অসম চৰকাৰ

সত্যমেৱ জয়তে
GOVERNMENT OF ASSAM

## Presentation at Symposium
## Imagining India @ 2047 through Innovation

## IMAGINING INDIA:
## A FIELD PERSPECTIVE

## THE DISTRICT TRANSITIONAL STORY
## &
## WHAT IT AUGURS FOR THE TRAJECTORY AHEAD

1. Pause and Rewind
2. What Is in Store in the 2020s? Opportunities for improving last mile governance
3. Ushering in Digital Governance - The Aspirational Districts Programme (ADP)
4. India at the Field level - The District Transformation Story: Goalpara and Kokrajhar
5. Promise of Digital for District Transformation – Some open Questions
6. Looking forward - Thinking about long term challenges for India @ 2047

*"The more you know about the past, the better prepared you are for the future." – Theodore Roosevelt*

To Imagine the next 30 years, we should perhaps pause and rewind across the last 30 years

*"In 1991, if people had tried to predict what India would be like in 2019, they would have gone hopelessly wrong, though they might have got some broad aggregate trends right. This is precisely what happens when large countries go through rapid growth and socio-economic change and churn.*

*- Shri Bibek Debroy, in the Foreword to "Towards a New India" by Shri V. Srinivas, IAS*
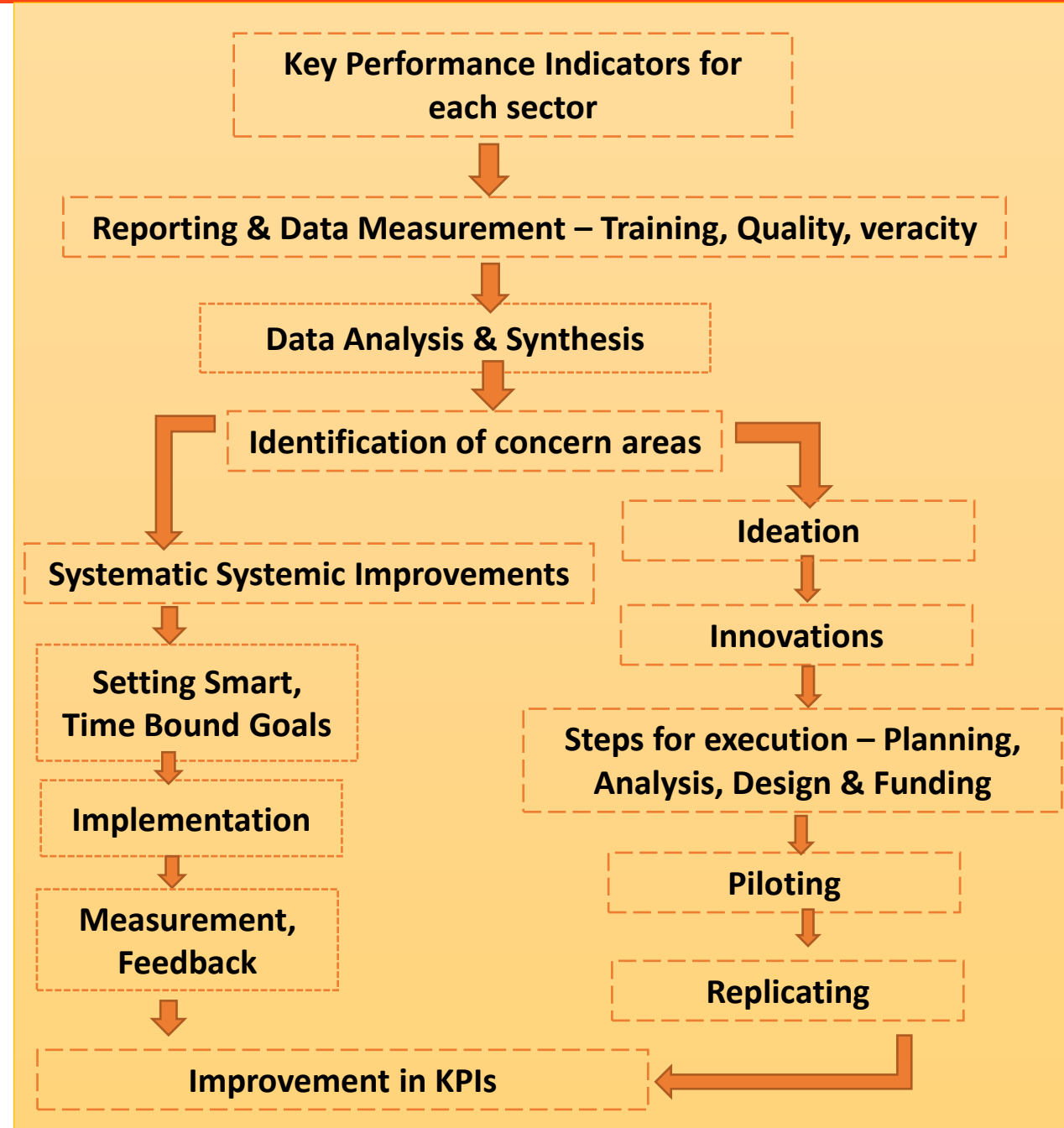
**A few broad trends of the 90s**

➢ Inception of e-governance: Inculcation of Data Analytics capabilities at the District and Block levels - envisaged as early as 1978 (Dantwala Committee report), subsequent efforts in the 1980s
➢ To Increasing shifts in governance: From paper-based business processes to digital
➢ Economic reforms ushered in the 1990s - progressively changed role of District Administration
➢ Increasing Policy shift to mitigate inter-regional inequality - Backward Regions Grant Fund, Rashtriya Sam Vikas Yojana, PM Rural Development Fellowship

➢ Strides in Financial Inclusion and improving access

➢ Large number of basic services likely to saturate even in the remote areas of the country

➢ Initiatives like PM Gati Shakti, Swamitva, National Digital Health Mission, upcoming National Digital Education Architecture, newly drafted National Data Accessibility Policy - possibilities for collaboration between Government, Research and private sector - possibilities for collaboration between Government, Research and private sector - role of Start-ups

➢ Taking Advanced analytics & other technology-based solutions to the grassroots will improve service delivery in rural areas

