

Facility for Low Carbon Technology Deployment



An Overview

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Specialized agency of the United Nations

Promote and Accelerate Sustainable Industrial Development

171 Member States

48 Regional and Country Offices

Mandated Functions

- Technical Cooperation
 - Action-oriented research & policy advisory
 - Normative standard-related activities
 - Partnerships for knowledge & tech-transfer
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National Counterpart

Bureau of Energy Efficiency Government of India



- ❖ Set up on 1st March 2001 under Energy Conservation Act
- ❖ Develops Policies and Strategies to Reduce Energy Intensity of Indian Economy

Flagship Programmes

ECBC  Energy Conservation Building Code	Star Label  Standards and Labeling
PAT  Energy Efficiency in Large Industry	SME  Energy Efficiency in Small & Medium Industry
SDA  Energy Efficiency in States	DSM  Energy Efficiency Through Demand Side Management

Facility for Low Carbon Technology Deployment (FLCTD) 2016 - 2025



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



ABOUT:

- 9 – year project to identify Low Carbon Technologies (for Industrial and Commercial Sectors)
- US \$ 8.7 m project funded by Global Environment Facility (GEF)
- Emission Reduction Target: 2.3 million tons CO₂eq
- Targets: – 120 innovations identified/demonstrated;
40 – Commercialized

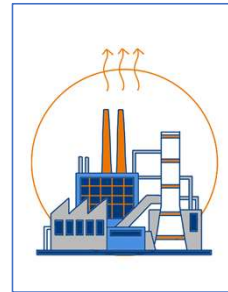
OBJECTIVES:

- Identify technology-gap areas having scope for energy saving
- Select innovative technology solutions that address the gap
- Support demonstration and validate efficacy
- Facilitate Scale-up

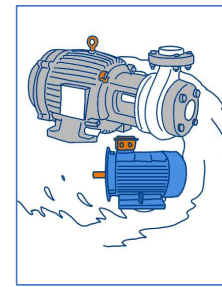
Project Partners and Technology Areas for Innovation



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Waste Heat
Recovery &
Thermal Efficiency



