

Building Institution for HSS- India Experience of NCCVMRC and NCCTC



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Immunization Specialist , UNICEF , Delhi

A Joint presentation of NCCVMRC ,NCCTC and UNICEF

Outline of Presentation

- **Country overview and programme mile stone**
- **Gaps in India ISCS based on 10 states VMA**
- **Philosophy and Principle of HSS-Institution Development**
- **Structure and Activities of the Centers**
- **Optimization of Cold Chain HR engagement**
- **Solarization of Health Facilities**
- **Fix basics**

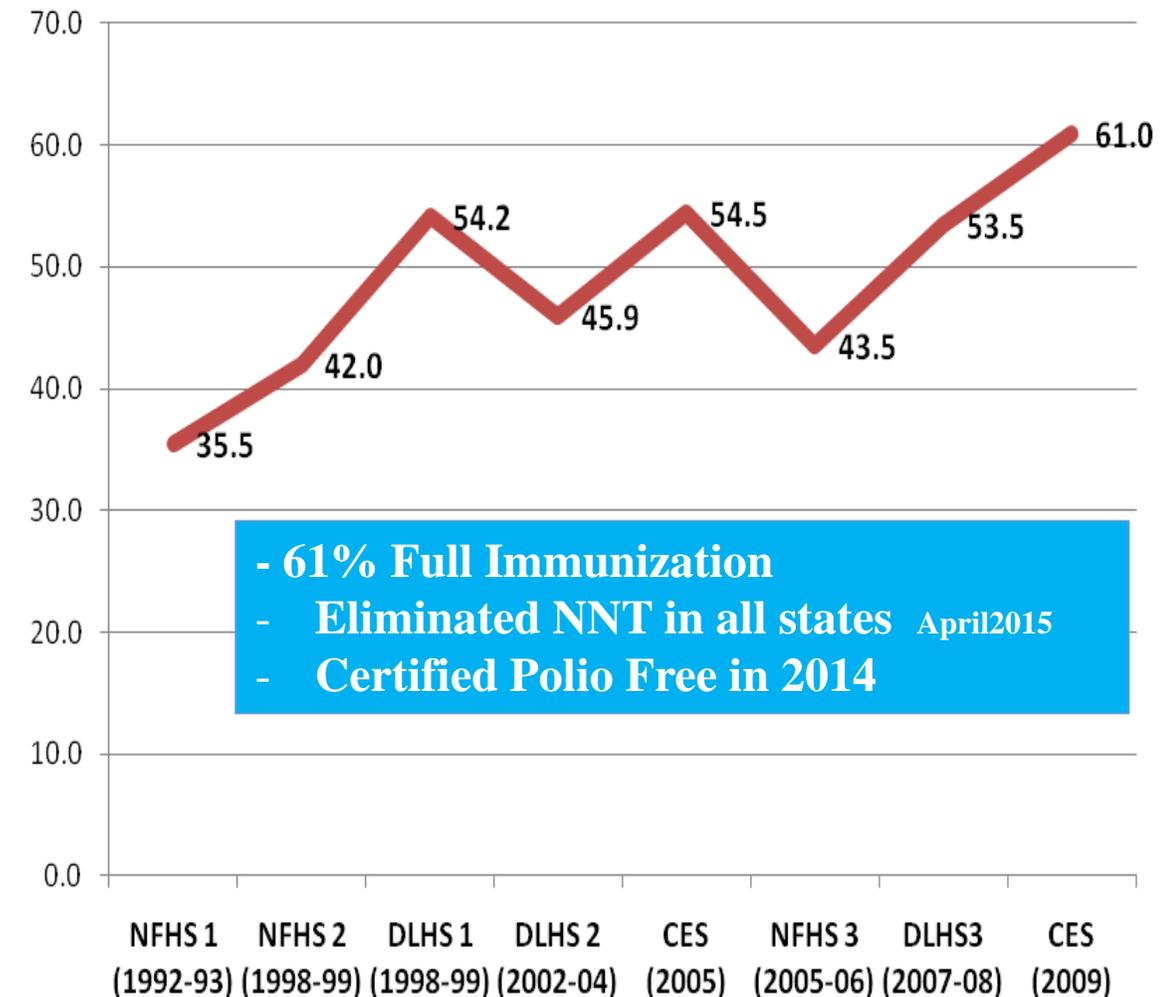
Immunization Program in India: A Snap Shot

- ~27 million new born targeted for vaccination each year
- ~9 million immunization session held annually
- ~28,000 cold chain points (Last Vaccine Storage Site) in India
- Vaccine against 10 preventable diseases
- NIDs for polio every year vaccinating 80 million children
- Catch-up campaigns targeting 135 million children in 2013
- JE vaccination conducted in 112 endemic districts covering 78 million children
- Hib containing Pentavalent vaccine introduced in the country in 2012

2015

Introduction of IPV, MR and Rotavirus vaccines

INDIA-Full Immunization Coverage by various Survey



MOHFW Divisions –India

1. Blindness Control
2. Bureau of Planning
3. Cancer Control Programme
4. CCA
5. Central Design Bureau
6. CHS
7. Drugs Food Quality control division
8. Emergency Medical Relief
9. IC & IH

