WELSPUN RENEWABLE ENERGY P. LIMITED

DOMESTIC CONTENT REQUIREMENT - DCR

19 NOVEMBER 2014

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STRICTLY CONFIDENTIAL

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HISTORY OF DCR IN INDIA

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PROVISIONS IN DIFFERENT POLICIES

- ROOFTOP AND OFF GRID APPLICATION - **SOLAR MODULES MUST BE MADE IN INDIA**
  - IN THIS CASE SOLAR CELLS MIGHT BE IMPORTED
- JNNSM PHASE-1 BATCH -1 – POLYCRYSTALLINE MODULES COULD NOT IMPORTED - HOWEVER NO RESTRICTION ON IMPORT OF THIN FILM MODULES
- JNNSM PHASE-1 BATCH-2 SAME RESTRICTIONS
- JNNSM PHASE-2 BATCH-1 (VGF SCHEME) CAPACITY DIVIDED IN DCR AND OPEN CATEGORY
  - 375 MW RESERVED FOR DOMESTIC MODULES
    - BOTH SOLAR CELLS AND MODULES MUST BE MADE IN INDIA – SILICON WAFERS COULD BE IMPORTED
  - 375 MW KEPT UNDER OPEN CATEGORY AND SPD HAVE THE CHOICE OF MODULES
- STATE POLICY DO NOT INSIST ON DCR IN ANY MANNER

HISTORY OF DCR IN INDIA

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IMPACT OF DCR POLICY SO FAR

- ROOFTOP AND OFF GRID APPLICATION
  - **MUSHROOMING OF CTM MANUFACTURERS**
- JNNSM PHASE-1 BATCH -1 & BATCH-2 – DCR FOR POLYCRYSTALLINE MODULES
  - **MORE THAN 60 PROJECTS CAME UP ON THIN FILM**
- JNNSM PHASE-2 BATCH-1 (VGF SCHEME) CAPACITY DIVIDED IN DCR AND OPEN CATEGORY
  - **DCR PROJECTS RESULTED IN HIGHER VGF BY MORE THAN INR 1 CRORE PER MW**
  - **YET SOME OF THE DEVELOPERS COULD NOT EXECUTE THE PROJECTS**
- STATE POLICY DO NOT INSIST ON DCR IN ANY MANNER
  - **STATES ARE GETTING BETTER TARIFF THAN JNNSM DCR PROJECTS EVEN WITH POOR CREDIT WORTHINESS**

SOLAR PV VALUE CHAIN

- DOWNSTREAM CONTRIBUTES 300-400% MORE THAN UPSTREAM TO ECONOMY AND EMPLOYMENT

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- 20-30% contribution in economic value and job creation (10-20% since wafers will be imported)
- 100% automated process with only high skill supervision
- 100% of machines and raw material (ingots and wafers) imported

10 - 20%

Solar grade silicon → **Ingots and wafers** → **Cells** → **Modules**

UPSTREAM

BOS → **Design and installation** → **Operation and maintenance**

DOWN STREAM

70 – 90%

MULTIPLE TECHNOLOGIES:
1. Crystalline (mor and poly),
2. Thin film (CdTe, CIGS, CGS &c)

Thin film technology is more suitable in India (thermal properties), Indian manufacturing has crystalline

- 80% contribution in economic value and job creation
- BOS manufacturing, installation, project management – 100% domestic, employs low skill workers, livelihood enhancement
- Energy access and security enhancement

Training, consulting and IT support

Research and Development

ANTI DUMPING DUTY PUTS 80% ECONOMIC CONTRIBUTION AT RISK BY FOCUSING ON 20% (PRACTICALLY 10% DUE TO WAFER IMPORT)

Source: http://www.greentechmedia.com/articles/read/u.s.-solar-market-grows-41-has-record-year-in-2013,; Welspun analysis

DCR, NOT VERY HELPFUL TO THE ECONOMY

- NEGLIGIBLE IMPACT ON FOREX OUTFLOW
- IS UNLIKELY TO PROMOTE DOMESTIC MANUFACTURING
- WILL HARM SOLAR GROWTH, LOCAL INDUSTRIES AND EMPLOYMENT

