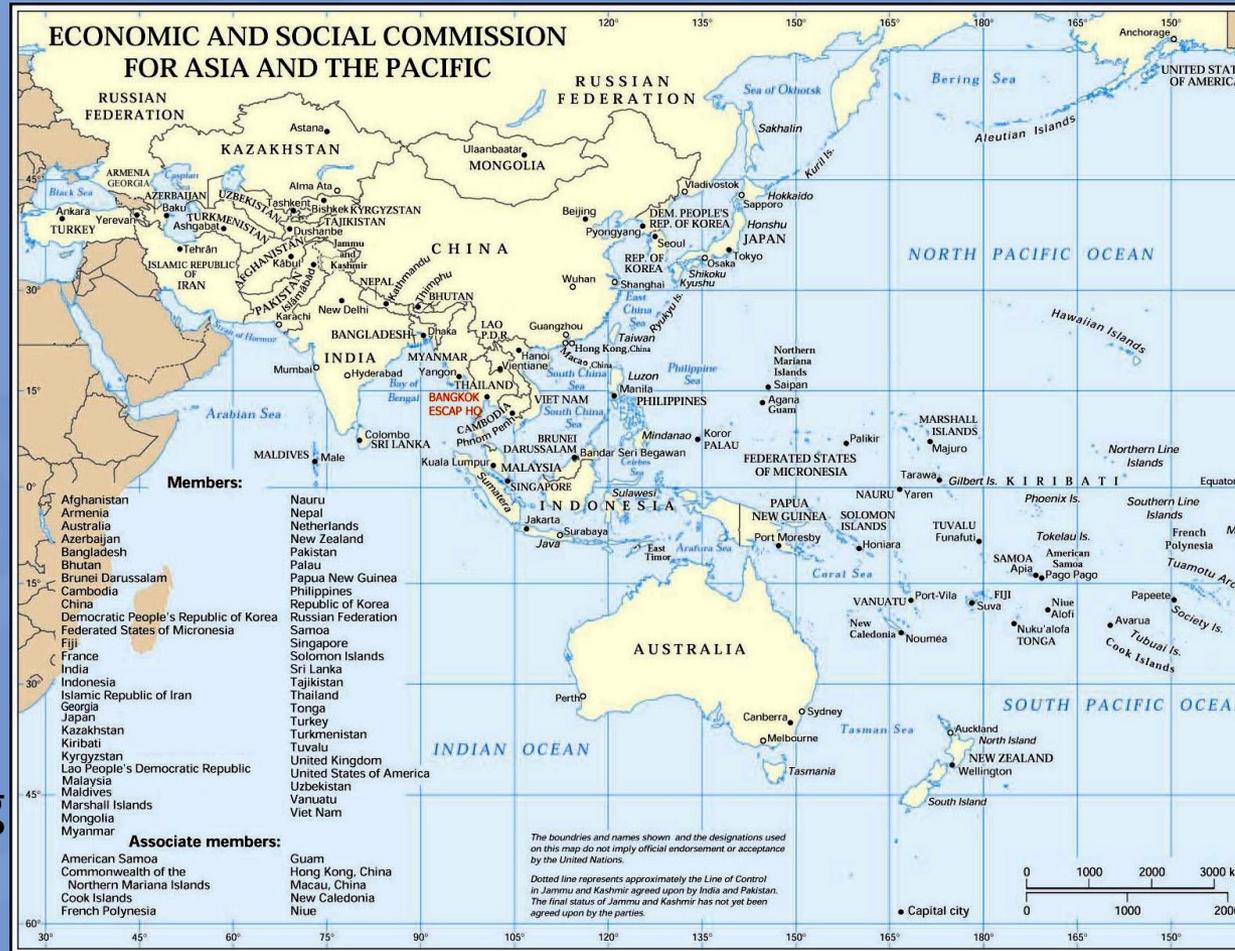
Appendix-VI

UNESCAP – APCTT’s
Strategic partnership with
International Solar Alliance (ISA)
for enhancing the capacity of Asia-Pacific
Countries to harness solar energy

Nagesh Kumar
APCTT and UNESCAP

Economic and Social Commission for Asia and the Pacific (UN-ESCAP)

- Regional arm of the United Nations in the Asia and the Pacific
- 53 Members and 9 Associate Members
- Covering 60% of world's population
- Intergovernmental Forum for promoting regional cooperation