Pumps &
Motors



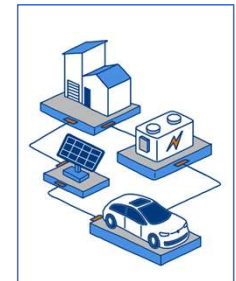
Space
Conditioning



Industrial Resource
Efficiency



Industrial
IoT



Electrical Energy
Storage Systems



3-Pronged approach for Technology Validation and Commercialization

Capacity building through an Accelerator program

Program entry point – **TRL 4**↑

66 Start-ups graduated
16 pre-commercialized
14 further support
5 commercialized

Deployment and Validation support

Program entry point – **TRL 5**↑

78 innovations identified /
USD 3 mn
35 innovations validated
25 commercialized

Financial due-diligence and fundraising support

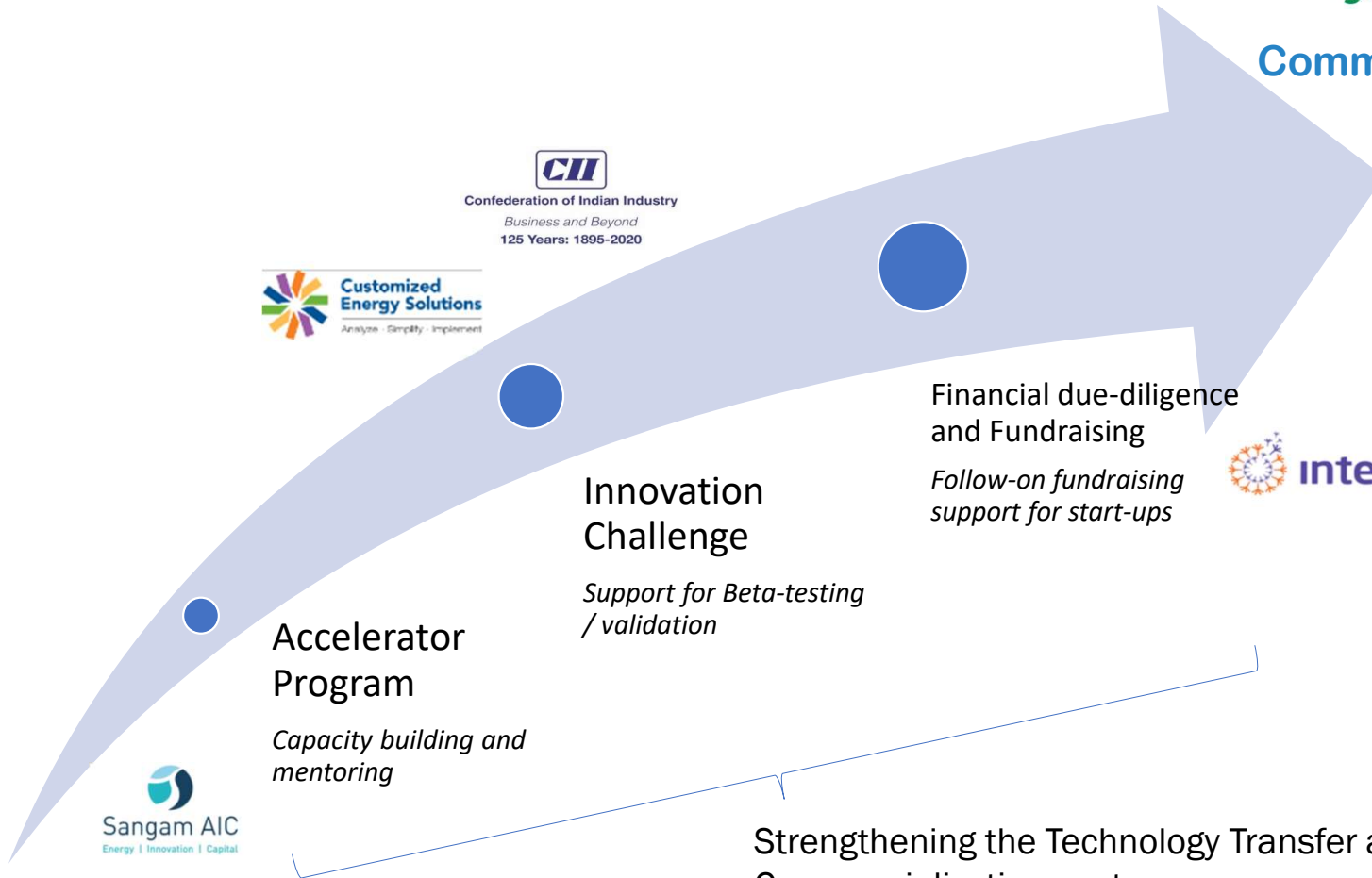
Entry point – **TRL 7/8**
(completion of technology trials)

18 start-ups selected

FLCTD – Project Activities

Commercialization

Early Stage
Innovation



**Accelerator
Program**

*Capacity building and
mentoring*

**Innovation
Challenge**

*Support for Beta-testing
/ validation*

**Financial due-diligence
and Fundraising**

*Follow-on fundraising
support for start-ups*



Strengthening the Technology Transfer and
Commercialization centres

What FLCTD Project Offers



Financial support
up to
US \$ 50,000 for
Field trials &
Validation of
efficacy
(β -testing)

Technical
Mentoring by
CII-GBC and
Subject Experts

'De-risking' of
innovation
before
commercial
launch

Industry
Linkages

Financial
Mentoring and
Fund Raising
Support

Technology Trial Partners



Trials at 220+ client locations

Large industries	MSME units	Dairy units	Building sites	Agriculture sites
18	70	35	32	65