10. Immunization

11. Medical Education
12. Medical Tourism
13. Mental Health Division
14. NPCDCS
15. NPHCE
16. NPPCD
17. NVBDCP
18. NGO Division
19. NHM Finance
20. NHM policy & Planning
21. NUHM
22. Infrastructure & HR Division
23. Telemedicine
24. Medical Education Policy - II
25. Dental
26. Nursing
27. PMS
28. PMSSY
29. PNDT
30. Principal Accounts Office
31. Procurement
32. Revised National Tuberculosis Programme
33. Statistics Division

34. Training Division

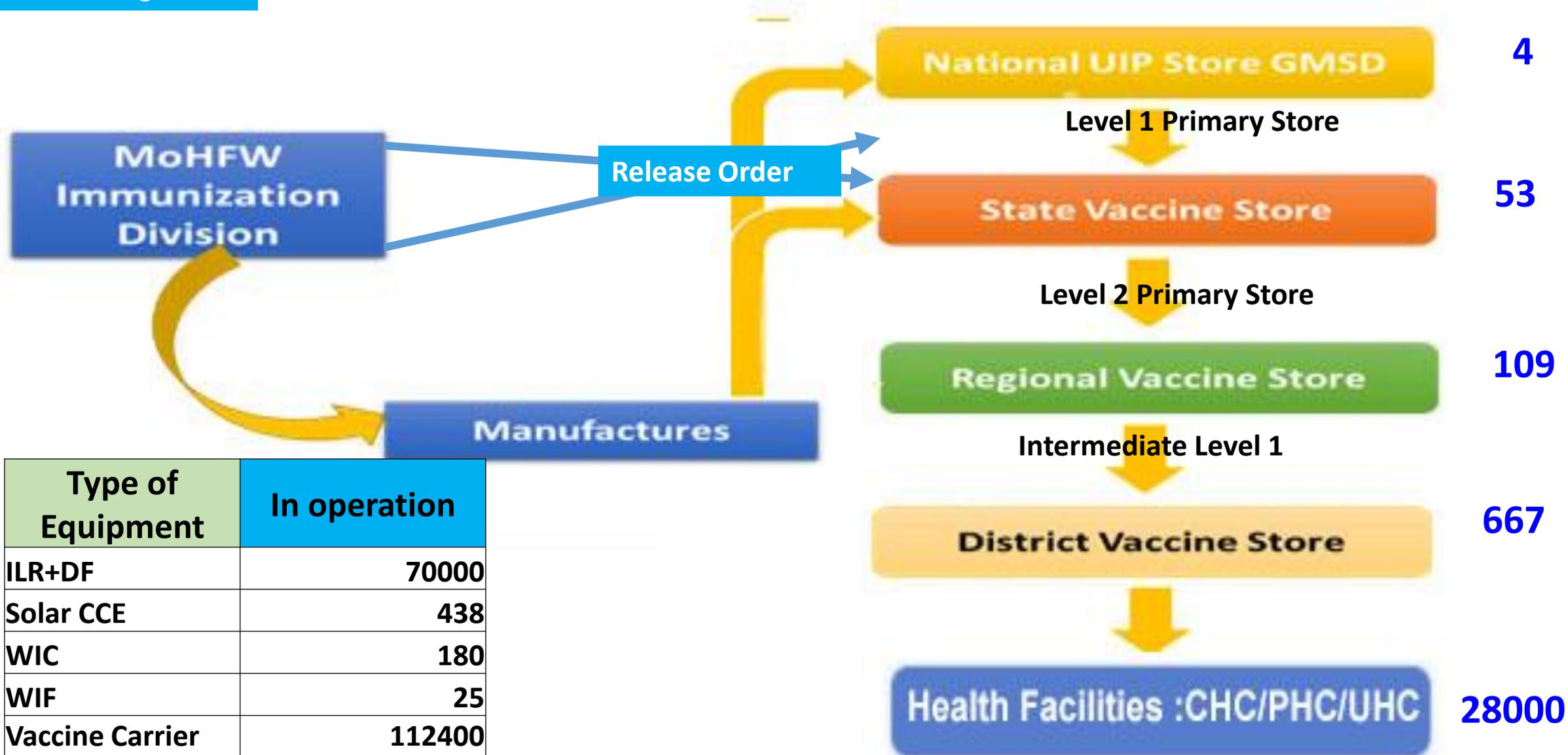
35. Activities of Health and Family Welfare
36. OP & Nirodh Marketing

36 Divisions

NIHFW
(National Institute of Health and FW
Apex Capacity building Institute of
MOHFW)

Immunization Supply Chain System in India

Partners Agencies :



| Type of Equipment | In operation |
|-------------------|--------------|
| ILR+DF | 70000 |
| Solar CCE | 438 |
| WIC | 180 |
| WIF | 25 |
| Vaccine Carrier | 112400 |
| Cold Box | 66000 |

Human Resource For Immunization-India

| TYPE OF STAFFs | NATIONAL 1.25 Billion population | STATE Av. 40 Million population | DISTRICT Av. 2 Million population | HEALTH FACILITY 40000 to 200000 population |
|---|-------------------------------------|--|--|---|
| | | 30 states & 6 UTs | 666 Districts | 29,000 HFs |
| RI program Vaccine Management | Deputy Commissioner | EPI Officer | Immunization Officer | Medical Officer |
| | | EPI Officer/ Vaccine Logistics Manager/ CCO | Store Keeper/ Pharmacist/ Vaccine Logistics Manager | Health Supervisor |
| Cold Chain AEFI, Training & Communication | Deputy Commissioner | Cold Chain Officer | Cold Chain Technician | Cold Chain Handler |
| Data Management | Senior Statistical Officer | Demography & Statistics/ Imm Computer Assistant | Statistical Assistant/ Health information Officer | Program Officer/ Health Educator |
| Administration & Finance | Under Secretary | State Finance Manager, NHM/ | Accounts Manager, NHM | Medical Officer/ Clerk |
| RI Communication | Section Officer | IEC and BCC cell | Public Health Education Officer | Health Educator |