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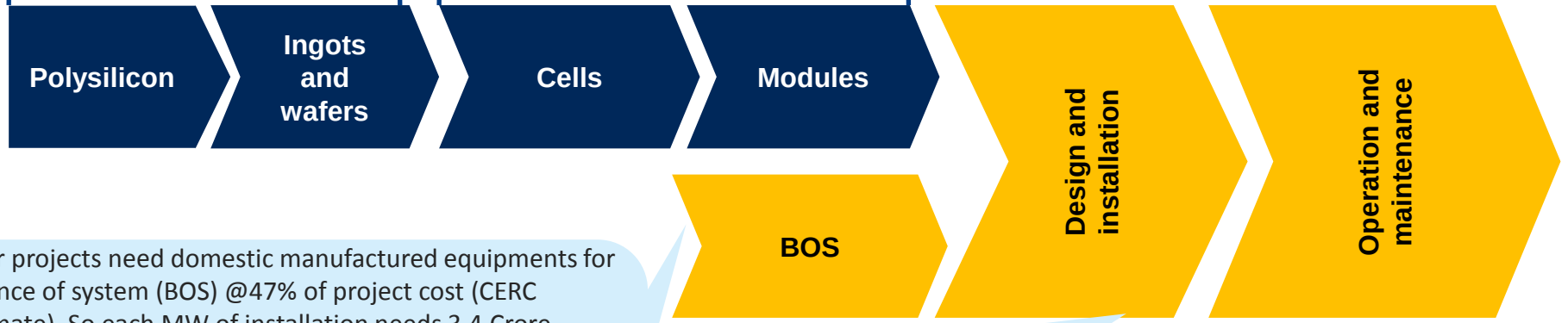
- Imports will continue
- 60 to 70% of price of the module

- Manufacturing set up will be imported (addition to forex outflow)
- Lack of R&D → products upgrade every 6 months → lower capacity module consume more land and BOS
- Setting up lead time for manufacturing 1-1.5 years (best effort basis). Minimum 1500 MW (50% of total till now) will be held due to lack of supply.



Solar projects need domestic manufactured equipments for balance of system (BOS) @47% of project cost (CERC estimate). So each MW of installation needs 3.4 Crore worth domestic economic activity including the following.

- Transformers
- Electrical cables
- Steel (including the switchyard and transmission lines)
- Cement
- Electrical components

- Job creation potential in installation of solar PV is ~50 -75% of the total manpower along the value chain especially low skilled (earth work, civil and electrical etc.)
- Additionally this builds the capability of manpower and provides sustenance to labor from neighboring areas
- Reduction in growth in solar installations due to import constraints (due to anti dumping duty) will hamper economic and social value creation.

HIGH GROWTH POTENTIAL SECTORS CONTRIBUTING 70% TO ECONOMY AND JOB (BOS, DESIGN & INSTALLATION AND O&M) WILL SLOW

Source: Laying the foundation for a bright future by CEEW and Natural Resources Defense Council, Welspun Analysis