UNESCAP's work on Energy

- Pro-poor public private partnerships (5-Ps) for improving energy access of poor communities
 - Enhancing sustainability of rural energy utilities through private sector and community co-ownership
- Asia-Pacific Energy Forums
 - Ministerial platform for promoting regional cooperation for sustainable energy for all
 - First session held in Vladivostok, May 2013
- Intergovernmental Committee on Energy
 - Endorsed by the 71st Session of the Commission in May 2015

Asian and Pacific Centre for Transfer of Technology (APCTT)

- A Regional Institution of UNESAP established in 1977
- Hosted by India and supported by voluntary contributions from the host government and other member states
- For enhancing capacity of UNESCAP member-states for innovation and technology transfer through South-South cooperation
- Science, Technology and Innovation (STI) as key means of implementation of Sustainable Development Goals

Focus Areas of APCTT

Science, Technology and Innovation (STI)

- Capacity-building for fostering National Innovation Systems and policies
- Fostering technology-based entrepreneurship and SMEs

Technology Transfer

- Capacity-building for identifying, acquiring and adapting technologies
- Facilitate technology transfer through regional and sub-regional networking and institutional intermediation

Technology Intelligence

- Information base on new and emerging technologies and technology trends

Asia-Pacific National Innovation Systems Online Resource Centre
A gate-way to policies, policy mechanisms, support systems and services

Navigation: About Online Resource Centre | Asia-Pacific Forum | Capacity Building | Case Studies | Web Resources

Search: Google Custom Search

Categories: Sustainable Energy, Advanced Fossil Fuel, Hi-tech Innovation, Policy News

India: Starts-Ups Poised for Economic Growth
In India's annual budget for 2014-2015, science and technology departments have reserved marginal increases in

Content: Promoting National Innovation Systems (China, India, Indonesia, Iran, Pakistan, Philippines, Sri Lanka, Thailand), Strengthening National Innovation Systems (NIS in CSI Countries, Key Components of NIS, New Approaches to Technology Innovation, STI Diagnosis and Strategy Development)

Related: BINASIA (Biotechnology network), Nanotechnology R&D Management Network, GRI (For Inclusive Innovation), Technology for

APCTT Asian and Pacific Centre for Transfer of Technology
of the United Nations Economic and Social Commission for Asia and the Pacific

ESCAP Economic and Social Commission for Asia and the Pacific

Navigation: About Us | Target Countries | Services | Solution Centre | Contact Us

Feature: SOLAR SPAIN ZOOM

Renewable Energy Technology Bank (RET-Bank)
Renewable Energy Business Directory

RET-Bank Search
Country: All
Technology: All

Welcome to the Renewable Energy Cooperation-Network for the Asia Pacific
At the annual session of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in Bangkok in April 2008, countries of the Asia-Pacific region took a decision to enhance collaboration to promote renewable energy technologies (RETs) for energy security and sustainable development. A resolution passed during this session proposed the establishment of an institutional cooperation mechanism to strengthen national capacities for renewable energy use in the form of a network of countries that could collect and disseminate RET information, share best practices, develop national capacities to plan and implement RET transfer projects, and promote research and development collaboration.

News: Bechtel President of Renewables Discusses...
Renewables and District Heating: Eastern Europe Keeps a Warm...
Cost Cutting in GBs: the BOS Innovation Solar Needs? >more

News from UN

Techmonitor.net
Information on the latest technology innovations and events

Click to search

APCTT Periodicals
Asia-Pacific Tech Monitor
WATS Update
Biotechnology
Food Processing
Non-conventional Energy
Ozone Layer Protection
Waste Management
APCTT Publications
Web-based Technology Transfer from APCTT

National Innovation System
Business Asia.net
Business Information
BINASIA
Biotechnology Network
technology 4SME.net
Technology Partnerships

Register FREE for additional services | Download PDF

Asia-Pacific Tech Monitor - Jul-Sep 2015

ISSN 0256-9997
Special Themes | Annual Index
Guidelines to Authors

The Asia Pacific Tech. Monitor brings you up-to-date information on trends in technology transfer and development, technology policies, and new products and processes. The 'New Frontiers Business Coach' for innovative firms, as well as technology offers and requests.