Immunization Supply Chain Gaps:10 states VMA 2007-2011

| No | Indicator | State Stores | Regional Stores | District Store | CHC/PHC/U HC |
|----|------------------------------------|--------------|-----------------|----------------|--------------|
| 1 | Vaccine storage Temp | + | ++ | ++ | ++ |
| 2 | Cold store capacity | ++ | ++ | ++ | ++ |
| 3 | Building, CC Equip, | +++ | ++ | + | + |
| 4 | Maintenance of CC Equip, transport | + | + | +++ | ++ |
| 5 | Stock management | +++ | +++ | +++ | +++ |
| 6 | Effective Vac Delivery | +++ | +++ | +++ | +++ |
| 7 | Correct Use of diluents | + | +++ | +++ | +++ |
| 8 | Effective VVM Use | +++ | +++ | +++ | +++ |
| 9. | Vaccine Wastage Control | +++ | +++ | +++ | +++ |

5 Areas of Immunization Supply Chain System Gaps

3 Ps of Health System

Process

Practices

Policies



For an efficient ISCS

Improvement Plan(IP) is to Strengthen the existing ISCS to make it Reliable ,Affordable and Efficient .

Needs System Approach



Institutions for Cold Chain and Vaccine Management-India

MINISTRY OF HEALTH AND FAMILY WELFARE,
GOVERNMENT OF INDIA

1. Blindness Control
2. Bureau of Planning
3. Cancer Control Programme
4. CCA
5. Central Design Bureau
6. CHS
7. Drugs Food Quality control division
8. Emergency Medical Relief
9. IC & IH

10. Immunization

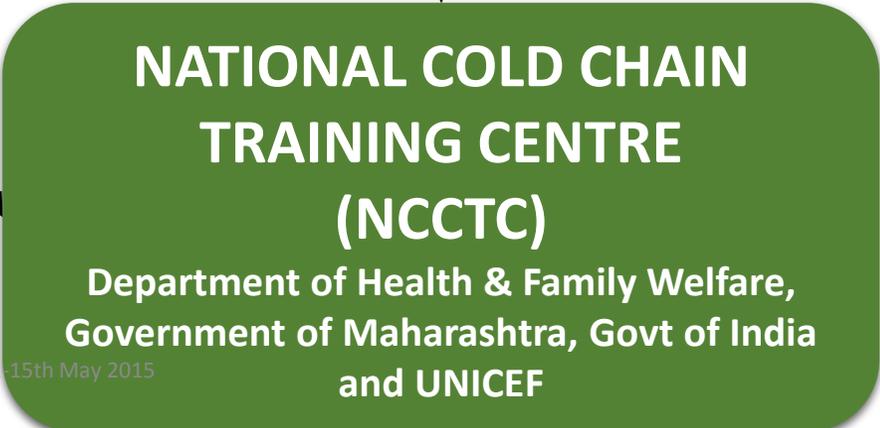
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34. Training Division

35. Activities of Health and Family Welfare
36. OP & Nirodh Marketing



A 4 years
Journey
from 2011



Philosophy and Principles considered

Philosophy

MOHFW is able to Plan ,Manage ,Maintain , Fund and run it's cold Chain system with long term vision

Principles

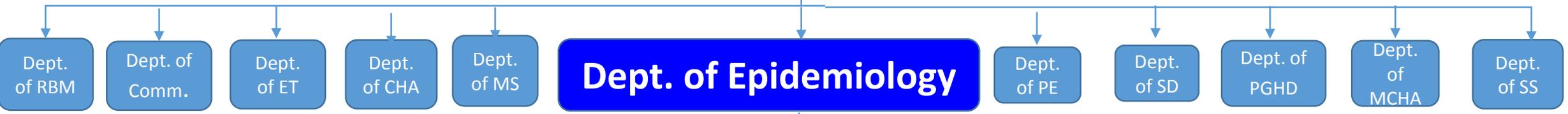
- *MOHFW ownership and investment*
- *Sustainable funding*
- *Long term vision*
- *Institutionalization*
- *Clear exit plan of initial support*
- *Within existing MOHFW institution/Infrastructure*
- *Least additional HR for activities at Sub National Level and below*



Organogram of NCCVMRC

(National Cold Chain & Vaccine Management Resource Center, MoHFW)

Director
(National Institute of Health and Family welfare)