➢ Digitalised Metrics in Government Service Delivery

*Ushering in Data Driven Governance*
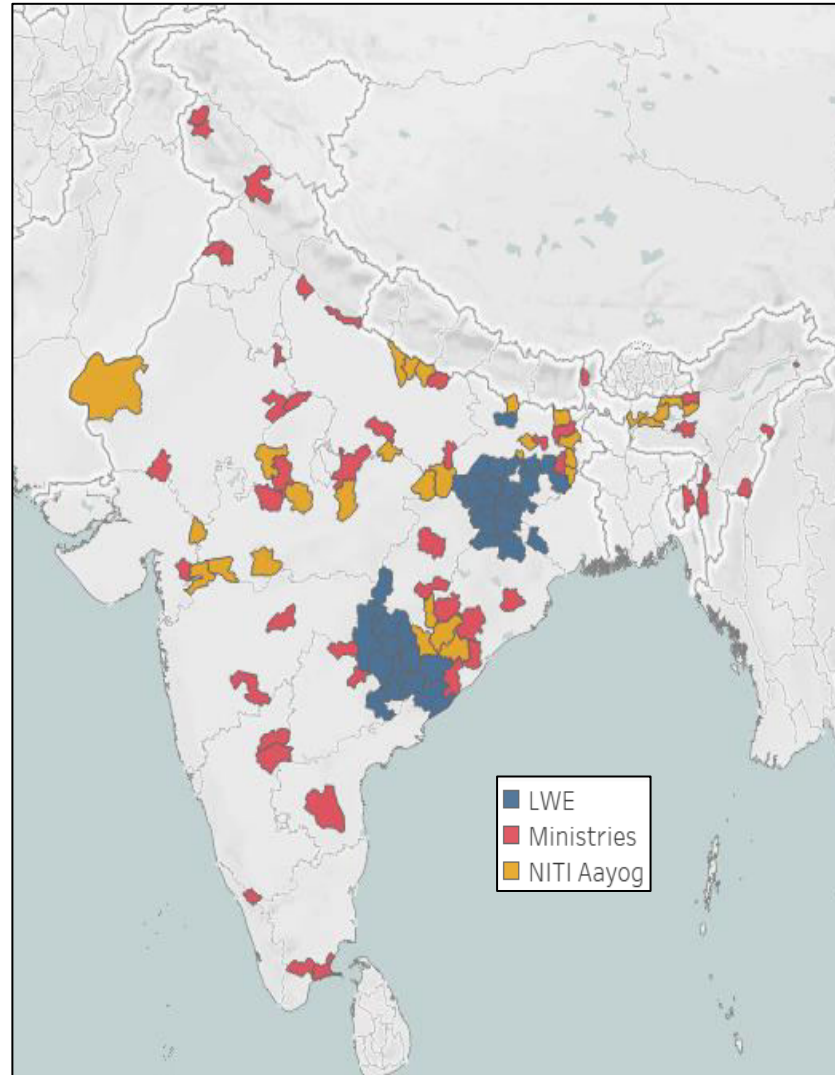
# India's
# Aspirational District Programme

Key Performance Indicators for each sector

↓

Reporting & Data Measurement – Training, Quality, veracity

↓

Data Analysis & Synthesis

↓

Identification of concern areas

Systematic Systemic Improvements

↓

Setting Smart, Time Bound Goals

↓

Implementation

↓

Measurement, Feedback

↓

Ideation

↓

Innovations

↓

Steps for execution – Planning, Analysis, Design & Funding

↓

Piloting

↓

Replicating

Improvement in KPIs

# Programme was launched in January 2018



**112** underdeveloped districts were identified as **"Aspirational Districts"**

**Launched by the Hon'ble Prime Minister in January 2018**

**Many Districts are reaching saturation point in critical indicators – Impact of a Digital, Data Driven regime**

Legend:
- LWE
- Ministries
- NITI Aayog

**Improved Impact of Govt spending**

- One of the largest governance reform programmes globally based on digital interventions: 275 mn - 17% of India's population
- ADP population = Population (France + Germany)
- In select indicators, Aspirational Districts are surpassing respective state or even national averages, reaching best in class figures
- NFHS-5 : ADP districts show significant improvement in indicators related to ANC registrations, institutional deliveries.

*"ADP applies innovative techniques…. the 3C principle and a well-designed system of incentives for good performance….*

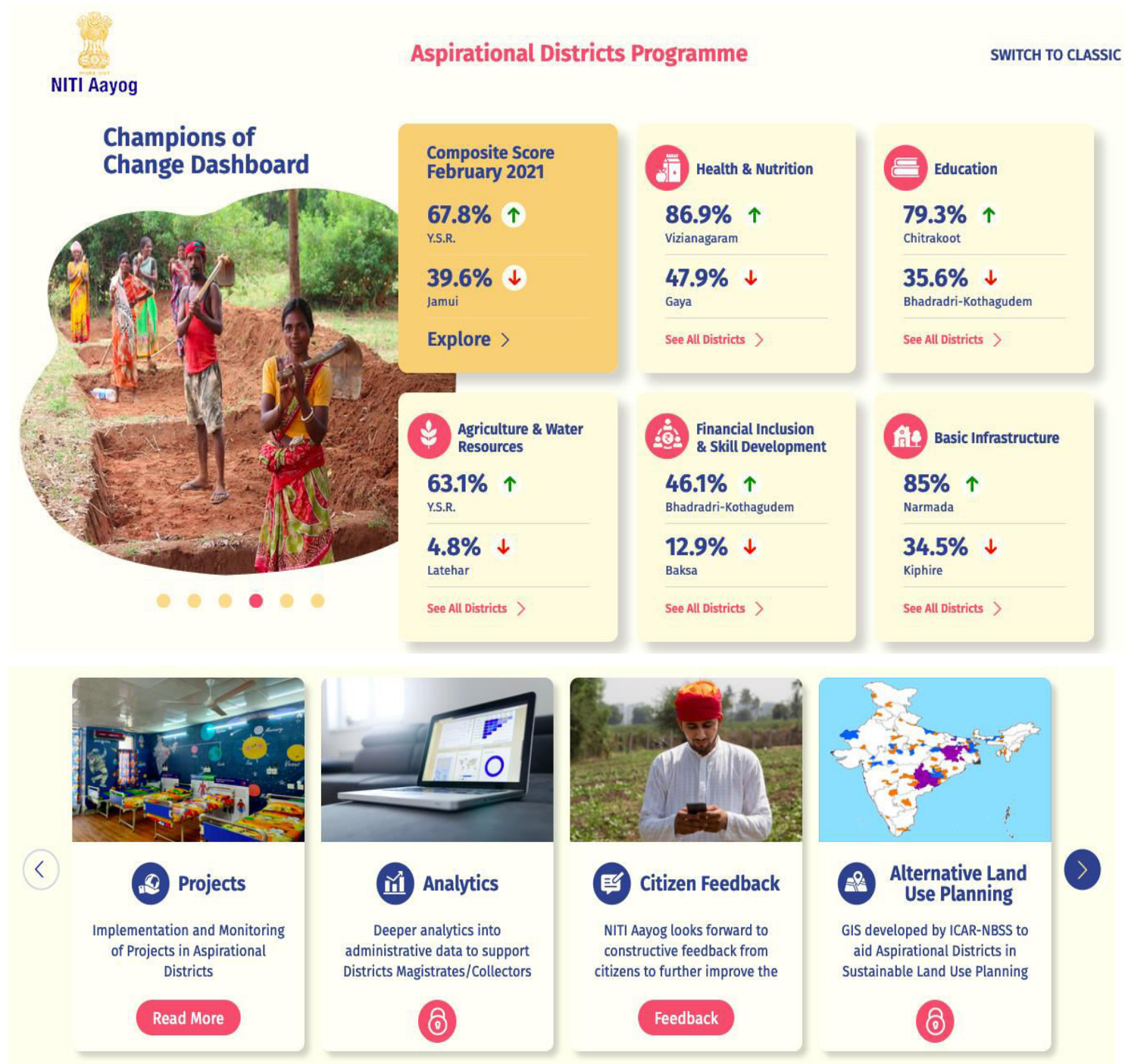*It merits replication in other parts of the developing world." - UNDP*
*ADP – An Appraisal*