TECHNOLOGY MARKET SCAN
TECHNOLOGY SCAN SPECIAL FEATURE
Smart specialization to enhance national technology competitiveness

- Smart Specialisation for regional economic transformation
- John Edwards, Carlo Giannini, Dimitris Koronaios and Roger Madsen
- Quadruple Innovation Hubs and smart specialization knowledge production and national competitiveness
- Elias G. Karayannis, Evangelos Grigoriadis and Dimitris Proumets
- Measuring smartness of innovation policy
- Bojan Radai, Karin Zwickel, Jasminica and Melod Dolnicar
- Smart specialisation: The European approach to research and innovation support
- Andrea Di Assunta and Christian Saubert
- Taking regional innovation policies in a new direction with smart specialisation strategies
- Petrus Boshoff

TECH EVENTS
TECH VENTURES & OPPORTUNITIES

- Business Coach for innovative firms
 - Start-Up Venture Creation
 - Technology Transfer
 - Venture Financing
 - Managing Innovation
 - Green Productivity
- Tech Opportunities
 - Technology Offers
 - Technology Requests

Latest WATS Issues

Renewable Energy Cooperation-Network for the Asia Pacific (RECAP)

- Knowledge-sharing, networking, and transfer of renewable energy technologies
- Renewable Energy Technology Bank (RET-Bank)
 - repository of pro-poor, off-grid, renewable energy technologies ready for transfer
- Capacity-building for sustainable energy innovation eco-system
 - Indonesia and Lao PDR

Supported by Indian Ministry of New and Renewable Resources



APCTT-IRENA Partnership for Promoting Renewable Energy in the Asia-Pacific Region

Joint capacity-development workshops since 2014 in the Asia Pacific

- *Asia Pacific Regional Workshop on Biomass Energy Resource Assessment, 6-8 July 2015, Bangkok, Thailand*
- *Southeast Asia Regional Training Programme on Renewable Energy Resource Assessment and Mapping, 28-30 September, 2015, Davao City, Philippines*

Possible contours of APCTT-ISA partnership

Subject to availability of financial resources, APCTT can support the mission of ISA in harnessing the potential of solar energy through capacity-building, technology facilitation and knowledge-sharing activities

Capacity Building

- **Planning and implementing solar energy resource assessments, technology transfer and intellectual property rights**
 - Including scaling up the APCTT-IRENA workshops
- **Capacity for drafting effective renewable energy policy instruments**
 - creating a pool of solar energy experts on solar energy leveraging APCTT's institutions network

Possible contours of APCTT-ISA partnership

contd.

Technology Facilitation

- **Creating a solar energy technology facilitation platform**
 - Leveraging APCTT's partnerships with technology transfer organizations globally

Knowledge-Sharing

- **New Value Added Technology Information Service (VATIS) on Solar Energy**
- **knowledge products in the area of solar energy technologies, solar energy market information, solar energy policy compendium** for the benefit of a wide range of stakeholders
- **Business-to-Business meetings (B2B) and policy dialogues**

Proposed ISA-UNESCAP MoU

- To provide a framework for ISA and UNESCAP partnership to strengthen the capacity of developing countries especially LDCs and small island developing States, to acquire technical expertise, skills and know-how related to solar energy technologies
- To leverage the expertise of different divisions and offices of ESCAP besides APCTT, including the new Energy Division, sub regional offices and other regional institutions working on sustainable development to support the work of ISA

THANK YOU

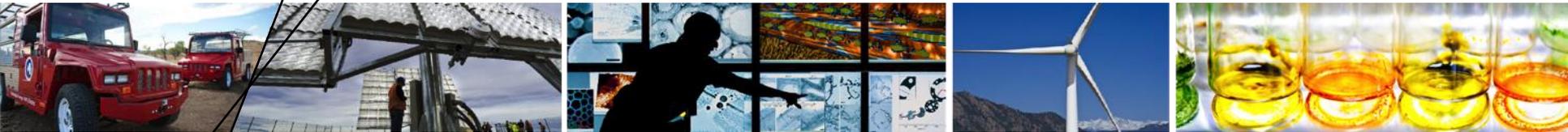
www.apctt.orgn

nkumar@un.org

Appendix-VII

ISA R&D Strategy

Joint NISE-NREL Presentation



Sarah Kurtz (NREL) & Dr. O.S. Sastry (NISE, MNRE)