Support for Science and Technology based innovations / startups



Support for fund raising / Commercialization

Support to Innovation Challenge Winners



FLCTD



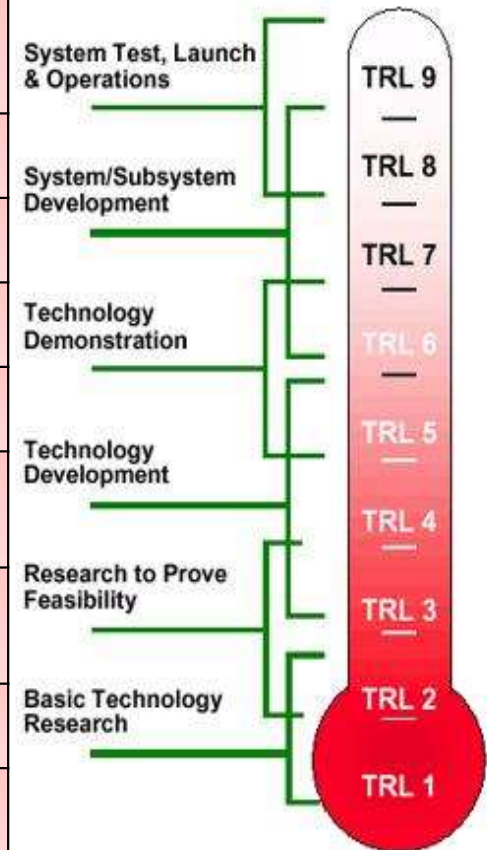
Accelerator Programme Support

Govt. Support -
Ideation to Lab. POC



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TRL 9: Commercialization & post market studies
TRL 8: Pre-commercialization
TRL 7: Late stage Validation
TRL 6: Early stage validation
TRL 5: Early stage validation
TRL 4: Proof-of-concept established
TRL 3: Proof of Concept Demonstrated
TRL 2: Proof of Principle
TRL 1: Ideation stage



Accomplishments

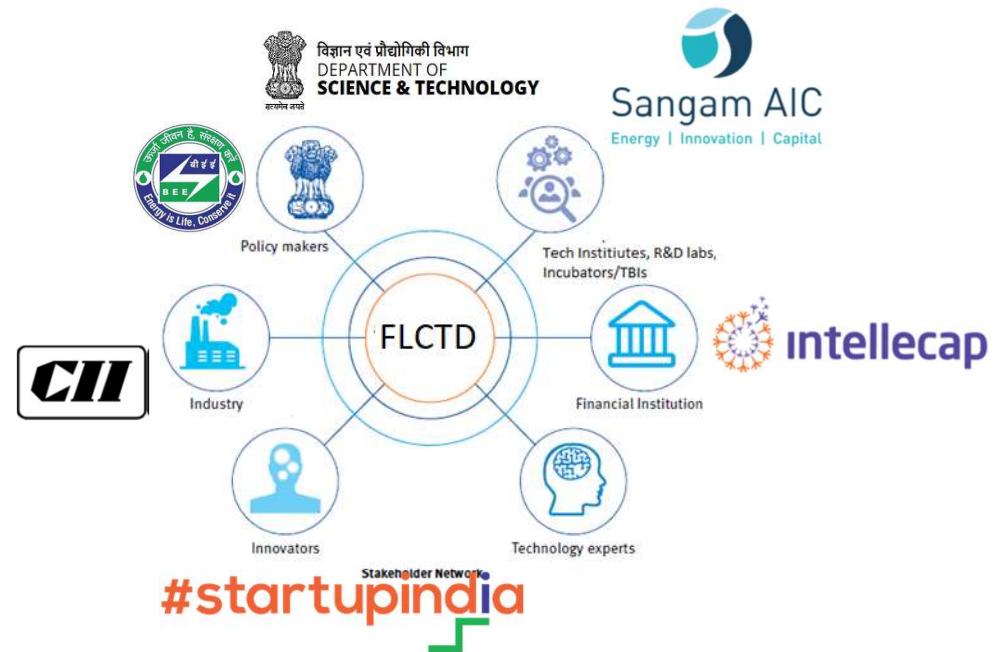
67 startups graduated from the FLCTD Accelerator program