PROJECTS VS. MANUFACTURING - CONTRIBUTION TO ECONOMY

VALUE ADD (2X) - *DESIGN, INSTALLATION - 70%, MANUFACTURING – 30%*

JOB (3-4X)– *(DESIGN, INSTALLATION: 55-80%, MANUFACTURING: 20-40%)*

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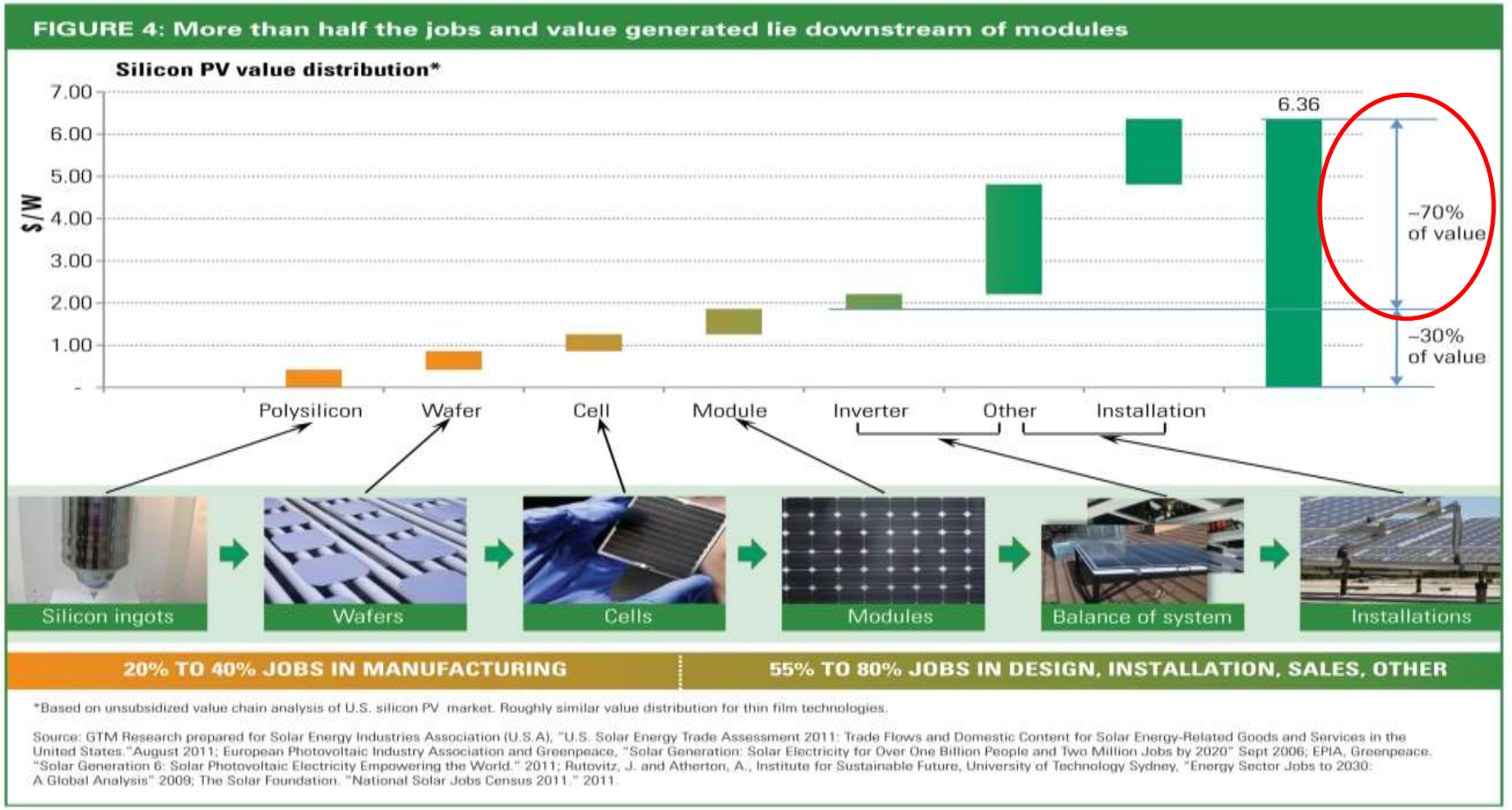

SOLAR INDUSTRY IN USA HAS ADDED 4 TIMES NEW JOBS IN PROJECTS THAN IN MANUFACTURING

- 120%↑ IN PROJECTS, 30%↑ IN MANUFACTURING (2010-2014)