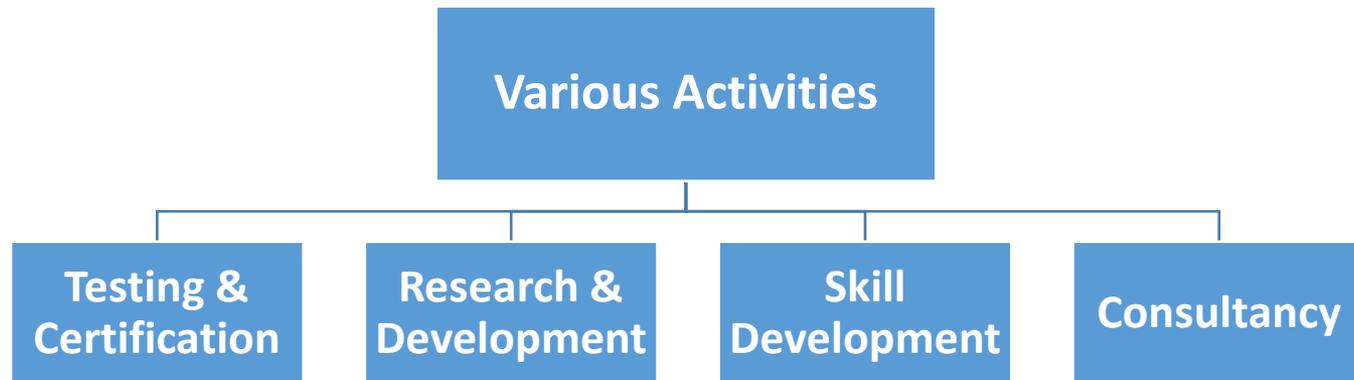
**2nd Meeting of International Steering Committee
(ISC) of the International Solar Alliance (ISA)**

Abu Dhabi

January 18, 2016

About NISE

- **National Institute of Solar Energy, an autonomous institute of Ministry of New and Renewable Energy, Govt. of India.**



- **Demonstration projects, R&D and Testing of Solar PV and Thermal Technologies.**
- **Conducting various National and International level skill Development programs.**
- **Consultancy services to various Central Ministries, Armed Forces, PSU's and corporate on Solar Power Projects, Rural Energy, Cold Storages, Food processing industries etc.**

NISE International Program

To enable an exchange and sharing of knowledge of Solar Technologies between countries under the following International Programmes

Indian Technical and Economic Cooperation (ITEC) / Special Commonwealth Assistance for Africa (SCAAP)

South Asian Association for Regional Cooperation (SAARC)

Association of Southeast Asian Nations (ASEAN)

Indian Ocean Rim Association (IORA)

Eurasia Countries

Forum for India Pacific Island Countries (FIPIC)

So far, a total of 356 participants from 80 countries have attended training program

Out of these, 277 participants were from ISA countries (53 countries)

National Renewable Energy Laboratory

NREL's Research Portfolio extends from basic research to policy and includes all renewable energy

Established 1974 by U.S.
Department of Energy
30 years of solar energy R&D
Located: Colorado, USA



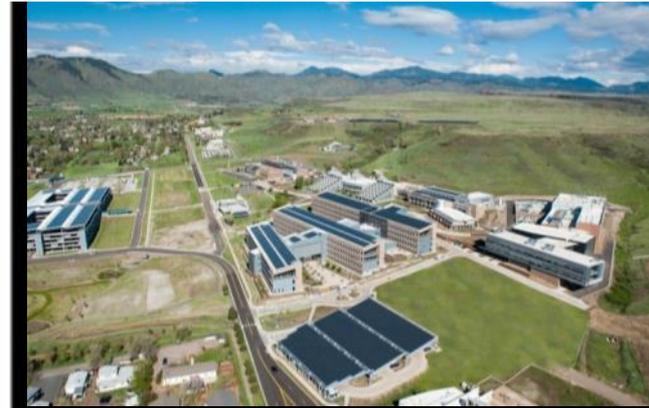
National Renewable Energy Laboratory

An *Applied* Research Lab

**Dedicated to Advancing Energy Efficiency
and Clean Energy Research**

Research Emphasis Includes:

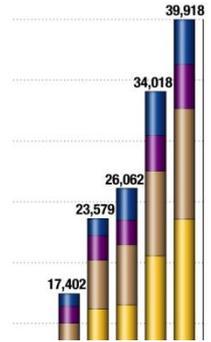
- Photovoltaic (PV) materials and devices
- Reliability and performance of PV modules and systems
- Electrical systems integration
- PV deployment
- Analysis of PV integration and policy implications



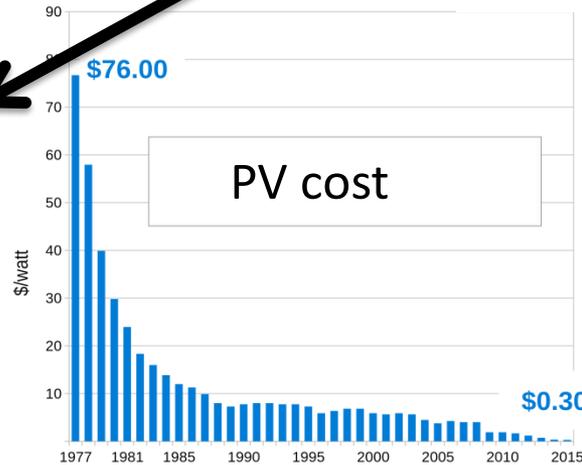
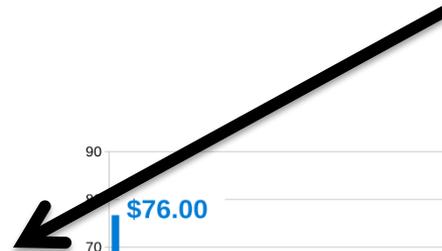
Vision: ISA R&D Toward Global Prosperity