*Focused at district level and instituted by states, the programme hinges on the strengths of local governments. It achieves this in big part through e-monitoring the real-time data.*
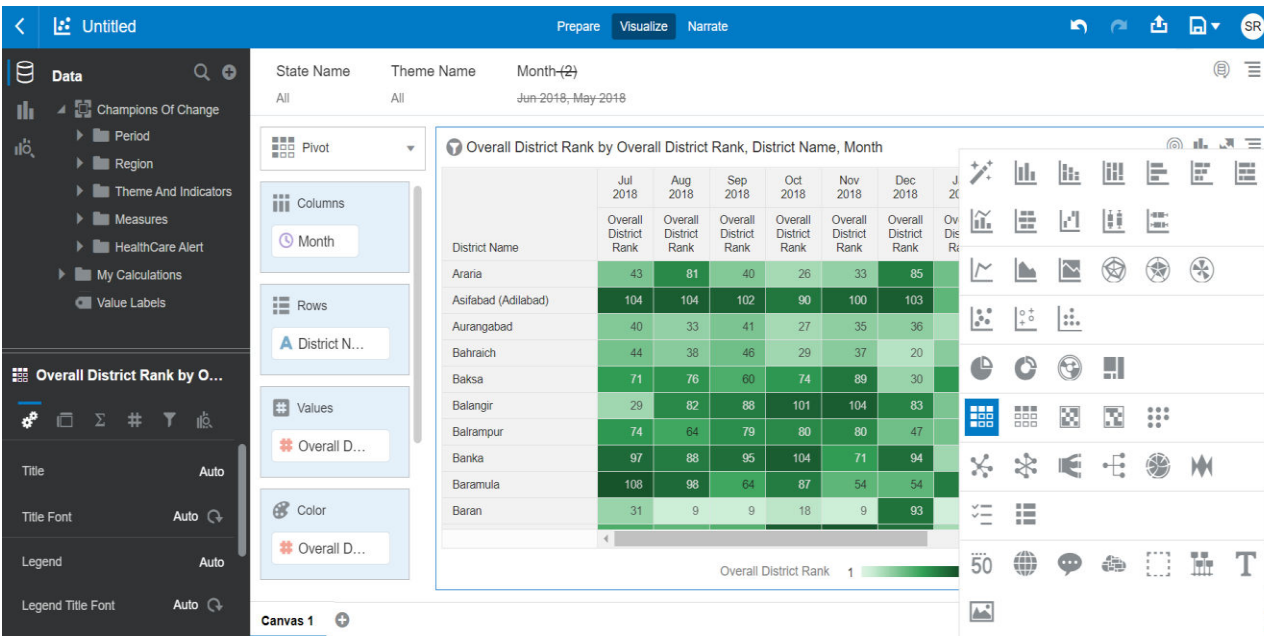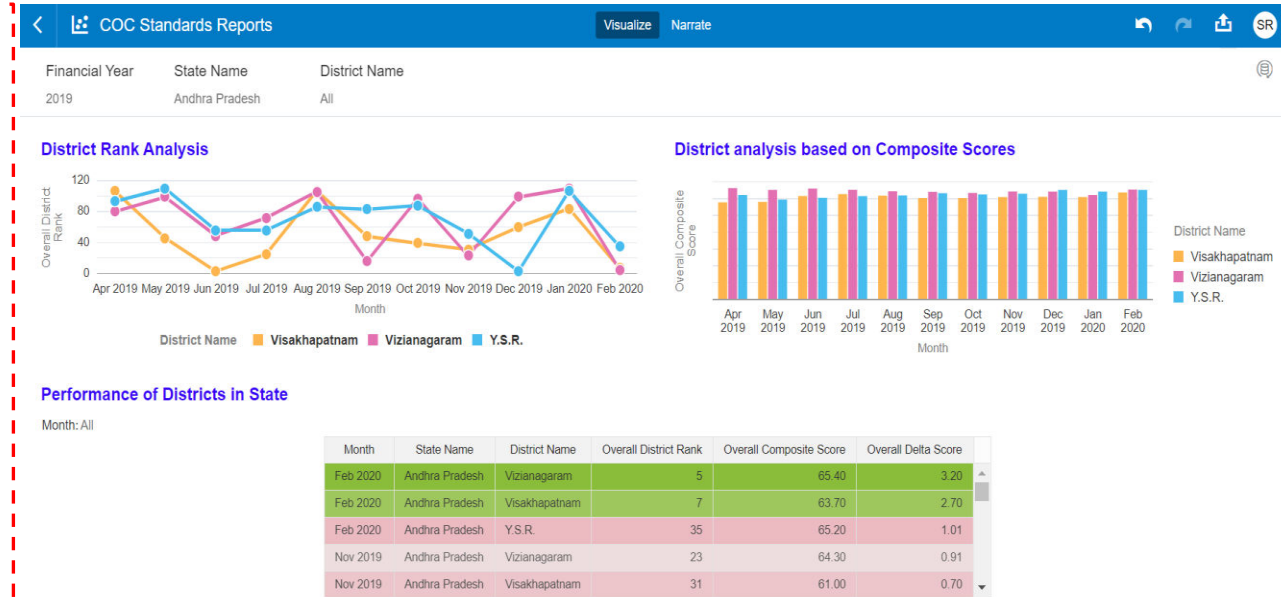- **Renata Dessallien**, UN Resident Coordinator in India

# Dynamic Dashboard for robust monitoring

✔ Platform empowers District Collectors for data-driven governance & evidence-based policy formulation

✔ Data driven monitoring of49 KPIs, 81 Data points covering most field level services: Health and Nutrition, Education, Basic Infrastructure, Agriculture and Water Resources, Financial Inclusion and Skill Development

✔ No additional hardware, software & internet required

✔ Block & Gram Panchayat Level Indicator Analysis made simple & user-friendly

# Self-Service Analytics Tools for District Officials

- Districts can now analyze their own performance across themes and indicators

- Districts can compare their performance with other districts in the State or the best among all Aspirational Districts

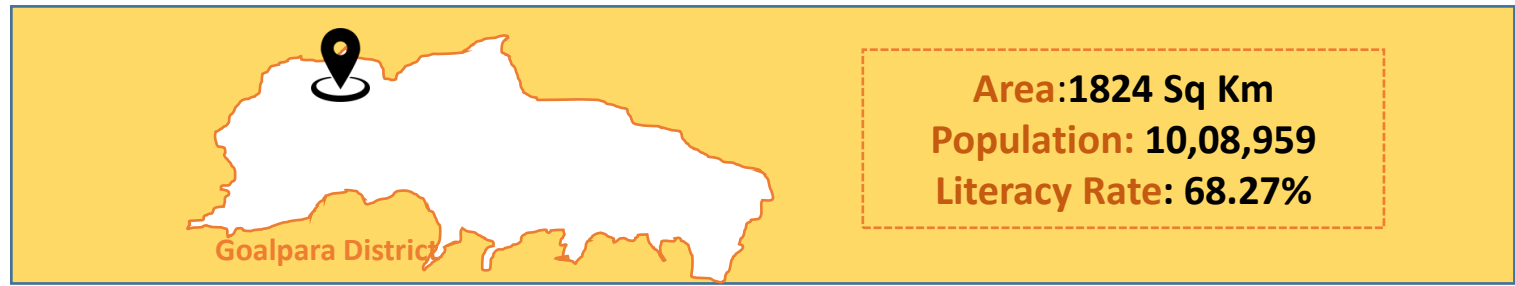- Districts have been trained to use this tool



- Districts can triangulate their analysis with other data sources such as NHFS, Census and 3rd party survey data

- Districts can upload and analyze their block level or gram panchayat level data as well

http://championsofchange.gov.in/

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# HOW COACTION PRODUCED SYNERGISTIC OUTCOMES AT THE FIELD LEVEL

## Stories from Goalpara and Kokrajhar

# DEMOGRAPHY & CHALLENGES

**Goalpara District**

**Area:** 1824 Sq Km
**Population:** 10,08,959
**Literacy Rate:** 68.27%

Formidable Access: terrain, topography, braided Brahmaputra

➢ Heterogenous population mix:
95% are tribes, minorities & backward
(Rabhas, Garos, Bodos, Hajongs, Nath Yogis, Koch Rajbonshis, Adivasis/Tea Tribes, Goria Moria, Deshi, Bengali, Nepalis, Bhatia muslim minorities and Assamese)

Volatile society; prone to conflicts along ethnic/religious/linguistic lines;

169 km sensitive border

Insurgency prone; Preferred entry point by insurgents from Bangladesh/illegal immigrants; extortion/threat to Govt. officials

Disaster prone – Floods, Flash Floods, Cyclones, Storms, Erosion, etc.