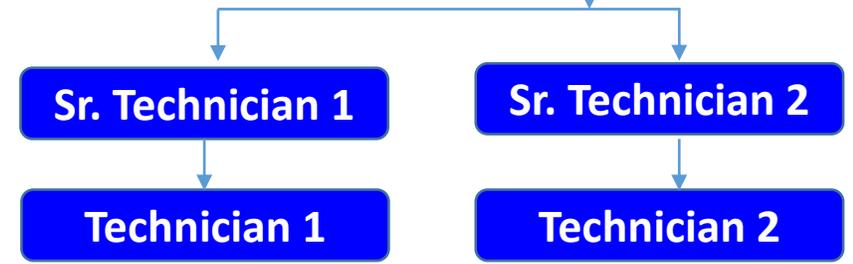


Nodal Officer, NCCVMRC
Professor of Epidemiology

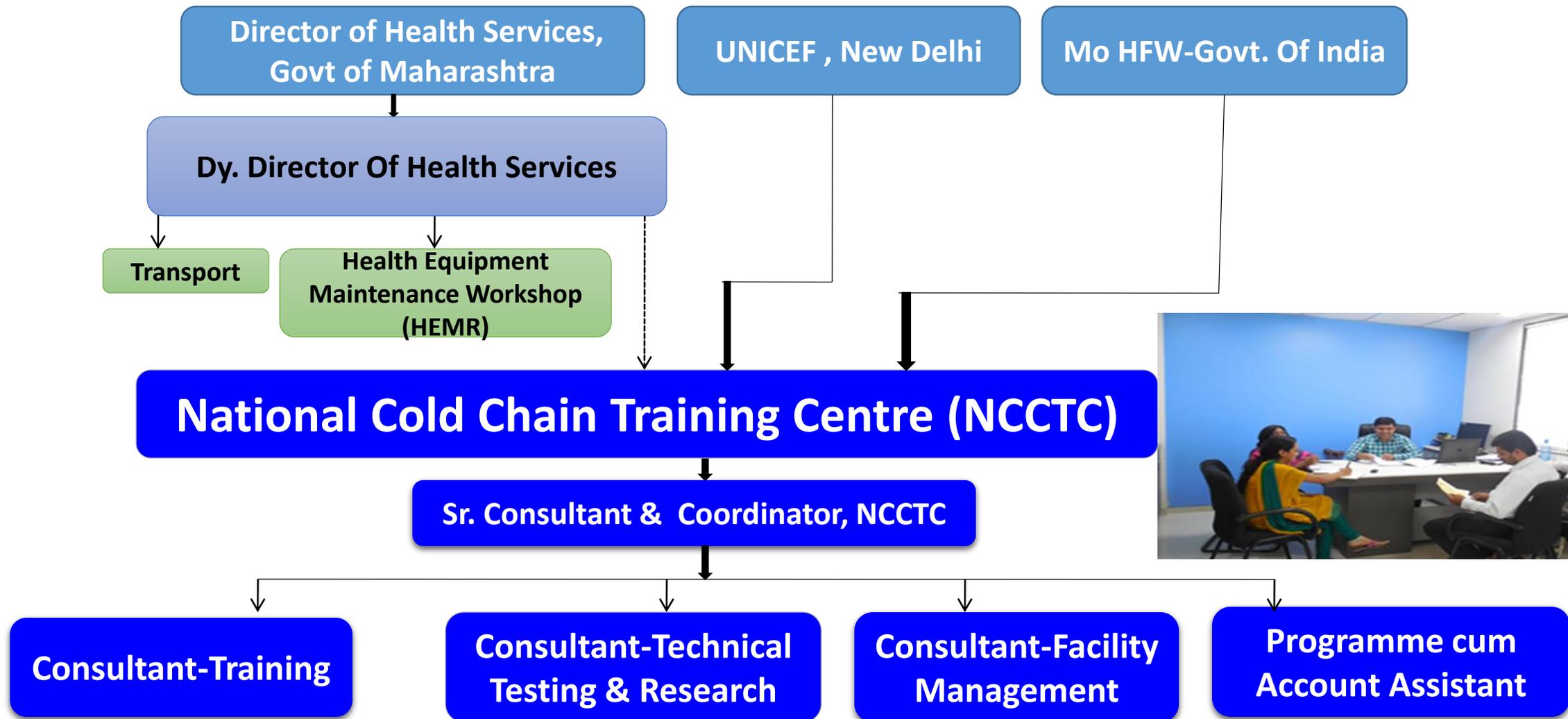
NCCVMRC Coordinator



- **Consultant: Data Analysis and reporting**
- **Software Developer Cum Data Analyst**
- **Programme Cum Data Assistant**



ORGANOGRAM OF NCCTC (NATIONAL COLD CHAIN TRAINING CENTRE, SHTO, PUNE)



NCCVMRC Functionality

CAPACITY BUILDING

- Training of cold chain technicians on ILR/DF , WIC/WIF, Solar CCE repair and maintenance
- Cold chain handlers training
- Effective cold chain & vaccine management course(ECCVMC)
- National Cold Chain MIS training

MONITORING

- Central Remote temperature monitoring of cold rooms in States and GMSDs
- Monitoring of cold chain performance through NCCMIS
- EVM assessments +IP preparation
- Regular field visit to state