Solar-powered world

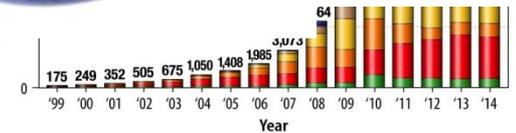
R&D



PV shipments



PV cost



PV statistics:

>10% electricity in Germany

> 5% electricity in California

World with prosperity for everyone from low energy cost

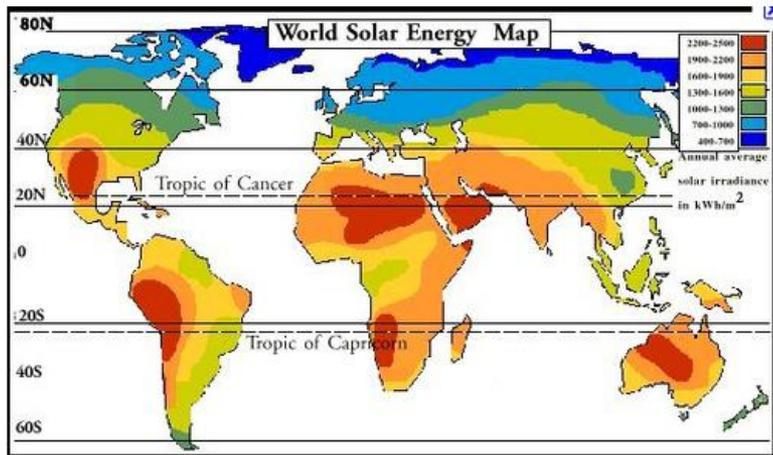
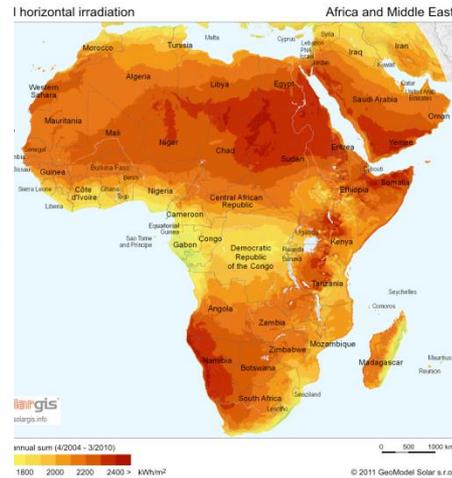
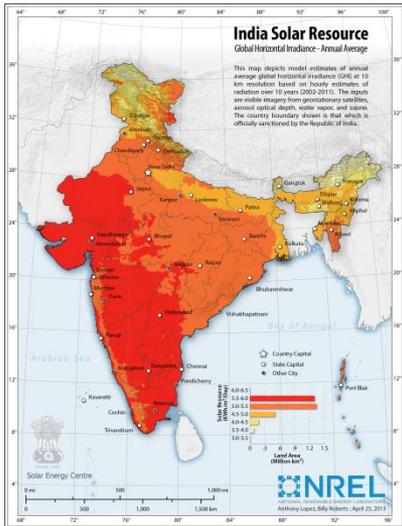
**Study WHEN
we can do it BETTER by working together**

**Study HOW
it can be accomplished**

**Study WHAT
can be accomplished**

**Existing Knowledge
Provides foundation**

R&D Strategy – Define WHAT the opportunity is



Solar resource – identify sites

- Relative to other options

Distributed vs grid

- Solar lighting for every home or central plants

PV vs CSP

- Solar electric vs thermal

Penetration target

- Meet daytime loads only?

Public vs private funding sources

- Large (on-grid) projects or off-grid?

Existing Knowledge
Provides foundation

Scale is important!



Financing Options

Grid Scale



R&D Strategy – Define HOW to get there



Funding and growth strategies

- Innovation has revolutionized markets

Training

- For construction, inspection, operation...