High rainfall and longer monsoons

Man-animal conflicts

High dependency on agriculture (90%), least industrialised

Frequent Bandh calls

NRC exercise

Low literacy rates; superstitious; Lack of receptivity to outsiders;

"One size fits all" approach impossible

Despite constraints, District saturated or crossed best in state figures in most of its KPIs

- 100% electrification; Shortlisted for PM Awards 2019 under SAUBHAGYA; Protection of life & property; better security; greater connect
- 100% GPs with Internet Connection
- Pucca Houses constructed increased from 9% (2018) to 100%; National Award under PMAY

## 🌳🌳🌳 Clean Goalpara, Green Goalpara

- Launched by Hon'ble CM in July 2018
- 15.6 Lakh saplings planted with protection measures
- Forest cover increased from 19.90% to 25%
- Swachhata as Jan Andolan

## 📍 Green Technologies In Road Construction

**Challenges:** NO RAW MATERIAL
**Intervention:** Introduction of Green Technologies in June, 2018 (Waste Plastic, ICBP, Geo-Grid, Cell Filled, Panel Concrete, Cold Mix)
**Advantages:** Disaster resilience, lower ecological footprints, flexibility to site conditions, livelihood opportunities to youth



### Road Length Constructed:

| | |
|---|---|
| 2000-2018 | 534 kms (@ 29.67 km/year) |
| 2018-2020 | **530 kms through use of Green Technologies** |
| 100% in KPIs – Construction of All-Weather Roads (49% in 2018) & Habitations covered by All Weather Roads (55% in 2018) | |



**SOURCING INPUTS LOCALLY - PLASTIC SHREDDER MACHINE**

*Conventional Method Bitumen Road (Above) & Adjacent Cell Filled Concrete Road (Below) – both submerged Flash Floods July, 2020*
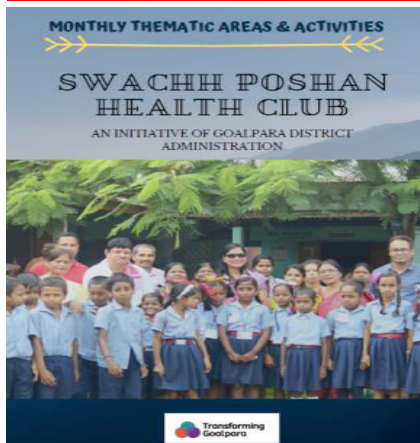


*Less Damage to Cell Filled Road*



ICBP Block Production Units set up by local youth; Youth employed as masons

- **First in state to use Waste Plastic in PMGSY; Replicated throughout state**

- **Shortlisted for PM Awards 2019**

- **Published in Best Practices by Niti Aayog**
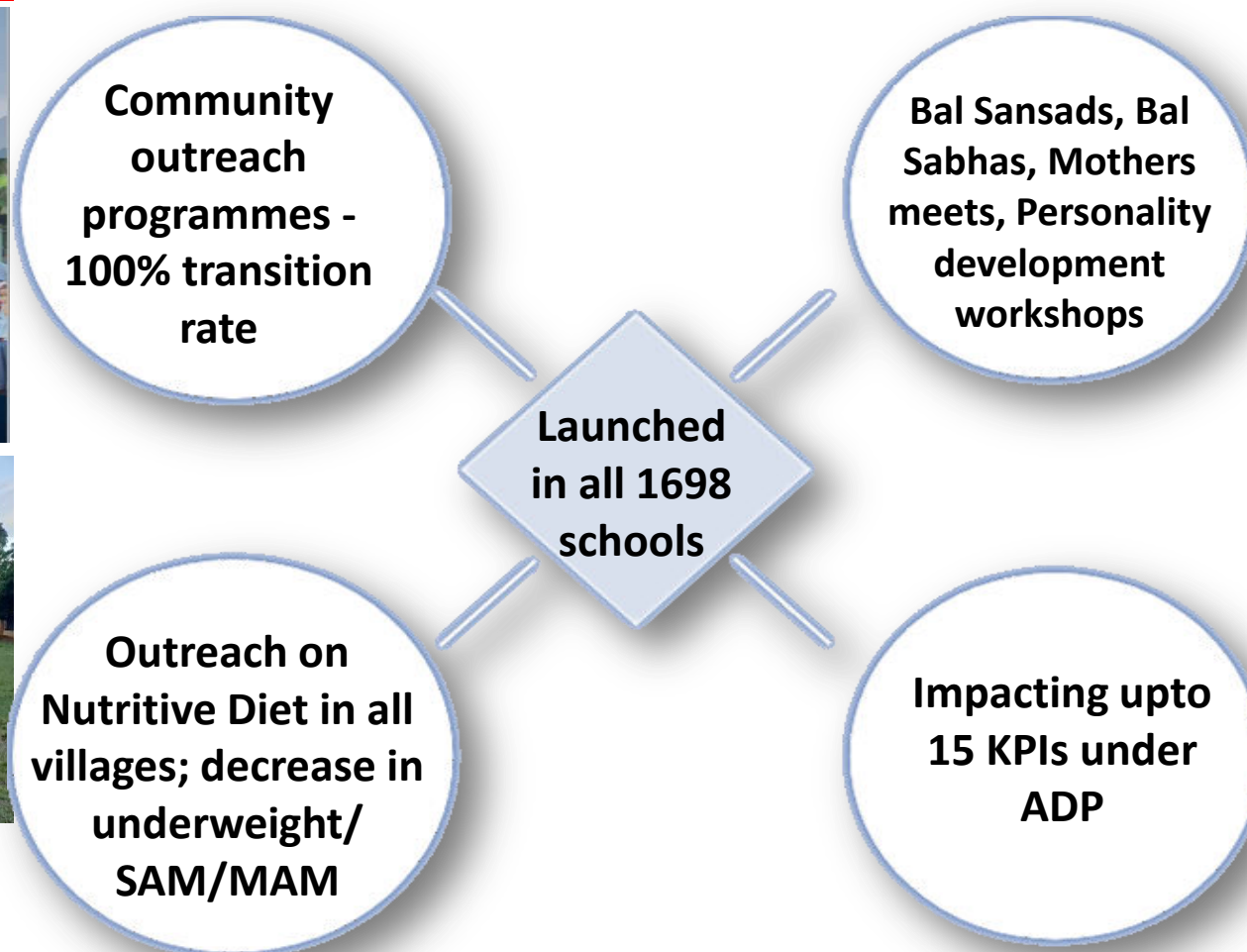
# POSHAN CLUBS

## Challenge

- Apathy toward community developmental targets

- Shortage of educators at schools, role models at home, lack of growth oriented peer activities

- Need to encourage children in co-curriculars for overall personality development, nurture their voices in their family and in the community.

- Children as key leaders & drivers for societal, attitudinal and behavioural changes.