- 5 commercialized

78 winners of the Innovation Challenge

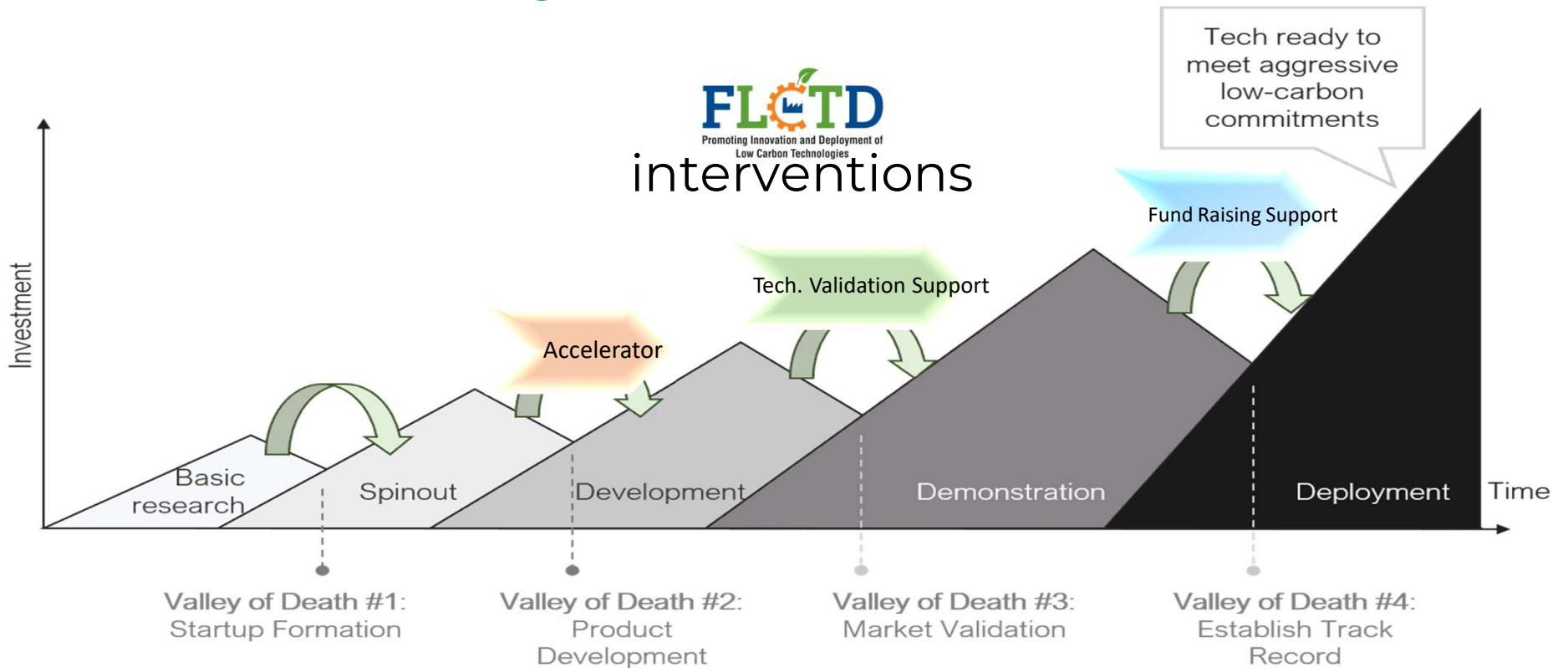
- 35 innovations validated
- 25 commercialised

US \$5m committed for mentoring and technology Validation, financial due-diligence and fund raising support



Climate Tech's Four Valleys of Death*

FLCTD - A Bridge for Climate tech Innovators



* Rocky Mountain Institute

Way Forward

How can innovation be a part of a company/industry's agenda to decarbonize ?

- Clean tech / Climate tech innovations necessarily have to be provided validation support to make them investible
 - Innovation needs to be continued - *at Sectoral level or in Thematic areas* jointly by government + intermediaries + industries in a structured way
 - The climate tech solutions needed to achieve the necessary deep cuts in emissions are constantly being developed – *their deployment needs to be accelerated*
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THANK YOU

Sandeep Tandon

National Project Manager

Facility for Low Carbon Technology Deployment



www.low-carbon-innovation.org