Standards development (PVQAT)

- Performance, reliability, quality

Bankability

- Standards and training lead to confidence

Infrastructure development

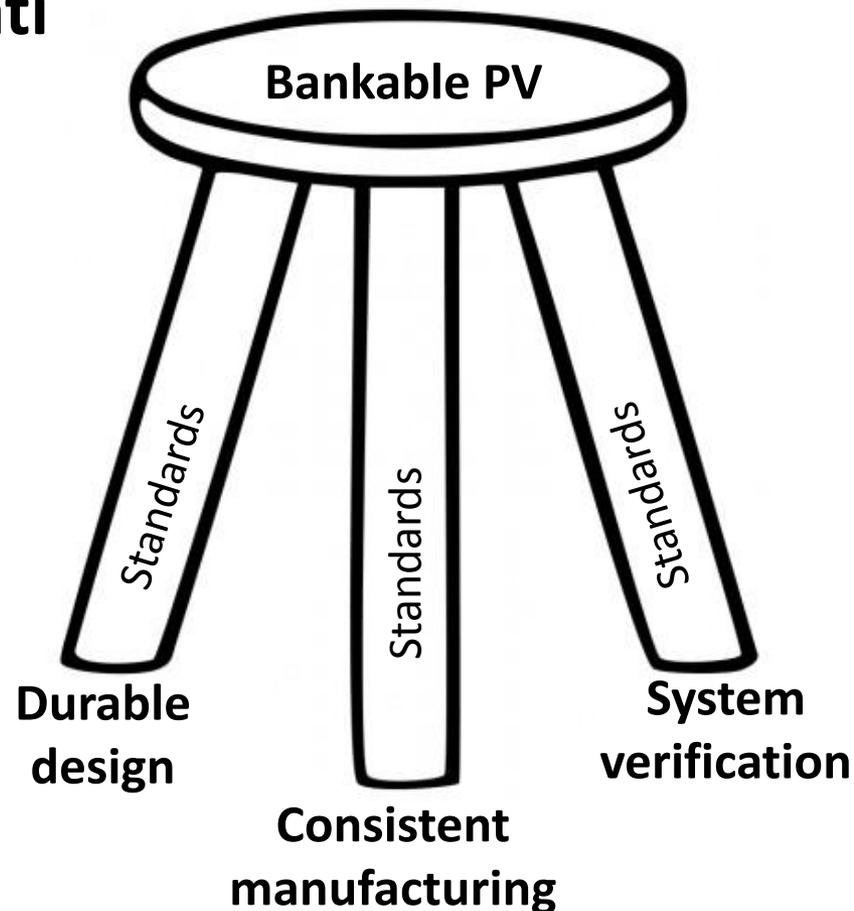
- Local vs national vs international

Existing Knowledge
Provides foundation

PVQAT works toward Bankability

International PV Quality Assurance Task Force (PVQAT)

1. *Qualification of durability of design of products* for chosen climate and mounti
2. *Guide for audit of consistent manufacturing* of products to that design
3. *Certification process for system verification* to ensure adequacy of design, installation, and operation



www.pvqat.org

R&D Strategy – Define WHEN to work together

Bankability:

- International standards beat many national standards

Training:

- Similar skills are needed everywhere

Technology:

- Solar lighting and water pumping

Innovative funding:

- Growth relies on installing a lot from a little



Existing Knowledge
Provides foundation

A working example

India

United States

Consortium Leads

Indian Institute of Science – Bangalore
Dr. Kamanio Chattopadhyay

National Renewable Energy Laboratory
Dr. David Ginley

Research Thrust Leadership

Indian Institute of Technology Bombay
Center for the Study of Science, Technology and Policy

Sandia National Laboratories
RAND Corporation

Consortium Partners

Institutes and National Laboratories

International Advanced Research Centre for Power Metallurgy and New Materials
National Institute of Solar Energy

Lawrence Berkeley National Laboratory

University Partners

Indian Institute of Technology Madras
Indian Association for the Cultivation of Science

Arizona State University
Binghamton University
Carnegie Mellon University
Colorado School of Mines
Massachusetts Institute of Technology
Purdue University
Stanford University
University of Central Florida
University of South Florida
Washington University in St. Louis

Industry Partners

Bharat Heavy Electricals Ltd.
Clique Developments Ltd.
Hindustan Petroleum Corporation Ltd.
Infosys Ltd.
Moser Baer India Ltd.
Thermax Ltd.
Wipro Ltd.