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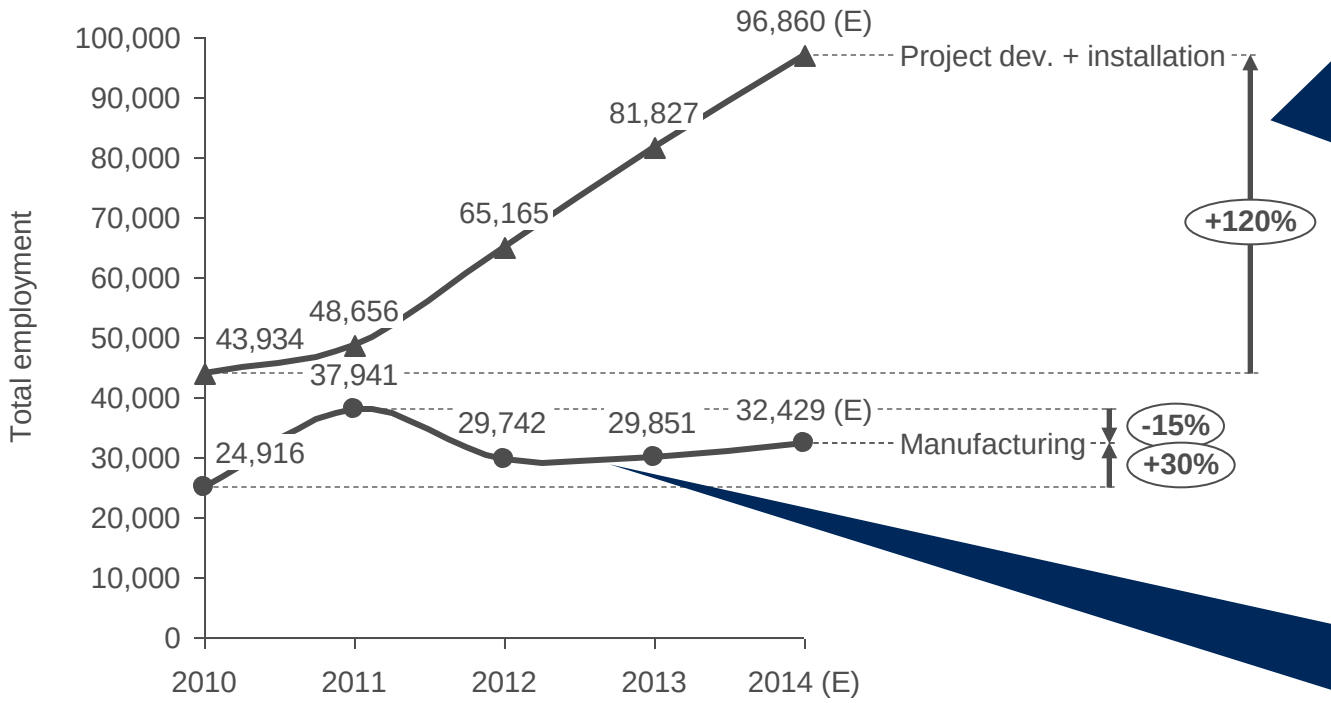
Protective measures has not encouraged domestic manufacturing in USA and Europe



Projects development and installation add more jobs because of jobs in the following sectors

- BOS manufacturing and execution
- Project execution (incl. BOS)

Contrary to claims, imposition of anti dumping duty by USA led to decrease in manufacturing jobs in USA and it is 15% below the 2011 level

Source: http://www.greentechmedia.com/articles/read/u.s.-solar-market-grows-41-has-record-year-in-2013,; Welspun analysis

SOLAR ENERGY CAN FULFILL PRACTICALLY EVERY NEED

ENSURE ACCESSIBILITY (ENERGY @DOORSTEP) AND AFFORDABILITY

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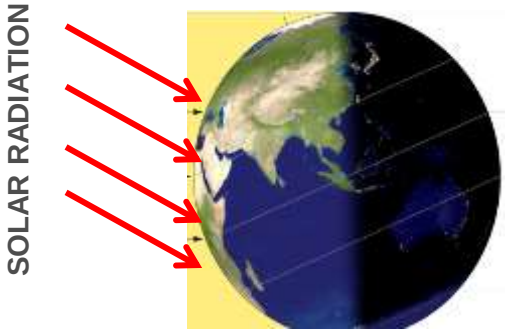
AFFORDABILITY (COST)

NEED TO REDUCE …

- INPUT COST
- TRANSACTION COST



ACCESSIBILITY

NEED TO ENCOURAGE …

- OFF-GRID/ DISTRIBUTED GENERATION (↓ T&D LOSS)
- UTILITY PRODUCTS (LAMPS, PUMPS, VEHICLES)