EVIDENCE GENERATION

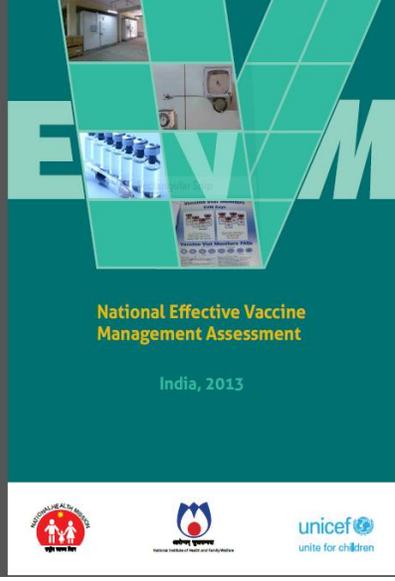
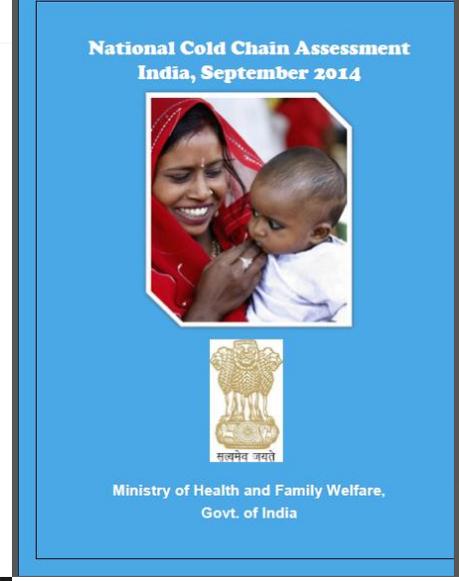
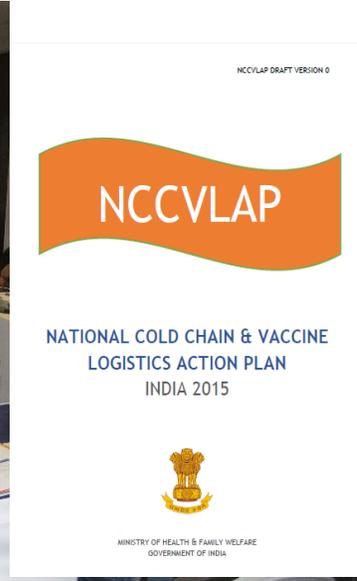
- National Cold Chain Assessment
- National and state EVM Assessment
- Solar hybrid System assessment
- Other operations research

Standards and Quality

- National Cold Chain and Vaccine Logistics Action Plan (NCCVLAP)
- Specification of CCE for MOHFW and states



ECCVM Course



NCCVMRC Activities

National Cold Chain Management Information System

National Health Authority
संस्कार संघ
संयुक्त स्वास्थ्य विभाग

Central Temp Monitoring Cell

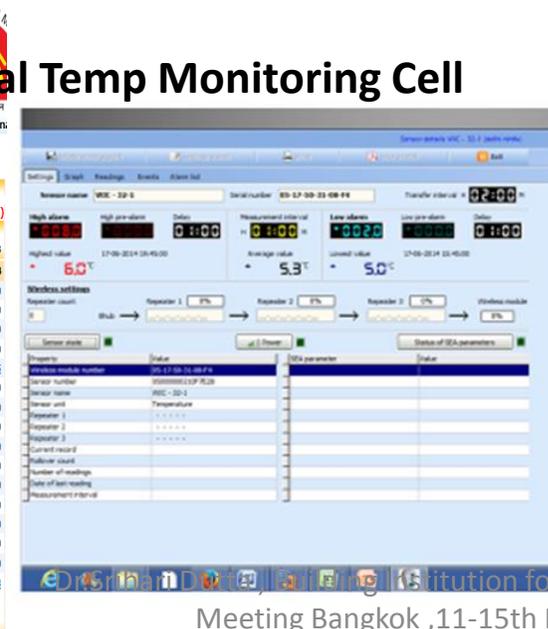
Immunization Division : Nation

Reports Logout

State - District wise Summary

(Total States:36 Baseline Data Uploaded:36) (Total Districts:678 Baseline Data Uploaded:672)

| State | CCP | | Non Electrical CCE | | | | Electrical CCE | | | | Associated CCE Available | Associated CCE Required | Temperature Monitoring Sensors | |
|---------------------------|--------------|-----------------|--------------------|--------------|--------------|------------------|----------------|------------|------------|-----------|--------------------------|-------------------------|--------------------------------|-----------|
| | Functional | Vaccine Carrier | Cold Box | ILR | DF Solar | SR(ILR,DF,Solar) | WIC | WIF | % SR | | | | | |
| Total | 27705 | 24832 | 1122666 | 61302 | 34296 | 32102 | 438 | 0.9 | 148 | 22 | 0.9 | 48592 | 17205 | 34 |
| Andaman & nicobar islands | 44 | 43 | 330 | 10 | 38 | 40 | 8 | 0 | 1 | 0 | 0 | 20 | 67 | 0 |
| Andhra Pradesh | 1548 | 1485 | 55447 | 2845 | 1379 | 1306 | 0 | 1.4 | 7 | 0 | 1.4 | 1129 | 1559 | 0 |
| Arunachal Pradesh | 166 | 164 | 0 | 46 | 223 | 198 | 38 | 6.6 | 2 | 0 | 6.8 | 356 | 100 | 0 |
| Assam | 808 | 769 | 58393 | 2346 | 1282 | 1147 | 36 | 4.3 | 3 | 0 | 4.3 | 1882 | 557 | 0 |
| Bihar | 592 | 577 | 52353 | 6783 | 1201 | 965 | 0 | 0 | 15 | 3 | 0 | 2184 | 0 | 0 |
| Chandigarh | 59 | 59 | 1500 | 2 | 90 | 71 | 0 | 0 | 1 | 0 | 0 | 135 | 27 | 0 |
| Chhattisgarh | 652 | 635 | 30272 | 1114 | 1059 | 803 | 15 | 0.2 | 3 | 0 | 0.2 | 1331 | 506 | 0 |
| Dadara & Nagar Haveli | 13 | 12 | 331 | 21 | 20 | 18 | 0 | 0 | 0 | 0 | 0 | 12 | 26 | 0 |
| Daman & diu | 3 | 2 | 80 | 8 | 21 | 17 | 0 | 0 | 0 | 0 | 0 | 22 | 16 | 0 |
| Delhi | 274 | 182 | 834 | 24 | 97 | 146 | 0 | 0 | 0 | 0 | 0 | 184 | 59 | 0 |
| Goa | 39 | 38 | 873 | 21 | 83 | 57 | 0 | 0 | 1 | 0 | 0 | 117 | 24 | 0 |
| Gujarat | 1678 | 1588 | 61626 | 3149 | 1708 | 1729 | 0 | 0.2 | 13 | 1 | 0.2 | 3300 | 116 | 0 |
| Haryana | 666 | 635 | 32859 | 1391 | 988 | 816 | 0 | 0.8 | 2 | 0 | 0.8 | 1548 | 239 | 0 |
| Himachal Pradesh | 642 | 598 | 7874 | 402 | 533 | 477 | 8 | 0 | 2 | 0 | 0 | 222 | 797 | 0 |
| Jammu and Kashmir | 579 | 576 | 13852 | 648 | 703 | 559 | 20 | 0.8 | 5 | 0 | 0.8 | 653 | 634 | 0 |