Corning Incorporated
Semlux Technologies, Inc.
Solarmer Energy, Inc.
SunEdison
Underwriters Laboratories



Participants from ISA countries attended NISE International Training Programme (2005-2016)

#	Country	No. of Particip.
1.	Algeria	13
2.	Bangladesh	2
3.	Botswana	1
4.	Cambodia	5
5.	Cameroon	1
6.	Chad	3
7.	Cuba	1
8.	Djibouti	4
9.	Dominican Republic	1
10.	Dem. Rep. of Congo	9
11.	Egypt	13
12.	Eritrea	2
13.	Ethiopia	17
14.	Fiji	1
15.	Gambia	2
16.	Guatamala	13
17.	Guyana	2

#	Country	No. of Particip.
18.	Ghana	1
19.	Indonesia	5
20.	Kenya	1
21.	Laos	3
22.	Liberia	1
23.	Madagascar	4
24.	Malawi	1
25.	Malaysia	9
26.	Mali	2
27.	Marshall Islands	1
28.	Mauritius	10
29.	Mozambique	3
30.	Myanmar	12
31.	Oman	1
32.	Namibia	3
33.	Niger	4
34.	Nigeria	18
35.	Paraguay	1

#	Country	No. of Particip.
36.	Peru	2
37.	Philippines	4
38.	Senegal	1
39.	Sri Lanka	6
40.	Sudan	22
41.	Suriname	2
42.	South Sudan	1
43.	South Africa	1
44.	Tanzania	19
45.	Thailand	11
46.	Togo	1
47.	Trinidad & Tobago	8
48.	Tuvalu	1
49.	Uganda	4
50.	Vanuatu	1
51.	Vietnam	16
52.	Yemen	4
53.	Zimbabwe	7

Total – 277 participants so far attended NISE' International Training Programme



Identify WHAT we can accomplish

- Which technologies and what projects

Identify HOW we can succeed

- Use training and standards to quickly achieve bankability

Identify WHEN to work together

- Sharing R&D advances in technology, reliability, and integration strategies reduces needed investment to achieve goals

Strive for prosperity for all

- Wide deployment of renewable energy will improve standard of living

Thank you for your attention!

Appendix-VIII



**PROMOTING 10,000 MW OF SOLAR PROJECTS IN
ISA MEMBER COUNTRIES**

**Abu Dhabi
January 18, 2016**

ISA Members – Demand Estimates



Large Opportunity Exists

- ★ Total installations in ISA member countries around 100 GW
 - ✓ Large installations in China (28 GW); Japan (23.3 GW); USA (18.2 GW) France (5.6 GW); UK (5.2 GW); Australia (4 GW); India (3 GW).
- ★ Few ISA members solar installation targets announced
 - Total 285 GW:-
 - ✓ Asia – 205 GW : --- India (100 GW); China (70 GW); Japan (28 GW)
 - ✓ Africa – 35 GW: --- Algeria (24 GW); Malawi (7 GW); Mozambique (2 GW)
 - ✓ Latin America – 2 GW: --- Brazil (1.4 GW)
 - ✓ Middle East – 42 GW: – Saudi Arabia (41 GW)
- ★ Opportunity exists in large number of ISA members by way of
 - Decentralized on-grid network
 - Countries with developed transmission systems
 - Countries lacking developed transmission infrastructure

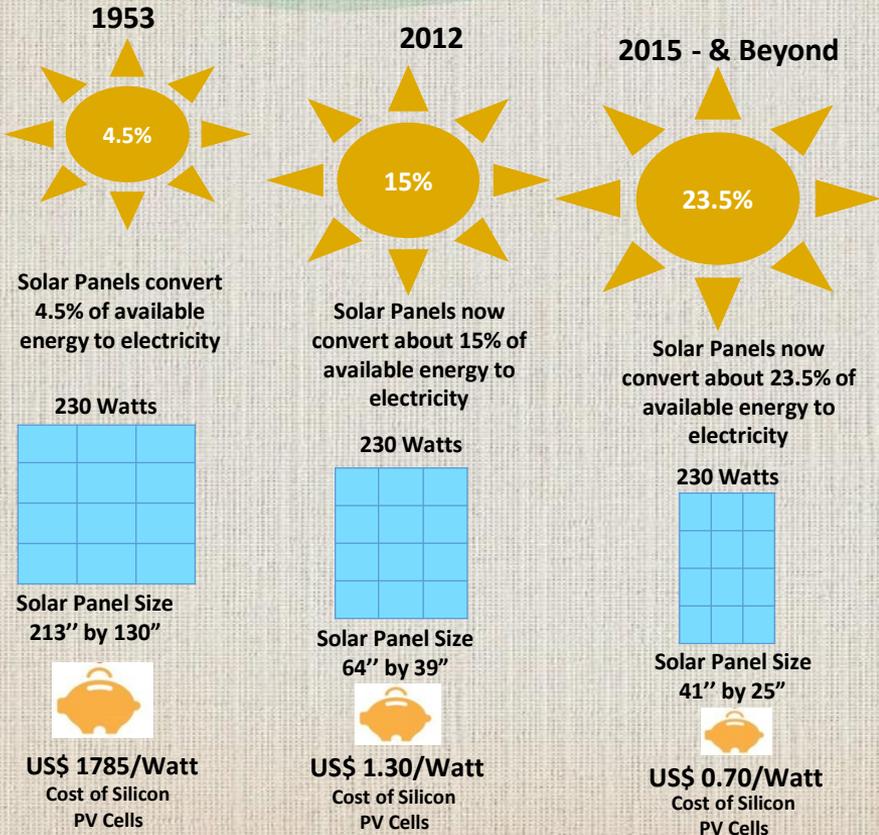
Large Opportunity Exists for On-grid and Off-grid installations