## Intervention





## Outcomes

**Community outreach programmes - 100% transition rate**

**Bal Sansads, Bal Sabhas, Mothers meets, Personality development workshops**

**Launched in all 1698 schools**

**Outreach on Nutritive Diet in all villages; decrease in underweight/ SAM/MAM**

**Impacting upto 15 KPIs under ADP**



## Achievements

**Awarded Best Innovative Practice; Best Convergence by Government of Assam**

**Appreciated by MoWCD; Selected as Best Practice under Poshan Jan Andolan, approved for replication in all districts of Assam**

**SWACHH HEALTH POSHAN CLUB CALENDAR**

**OCTOBER**

**SWACCHATA ANDOLAN**
CLUBS WILL ORGANIZE -
- PLOGGING RUN FOR COMMUNITY - CLEANING.
- CLEANLINESS DRIVES
- PLASTIC FREE CAMPAIGNS
- AWARENESS SESSION ON NON-COMMUNICABLE DISEASE BY ANM & BCM

**NOVEMBER**

**REDUCE REUSE RECYCLE**
POSHAN CLUB WILL
- PINKATHON - POSHAN CLUB WILL ARRANGE AND EXECUTE GIRLS MARATHON IN SCHOOLS.
- PARTICIPATE IN GARBAGE DISPOSAL PRACTICES
- DEMONSTRATE SEGREGATION OF WASTE MATERIALS IN COMMUNITIES
- RECYCLE COLLECTED ITEMS TO MAKE DUSTBINS, FLOWER POTS, PAPER BAGS ETC
- SESSIONS ON CONSUMPTION OF VITAMIN A SYRUP AS WELL AS FOODS AND VEGETABLE BY ANM & BCM

**GO GREEN**
POSHAN CLUB WILL CARRY OUT
- PLANTATION DRIVE OF NUTRITIOUS MORINGA TREE IN SCHOOL CAMPUS.
- CAMPAIGN ON PLASTIC FREE SCHOOL CAMPUS - CREATION OF DUMPING ZONES. (STUDENT CAN COLLECT THE PLASTICS FROM VILLAGE AND SCHOOL AND DUMP IT IN DUMPING ZONE)
- ESSAY/DRAWING COMPETITION - CLEAN GOALPARA, GREEN GOALPARA
- FOOD QUIZ - ON THE EVE OF CHRISTMAS POSHAN CLUBS IN SCHOOLS WILL CELEBRATE BY ARRANGING QUIZ COMPETITION ON NUTRITIOUS FOODS, INDIGENOUS VEGETABLES.

**DECEMBER**

**JANUARY**

**UTSAV VIDYARAMBH**
POSHAN CLUB MEMBERS WILL
- IDENTIFY SCHOOL DROPOUTS FROM THEIR SCHOOLS
- PERFORM STREET PLAYS ON ENROLMENT
- RECIPE DEMONSTRATION TO THE PARENTS USING LESS OIL & SPICES FOCUSING MORE ON HEALTHY DISHES DURING MAGH BIHU.
- INTRODUCING BRAIN GAMES LIKE SOLVING RIDDLES, CHESS, SUDOKU, CROSSWORDS AND PUZZLES DURING THE SPORTS WEEK.

**Activity Calendar developed to sync activities with events & programmes**
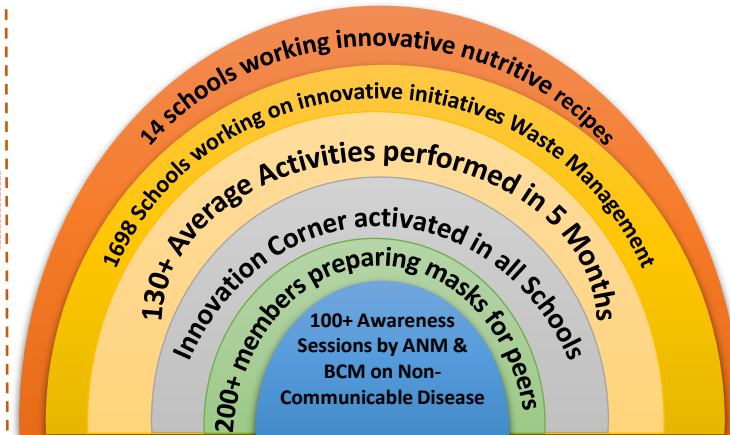
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3 Tier Reporting; Verification by Analytics

Analytics Centre at DC Office for verification

Data Management Repository For Data Tracking

- Evaluated and incentivized Best Performance
- Every month: Trip to DC office, opportunity to interact with DC and senior officials on 3rd Wednesday
- Every Quarter: One Educational trip sponsored
- Annual: DC's running Cup of excellence on 15 Aug
- Best Performers also felicitated on local, social media

**CLUBS ARE A MASSIVE EXERCISE OF CONVERGENCE, DRIVEN BY A DIGITAL DATA & EVIDENCE BASED REGIMEN**

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14 schools working innovative nutritive recipes

1698 Schools working on innovative initiatives Waste Management

130+ Average Activities performed in 5 Months

Innovation Corner activated in all Schools

200+ members preparing masks for peers

100+ Awareness Sessions by ANM & BCM on Non-Communicable Disease



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## Activities During the Pandemic and Disasters

- **SEE (Social Emotional Ethical) Learning**
- **Operationalizing small groups of students in *Sotaals* to ensure learning continues**

- **"Care Kits" to frontline COVID warriors**
- **Online classes on self defence**

## The Way Ahead

- **Building progressive, strong & resilient youth leaders**
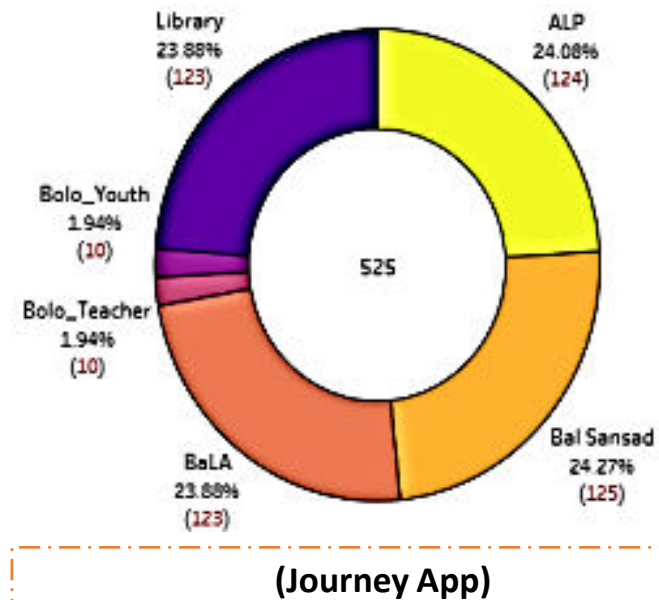- **Incorporation into Programme Inputs**

**100+ Poshan Clubs mobilized volunteers in 50 Localities To improve learning outcomes of 8000 students by 15%**

## Challenge

Low learning Outcomes, High Dropout, Cascading aggravation

## Intervention

- Mobilising Volunteers by Poshan Clubs
- Orientation workshops
- Rabha Community as Pilot

## Outcome

- Learning outcomes 15% ↑
- Corps of volunteers for outreach activities

| Skills | Baseline | Endline |
|---|---|---|
| Paragraph | 15% | 26% |
| Story | 50.4% | 74.6% |
| Division | 4.5% | 7.9% |
| Subtraction | 29% | 44% |

Baseline & Endline Assessment by Piramal Foundation with Assessment Tracker App

## Challenge

- Lack of libraries
- Scarcity of books
- Old dilapidated classrooms, lack of Teaching Learning Materials

(Journey App)

## Intervention

- 127 Cluster heads, teachers of 200+ Schools oriented
- Book Donation drives, Hanging Libraries, BaLAnisation drives

## Outcome

- Improved learning ecosystem in 600 schools (Journey App)
- Learning levels improved (on ASER Testing Tool by Assessment Tracker App)
- BaLAnization by SSA Assam based on Goalpara inputs

Library 23.88% (123)
ALP 24.08% (124)
Bolo_Youth 1.94% (10)
Bolo_Teacher 1.94% (10)
525
BaLA 23.88% (123)
Bal Sansad 24.27% (125)