Ministry of Health and Family Welfare
Government of India

Solar Hybrid Photovoltaic System
in Primary Health Centres

EVALUATION REPORT

MARCH 2015

NCCTC Functionality

COLD CHAIN-Immunization

- ILR/DF/WIC/WIF/Solar /Generator/Stabilizers Training
- CCE installation (Solar , WIC WIF Generators ,SNCUs)
- CCE performance testing
- Temp. monitoring system development
- Indigenous compatible spare parts compilation
- Calibration and temperature mapping of cold rooms
- Equipment specifications
- Assessments/ studies on cold chain
- Building and infrastructure standards
- Health transport

1. Research and Innovation in Cold Chain Technology

2. Make in India Cold Chain Equipment system

SOLARIZATION OF HEALTH SYSTEM

- Design of solar hybrid system
- Capacity building on use and maintenance
- Specifications development
- Remote monitoring

SNCU, FRU, BSU

- Installation
- Repair/ maintenance
- Handler's training
- MIS development Health Equipment

COLD CHAIN PLANNING

(NON IMMUNIZATION)

- Central medical store warehouse/ store
- State Ware houses and Temp Monitoring

Capacity building of CC staffs of Afganistan (CCE, Solar Equipment , Hybrid Solar and SNCU Equipment



Dr.Srihari Dutta , Building Institution for HSS , 14th TechNet Meeting Bangkok ,11-15th May 2015

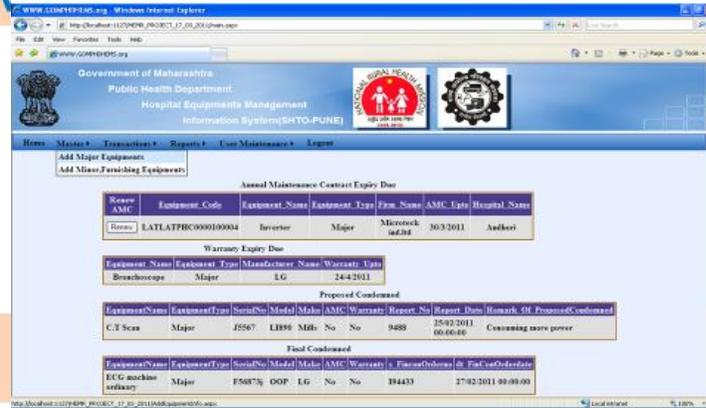
Walk-in-Cooler / Freezer :- Temperature Mapping in WIC/WF



ILR / Deep Freezer :- Temperature Controller



Login by Hospital Admin



Solutions to problems in CCE r



Workshop on installation & commissioning of Solar Refrigerator



NCCTC Activities

Adaption of newer technology - Face plate contd.....

Indigenous Alarm and Temperature Controller System for WIC-WIFs

- Temperature controller (ERC 102C)
- Acoustic hooter 110 DB
- UPS, for uninterrupted monitoring. Also this UPS can be used to power other devices like data loggers.



Conference / Workshop and Seminar



Overall SPVS system configuration



Initiative to Establishment of CCE test lab @ NCCTC Pune

Initiative on **"CAPACITY BUILDING OF COLD CHAIN EQUIPMENT MANUFACTURERS and PROFESSIONAL INSTITUTES IN INDIA on WHO-PQS Standard"** has been conducted on 20th October, 2014 at hotel Royal Plaza , New Delhi, to build Indian manufacturers' and academic institutions capacity towards WHO-PQS compliance by UNICEF in association with MOHFW, NCCTC, NCCVMRC (NIHFW) and NHSRC.

Prototype development for Temperature monitoring of Vaccine Carrier



FPSC- Cold Cargo



Solar-Direct-Drive (SDD)



Remote temperature monitoring of ILR/DF



A typical district in India-SNCUs



- Average population = 2 million
- Average No. of Blocks = 10
- Average number of FRU=4
- Average number of stabilization unit=10
- Average of SNCUs= 2
- Average number of Health Facilities=45
- Average number of new born corners= 45
- Average number of Cold chain equipment=85
- Average number of cold chain technician=1

SNCU Equipment Repair Maintenance Training by NCCTC

565 SNCUs
1904 NBSUs
14152 NBCCs

Special
Neonatal
Care Unit
Equipment

Repair & Maintenance Training Programme



- Radiant Heat Warmer,
- Phototherapy Unit,
- Pulse Oxymeter,
- Oxygen Concentrator,
- Syringe Infusion Pump,
- Portable suction machine,
- And more.....