Solar Energy: Generic Challenges



Technology is Established and Proven

Cost, Size, Efficiency continues to improve



Growth Drivers

Technology

- ★ Absorption of technology and reduction of cost
- ★ Appropriate roll out plan for decentralized installations.

Financial

- ★ Availability of low cost long term finance

Support

- ★ Cooperation in R&D, capacity building and training

Policy

- ★ Enabling regulatory framework; fiscal incentives; and market reservations/access.

Solar Energy: Financial Issues-Challenges



- ★ Availability of low cost long term financing
 - High risk perception of solar projects
 - Credit record of the industry is yet to be established
 - Development of solar projects have been largely on commercial terms
 - Reduction of borrowing cost can positively influence growth of industry
- ★ Need for cooperation amongst Export Credit Agencies (ECAs)/Developmental Financial Institutions (DFIs) for long term low cost finance for sustainable growth
 - ECAs/DFIs engaged in long term financing of industries
 - Expertise can be leveraged for solar projects
 - ECAs have experience in funding cross border projects

Solar Growth requires Favourable Financing

ISA Members – Scope for Cooperation



ISA Cooperation Matrix



- ★ Innovation is costly and risky - hence most innovation activities are concentrated in a few developed countries
- ★ Manufacturing base is growing in a few of advanced developing countries - Continuing technology upgradation.
- ★ New manufacturing/assembly centers needed for widespread and sustainable growth of the industry. Need for knowledge/sharing transfer, training.
- ★ ISA member countries spread across. Cooperation Matrix can meaningfully exchange technology and operations related knowledge for growth.

Appropriate ongoing cooperation model has to be established through discussions amongst ISA members

Cooperation amongst ISA Members



Steps towards attaining 10 GW

- ★ Large opportunity exists - ISA member countries have expressed interest for solar installations
 - New installations across the World in the past -
 - ✓ Supported by Government through enhanced market access, provision of long term credit, regulatory framework.
 - Technology / knowledge cooperation, training among ISA members desirable.
 - Appropriate financial architecture is required to be developed
 - ✓ ECA-MDB Co-financing; ECA-MDB parallel financing; Co-financing/Parallel financing among ECAs/DFIs; ECA/DFI financing to sovereign/its entities; reciprocal guarantee facility for investment, etc.

Cooperation will Help us to Reach the Cherished Goal

ECAs/DFIs Role in ISA - Proposed



Broad Areas

- ★ Continuing extension of financial assistance to solar projects in ISA member countries
- ★ Developmental Role
 - Assist in for implementation of ISA program
 - Facilitate preparation of Detailed Project Report
 - Appropriate structuring of project
 - Facilitate interactions amongst stakeholders
- ★ Exchange of Best Practices
 - Organizing information dissemination programs in select ISA member countries
 - Designing of appropriate training program for personnel
 - Knowledge management – technology, sharing of information relating to technology, O&M of projects.
- ★ Utilising networks of various ECAs & DFIs towards furthering cooperation like AEBF; G-NEXID; BRICS; etc.

WAY FORWARD



1. Opportunity to capture the decline in cost – challenge is capital cost
2. Roll out project for centralized and decentralized installations
3. Enabling regulatory framework and fiscal incentives
4. ISA could serve as a common platform to bring together Export Credit Agencies (ECAs) towards funding solar projects
5. Support new manufacturing/assembly centers for widespread and sustainable growth of the industry
6. Cooperation in R&D
7. Exchange of best practices through knowledge/sharing, technology transfer, training, and skill development



Thank You