**(Journey App)**

## 6895 Illiterate women in Rangjuli Pilot Block identified and made literate

### Challenge

**Low Female Literacy rate** (15+)

### Intervention

- Dovetailing resources – SSA, Adult Education, PRIs, ZP, PHE, ASRLMS, Health
- 690 community youth volunteers as Instructors.
- Daily small group sessions (10:1)
- Home visit support
- Minute Supervision
- All round handholding

### Outcome

- 100% Beneficiaries able to read/write/ sign
- Study groups continue
- Replication



*Self reliance through literacy among illiterate women in Goalpara*

**Corps of 690 youth educators, used in other outreach activities**

**22000 Households in 9 Gram Panchayats surveyed**

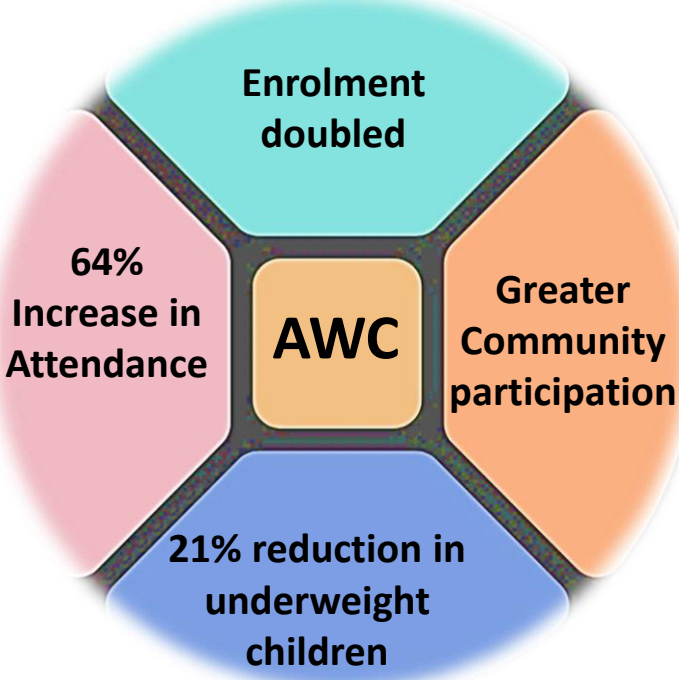**Handholding by ASRLM - Atmanirbhar Bharat**

**All 6895 made literate, 4623 got Grade A**

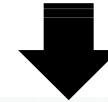**Health Camps, Insurance, Sanitation Support**

- Evaluation by Adult Education Supervisors taking the key assessment parameters of the Saakshar Bharat Mission – Center based Approach

- Beyond Vidya to Shakti – Better Livelihood options, income generation

# MODEL ANGANWADI CENTRE

## Outcomes



- Enrolment doubled
- 64% Increase in Attendance
- AWC
- Greater Community participation
- 21% reduction in underweight children

Early childhood Skills Developed
(National Curriculum Framework 2005)



## Challenges

Irregular attendance, Lack of community interest, High SAM/MAM
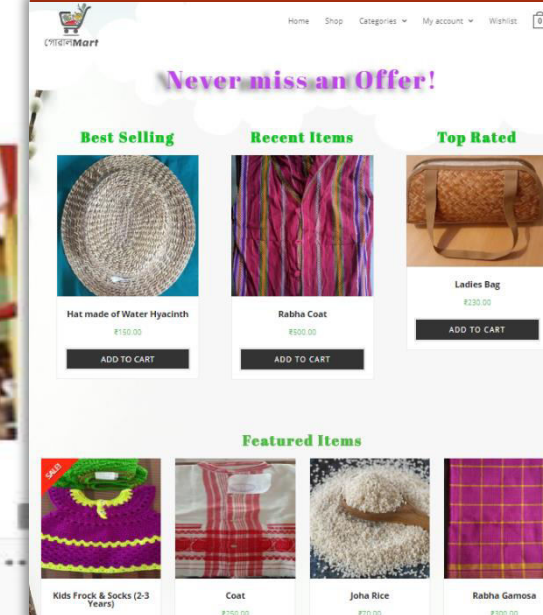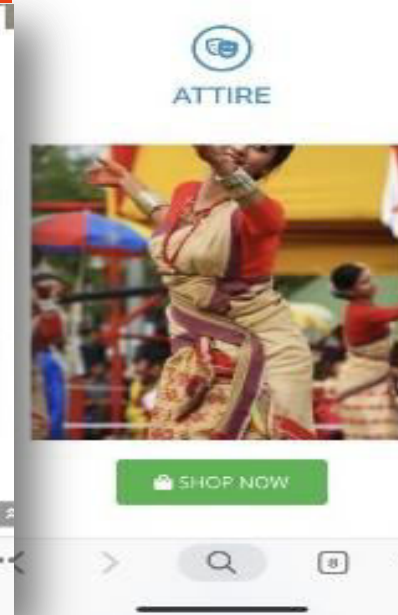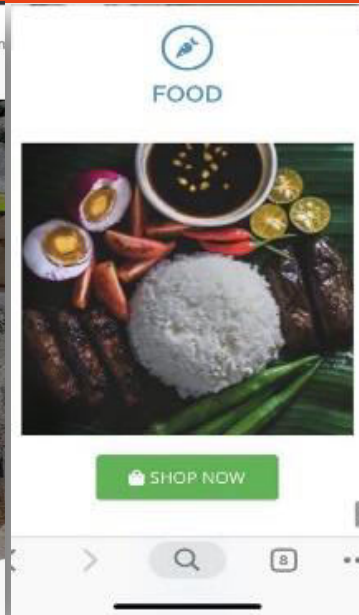
## INTERVENTIONS

- Child friendly facilities, multi modal teaching, BaLA, solarization & electrification, RWH/ground water recharge, nutri garden, vermicomposting.

## WAY AHEAD

- Replications
- "Model AWC lite"

- G2C portal "*GOALMART*" for local produce & products; Developed in-house
- Wider market reach, better pricing options, eliminates middle men, encourages innovation, overcoming constraints of access

**GOALMART: Cited as one of the Best Practices in the UNDP Appraisal Report of the Aspirational Districts Programme**
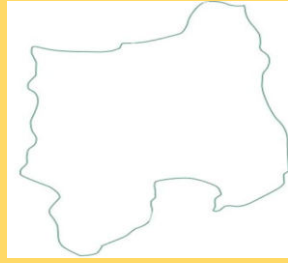
✓ **Rank 1 in FI & Skill (Cumulative Since Inception)**
✓ **Shortlisted for PMA 2020**

**Under PLASTIC FREE GOALPARA**
- **Divyaang trained on plastic alternatives**
- **Upstream/downstream handholding & marketing support**
- **Producing masks, hairnets during pandemic**

**Kokrajhar**

Area: **3169 Sq Km**
Population: **8,87,142**
Literacy Rate: **66.63%**

Problematic Connectivity and Reach

Heterogenous population mix:
Tribals, Religious & Ethnic Minorities

Volatile society; prone to conflicts along ethnic/religious/linguistic lines

Declared Disturbed Area

Deep Seated history of Insurgency and Violence

Headquarters of Sixth Schedule Bodoland Territorial Region

Disaster prone – Floods, Cyclones, Storms, Erosion, etc.