National Cold Chain
Training Centre
(NCCTC)SHTO, Pune.

| FINANCIAL YEAR | Cumulative No. of SNCUs established | New SNCUs added in year | SNCU Utilization | | |
|----------------|-------------------------------------|-------------------------|--|--------------|----------------|
| | | | Newborn Admitted | Newborn Died | Mortality rate |
| 2005-08 | 184 | -- | Information on utilization not available | | |
| 2009-10 | 222 | 38 | | | |
| | | 565 | 1904 | 14152 | |
| 2010-11* | 263 | 41 | 41627 | 4442 | 10.7% |
| 2011-12 | 340 | 77 | 3, 51,144 | 38,463 | 11.0% |
| 2012-13 | 421 | 81 | 4, 41, 075 | 51,626 | 11.7% |
| 2013-14 | 525 | 104 | 5, 95, 303 | 64,392 | 10.8% |
| 2014-15** | 548 | 23 | Data Under compilation | | |
| Total | 548 | | | | |

Rihari Dutta, Building Institution for HSS, 14th TechNet Meeting Bangkok, 11-15th May 2015

Solarization of Health Facilities



430 Health Facilities with Hybrid Solar Systems for all Health services in Maharashtra and 300 facilities for Immunization only



| Sr. No. | Description | Quantity & Consumption for 2.4 KVA | Place of electrical point |
|------------------------------|---------------------------|------------------------------------|---|
| 1 | Lights | 13 x 18W = 234W | Male ward, Female ward, MO room, OT, office, Pharmacist room, cold chain room, entrance light, labor room, corridors & Laboratory |
| 2 | Fans | 6 x 75W = 450W | Male ward, Female ward, MO room, OT, office, Pharmacist room |
| | | W = 252W | Cold chain room |
| 4 | Shadow less lamp | 1 x 275W = 275W | OT |
| 5 | Blood Storage Unit | 1 x 500W = 500W | Cold chain room / Labor room |
| 6 | Nebulizer | 1 x 100W = 100W | Labor room |
| 7 | Suction machine | 1 x 150W = 150W | OT |
| 8 | Fumigation machine | 1 x 100W = 100W | OT |
| 9 | Fetal monitor | 1 x 100W = 100W | Labor room |
| Total Electrical load | | 2161 Watts | (Load Diversity around 60 %) |

On site Installation of Solar Equipment



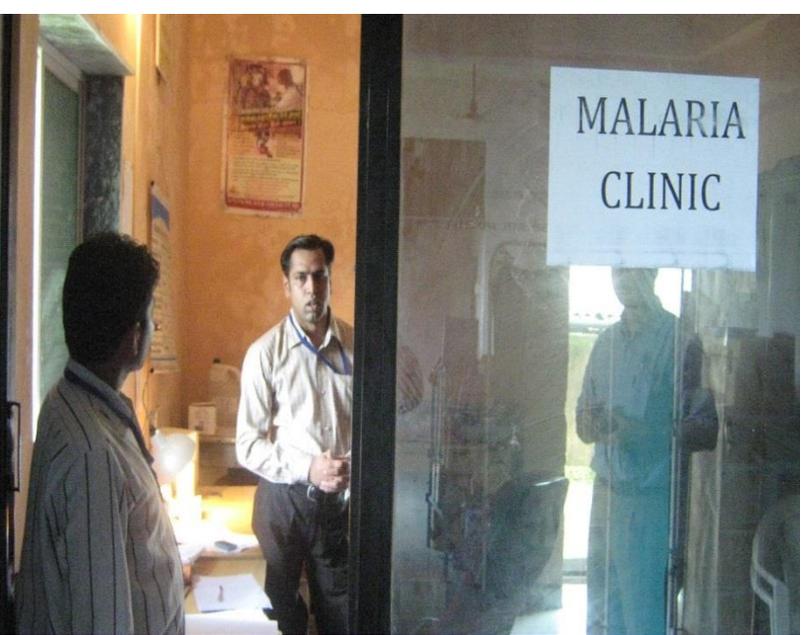
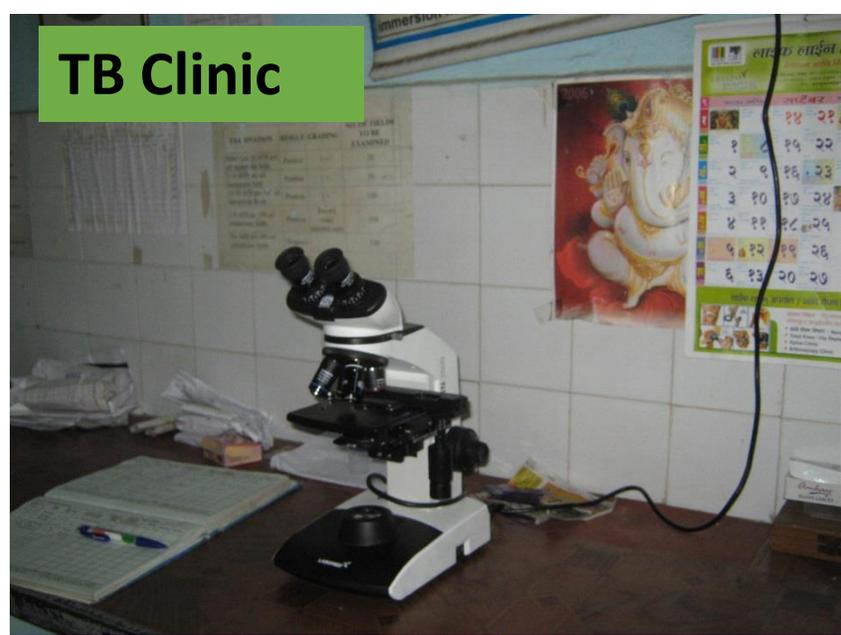
Proposed SPVS installations MH-State (2015-2020)