Solar PV power

Solar lantern

Solar agricultural pump

Solar thermal power

Solar water heater

Solar building

Solar traffic light

Solar rural house

Solar powered vehicle

GRID PARITY WILL FOSTER FASTER GDP GROWTH

- *MODULE COST (53% OF PROJECT COST) NEEDS MAX REDUCTION*

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National policy objective

Policy framework in the country including National Electricity Policy and Electricity Tariff Policy lays down that the **supply/availability of electricity to the consumers at reasonable and competitive.**

DCR impact on tariff

The DCR bids in JNNSM Ph 2 (Batch 1) attracted additional VGF demand of Rs. 1 Cr/MW → tariff ↑ Re ~1/kWh

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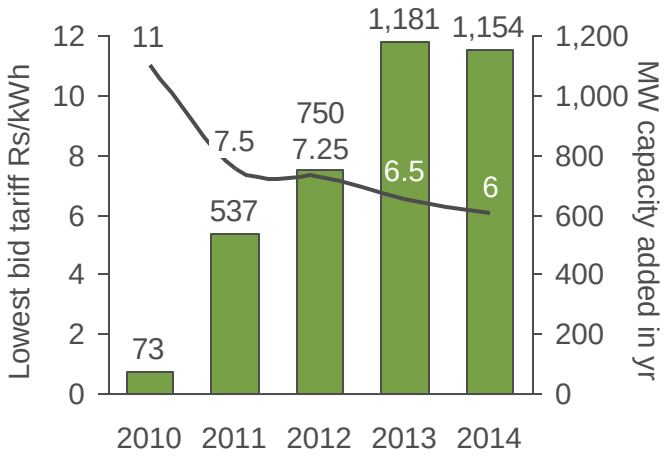
GRID PARITY → **COST REDUCTION**

- **MODULE COST REDUCTION Helps most (53%)** → Budgetary compensation may be needed to offset ADD impact.
- **"BOS" COST REDUCTION Hurts Indian manufacturing**
- **INSTALLATION COST REDUCTION Hurts local India manpower**

Accelerated achievement of grid parity and the benefits

- No supply constraint (capacity in India is about 30% of required in medium term)
- Take advantage of globally increasing efficiency (reduced land usage) and reducing prices of modules
- Saving on forex due to faster solar growth and increased electricity availability – reduce imported oil and coal (**Replacement by solar can save 2 billion liters of diesel per annum**)



GRID PARITY WILL MAKE SOLAR INDUSTRY SUSTAINABLE → ABUNDNANCE WITHOUT SUPPORT → MUCH ↑ ECONOMIC GROWTH

LONG TERM PLANNING, POLICY SUPPORT AND INVESTMENT NEEDED FOR SOLAR MANUFACTURING

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CURRENT SITUATION

- **Outdated manufacturing set up (1600 MW)**
  - **~300 MW of cell + module manufacturing (Wafer imported)**
  - **~1300 MW of module manufacturing (cell imported)**
  - **Concentrated capacity with 4-5 players and balance fragmented with average capacity <40 MW/annum.**
    - Unable to commit supply due to short execution period e.g. project period for 40 MW = ~5 months and most of the players have <40 MW as annual capacity
  - **Lack of testing facilities for modules and providing generation guarantee**
- **Imported machinery needing technical, maintenance support and knowhow transfer needed continuously due to lack of R&D facilities.**
- **In-house quality testing of international standard not available**

REMEDIAL SUGGESTIONS

- **Facilitate FDI in solar manufacturing sector through policy initiatives and incentives.**
- **Facilitate testing facilities in Indian that can accessed by manufacturers**
- **Facilitate insurance for product warranty aligned with PPA especially in case companies become sick**
- **Inter-country collaborative frameworks should be designed and deployed for attracting technology, investment etc.**
- **Current capacity utilization can be enhanced by promoting off-grid and creating an eco-system for the same**
- **Financial support or capital realignment, as and if necessary, for small players**

- Initiatives and interventions will bear result in 3-4 years
- Interim support for capacity utilization through promotion of off-grid sector (including micro and smart grid)
- Investment in R&D, collaboratively, if required, with international manufacturers and institutions.
- Focused development of India as an export hub for manufacturers.

THANK YOU

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