Flashy rivers

50% forested – encroachment in Animal habitat

High dependency on agriculture (90%), least industrialised

Long & Porous International & Inter state border

Entry Point to Assam from Chicken's Neck

Low literacy rates; Lack of receptivity to outsiders;

# ATMANIBHAR THROUGH ODOP – THE KOKRAJHAR MUSHROOM STORY

## CONVERGENCES WITH SCHEMES/DEPTS/GOVT DEPTS

**National Rural Livelihood Mission/National Urban Livelihood Mission**

**Midday Meal Scheme**

**Poshan Abhiyaan**

**Mushroom : Super Food, Super ODOP**

**Khangnai/Jwthwn/Onaini Nerswn**

**Khelo India**

**Resource points**

> - Biotech Dept, Bodoland University
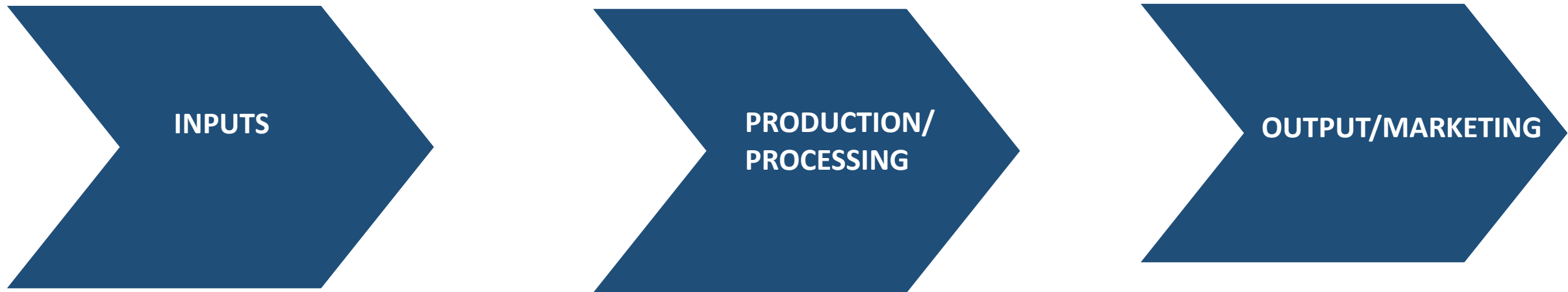> - CSR/Crowdsourcing
> - Poshan Clubs

## ZERO WASTE MODEL

> - Training mushroom producers – Agri/Nutrigarden waste; Waste as biofertilizer, Cattle feed
> - Vermicomposting/waste management – showcased at Nutrigarden/ Anganwadi Centres
> - Training Anganwadi Workers/Teachers as Community Leaders

## CONCERTED FOCUS ON TECHNOLOGY EXTENSION, CAPACITY BUILDING, BRANDING, EXPORT

> - Training & consultancy support to 45+ states & countries
> - 24 Hour Mushroom helpline
> - Training Community influencers
> - Dialogue with neighbouring states & countries – USP like fully organic produce; high grade nutrients uniquely fortified products
> - Nutraceutical Products as a source of livelihood generation
> - Convergences with Startup India, Standup India

## DIGITAL GOVERNANCE IDENTIFIES POINTS OF INTERVENTION

KOKRAJHAR

**INPUTS**

**PRODUCTION/ PROCESSING**

**OUTPUT/MARKETING**

Problem solving/Handholding by Administration & agencies at all points of the Value Chain

From Problem Solving At Each Stage, Dedicated Upstream & Downstream Linkages, Improving Market Accessibility, Innovative Convergences With Govt Schemes/Departments/Stakeholders, CSR/Crowdsourcing – *Training to Trading*

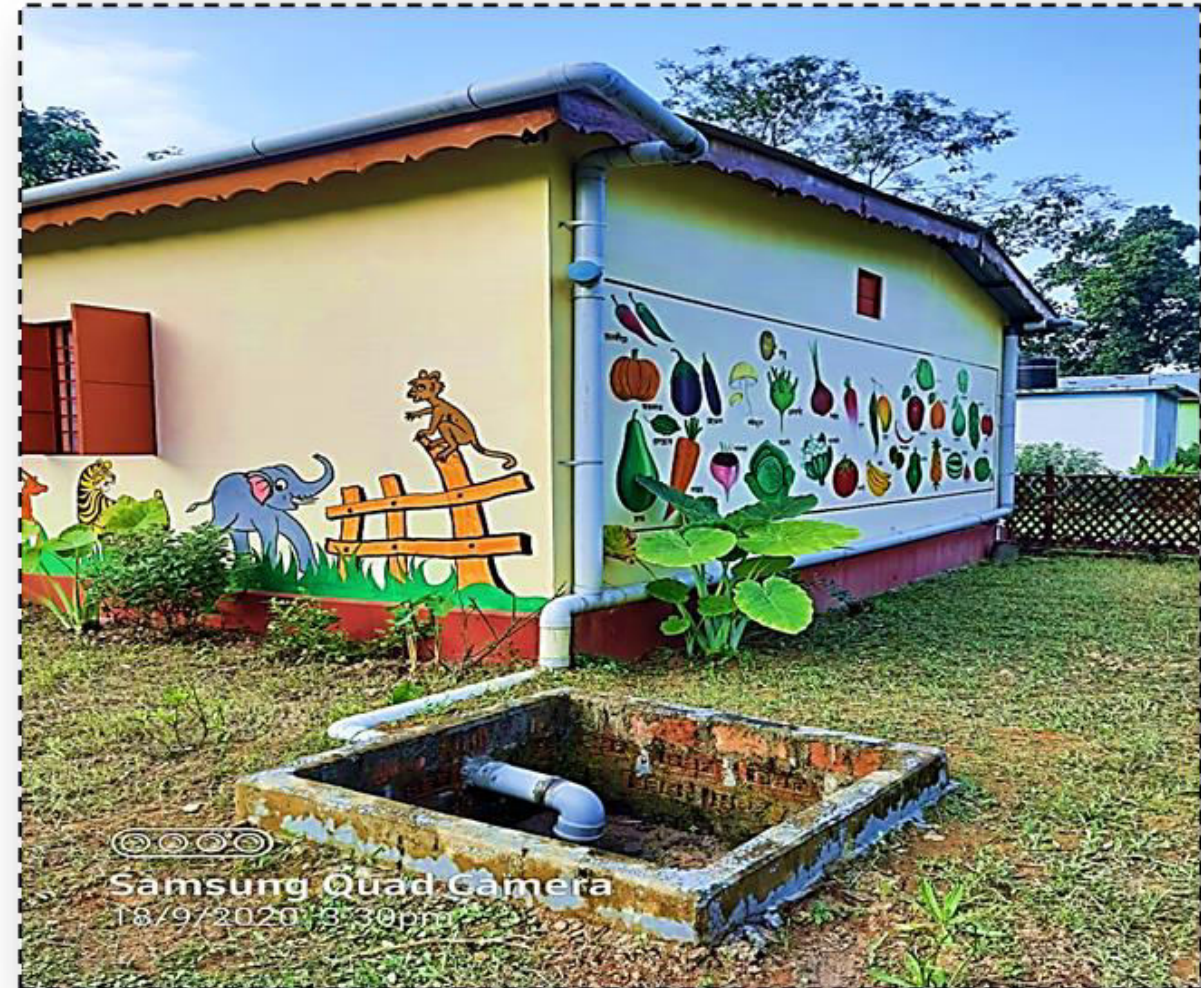**Multi Agency Efforts Have Converted Kokrajhar Into A Mushroom Hub**

**Dovetailing & Digital Governance For Water Management At Kokrajhar:**

**KEY MANTRA: Water Management Is The Responsibility Of Every Department**

- Identification, geo-tagging of water bodies
- District Water Conservation Plans: Systemic interventions that last
- Dovetailing:
  - Agri, Soil Conservation, SOPD, Works Dept, Irrigation, MGNREGA, SIPRD, RSETI, DDUGKY, Fisheries, Education, Social Welfare