| Sr. No. | Year | Period | No. of PHC's to be equipped with SPVS installations | | Estimated Cost of the installations (in Crores) | |
|--------------------|---------|------------------|---|-----------|--|---------------------------------|
| | | | Hybrid SPVS | 100% SPVS | Hybrid SPVS @ Rs. 13.5 Lakhs each | 100% SPVS @ Rs. 23.5 Lakhs each |
| 01 | 2015-16 | April- September | 66 | 64 | 9.00 | 15.00 |
| | | October-March | 150 | | 20.00 | |
| 02 | 2016-17 | April- September | 130 | | 17.50 | |
| | | October-March | 150 | | 20.00 | |
| 03 | 2017-18 | April- September | 130 | | 17.50 | |
| | | October-March | 150 | | 20.00 | |
| 04 | 2018-19 | April- September | 130 | | 17.50 | |
| | | October-March | 150 | | 20.00 | |
| 05 | 2019-20 | April- September | 130 | | 17.50 | |
| | | October-March | 173 | | 23.00 | |
| Total | | | 1359 | 64 | 182.00 | 15.00 |
| Grand Total | | | 1423- PHC's | | INR=197.00 Crores; 31.52 million USD | |

Out Door services in HF



TB Clinic



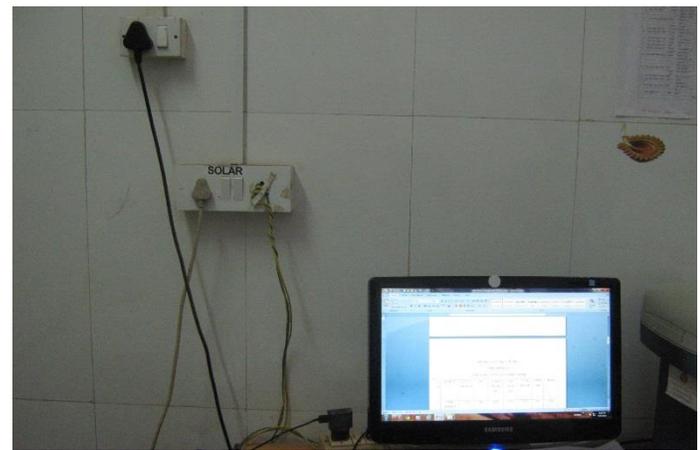
How Solarization helped assuring 24x7 electricity supply for functional Health Facility



Indoor Patients and Immunization in HF



Dr. Subhri Dutta, Building Institution for HSS, 14th TechNet Meeting, 11-15th May 2015
SNCU equipment



Daily Online Reporting from HF



How Solarization helped assuring 24x7 electricity supply for a functional Health Facility



Dr.Srihari Dutta , Building institution for HSS , 14th TechNet Meeting Bangkok ,11-15th May 2015



Health System Before & After 2011

Immunization Supply Chain (Cold Chain) and Child Health (SNCU)

Fix Basics :

- **HR+ Regular Capacity Building+Empowerment**
- **Equipments +Adequate Spares +Tools**
- **Equipment need to be need specifics and country driven**
- **Review ,Monitoring and supportive Supervision**
- **Partner's role is to empower Govt**
- **Issues in Cold Chain is more than Technology and Managerial**

Acknowledgement

➤ **Ministry of Health and Family Welfare, Govt. of India**

- Dr. M.K.Aggarwal, Deputy Commissioner, UIP

➤ **National Institute of Health and Family Welfare, MoHFW**

- Prof. Jayanta K. Das, Director
- Dr. Sanjay Gupta, Nodal Officer, NCCVMRC

➤ **National Cold Chain Training Centre,Pune**

- Dr. Vitthal Bandal
- Mr. Durgesh Deshmukh
- Mr. Yogesh Bhamare

➤ **National Cold Chain and Vaccine Management Resource Centre, NIHFW , New Delhi**

- Dr. Mainak Chatterjee
- Mr. Paritosh Panigrahi

➤ **UNICEF –Delhi**

- Dr. Genevieve Begkoyian
- Dr. Gagan Gupta
- Dr. Satish Gupta

NCCTC New Hostel Building (Under construction)



We invite countries to visit , collaborate and utilize the two National Centers



A photograph of a sunset over the ocean. The sun is low on the horizon, casting a warm glow across the sky and water. The sky transitions from a deep blue at the top to a bright orange and yellow near the sun. The water is dark blue with some whitecaps. A watermark "FreeFoto.com" is visible in the bottom right corner of the image.

**Innovation in Technology and
implementation Out of Box thinking
Drive for Result
Willing to learn from Failure
Sustainable financing**

**Advocacy
Partnership
Networking
Optimization**