## IMPACT

- Reduction in Irrigation Gap: 36.63%
- Sustainable water management structures
- Multi cropping; livelihood generation; inclusiveness in workforce
- Reducing Man-Animal Conflict

*"There are decades where nothing happens, and there are weeks where decades happen."*
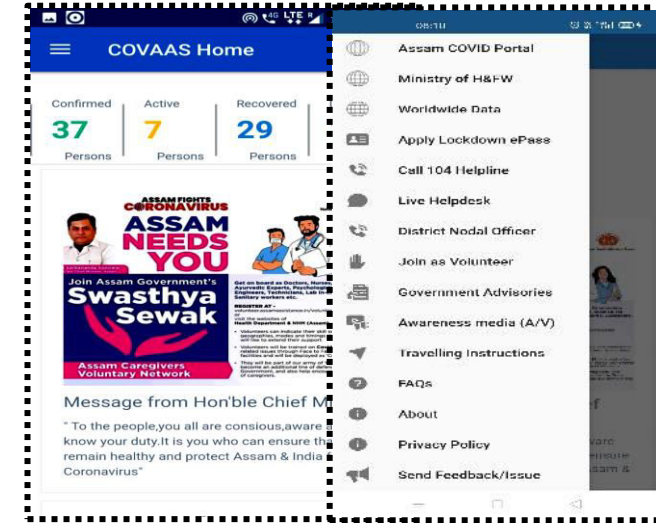– How COVID short-circuited the decades for us



**More focus on Insurance coverage:** PMJJBY coverage through CSR

**DIGITAL LEARNING**
- **Modular videos**
- **Teacher Training on Digital Pedagogy, Online Safety & Psycho Social Counselling**
- **Mission Tarang (Learning from Home): 15000+ students**
- **Knowledge Kits with Take home Midday Meals (24000+ students)**
- **#GoalparaTechCares drive**
- **Stress Management Counselling to students**

**Forced us even at District levels to CREATE RELEVANT TECHNOLOGIES: COVAAS App**

**Home Delivery Service**
A Goalpara District Administration Initiative
For Home Delivery of Groceries/Essential Commodities during the 21-days lockdown period
Contact/WhatsApp on the following numbers.

**VISHAL MEGA MART**
Call/WhatsApp (9AM-5PM)
91016-80641  70023-54497
70027-39640  70024-51020
70028-08750  98542-27005

**City hub**
Call/Whatsapp (9AM-5PM)
97069-61978  84866-27569
86388-64262  91012-60299
60015-05204

**Amir Store**
Call/WhatsApp (10AM-3PM)
60026-45107
60032-63557

**Iman Store**
Call/WhatsApp (10AM-3PM)
70027-31039
91010-86766

#StayHomeStaySafe  #CoronaFreeIndia

**Creation of new era supply chains addressed two pronged challenges of Supply & Demand**

**Technology adoption in an incredibly compressed time – from high touch, analog interactions to the opposite**

**HAVE WE BECOME DIGITAL CREATURES? HOW MUCH OF IT IS HERE TO STAY?**

## Infrastructure Snapshot App

An Android based convergence app to overcome problem of supervision, monitoring, grievance redressal due to logistical and demographical constraints
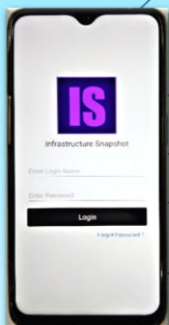
Serves as a cross platform for reporting of issues and monitoring tool -by public, third parties

Swift grievance redressal; brings participatory governance at the doorstep with use of ICT

Piblic Feedback helps monitor government schemes and departments.

Creation of verified Database to identify & prioritise focal areas of Governance & Administration
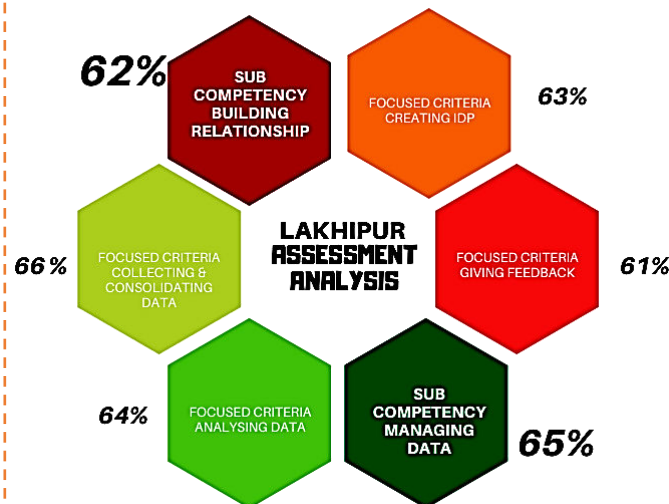
Instant alert mechanism for disaster, domestic violence, moral policing etc

Mandatory geo-tagging and Photograph for authentication
Version 1 released in December 2018
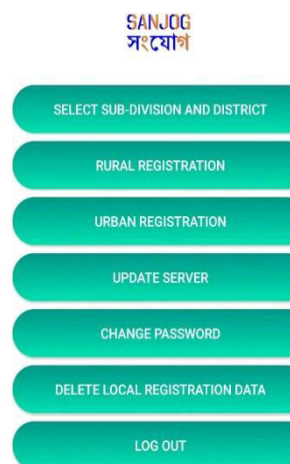Version 2 released in Sept 2020 – already reached 3000+ downloads

***Published in Best Practices (Vol 1) by Niti Aayog***

**Education:**
Smart Classrooms,
Apps: Assessment Tracker,
Samiksha, Unnati, Pratham Digital (PraDigi)

Pic (R) - Analysis of competencies by Samiksha App

### LAKHIPUR ASSESSMENT ANALYSIS

- 62% — SUB COMPETENCY BUILDING RELATIONSHIP
- 63% — FOCUSED CRITERIA CREATING IDP
- 61% — FOCUSED CRITERIA GIVING FEEDBACK
- 65% — SUB COMPETENCY MANAGING DATA
- 64% — FOCUSED CRITERIA ANALYSING DATA
- 66% — FOCUSED CRITERIA COLLECTING & CONSOLIDATING DATA

**Health:** Refurbished boat ambulances**,** Digital Heamoglobinometers (R), Comcare app

**Agriculture:**
Fertigation; Systems of Rice Intensification (SRI) in summer paddy,
Kshyamata portal,
Web based training & support

### SANJOG সংযোগ

- SELECT SUB-DIVISION AND DISTRICT
- RURAL REGISTRATION
- URBAN REGISTRATION
- UPDATE SERVER
- CHANGE PASSWORD
- DELETE LOCAL REGISTRATION DATA
- LOG OUT

**Basic Infrastructure:**
Green Technologies, SANJOG app; e-Suvidha App

➢ Digital Technologies at District & Block levels. The next frontier of saturation?
➢ Aspirational Blocks Programme by Hon FM
➢ Opportunity for partnerships amongst Entrepreneurs, Research scholars partner & government agencies

**>> Possible Areas of Intervention:**
- Indian data systems continue to remain data-entry or reporting based and not transactional. **Innovative use of technology required to decrease the data entry burden of frontline staff** so that they can focus more on service delivery.
- Computer vision algorithms say for parsing handwritten ASHA worker records?
- In Nutrition, mobile app-based growth monitoring?
- How can technology-based start ups collaborate with FPOs/women SHGs?
- Developing open technology platforms for OJL/OJT for frontline & block level staff - Can open technology platforms help develop capacity building at scale?
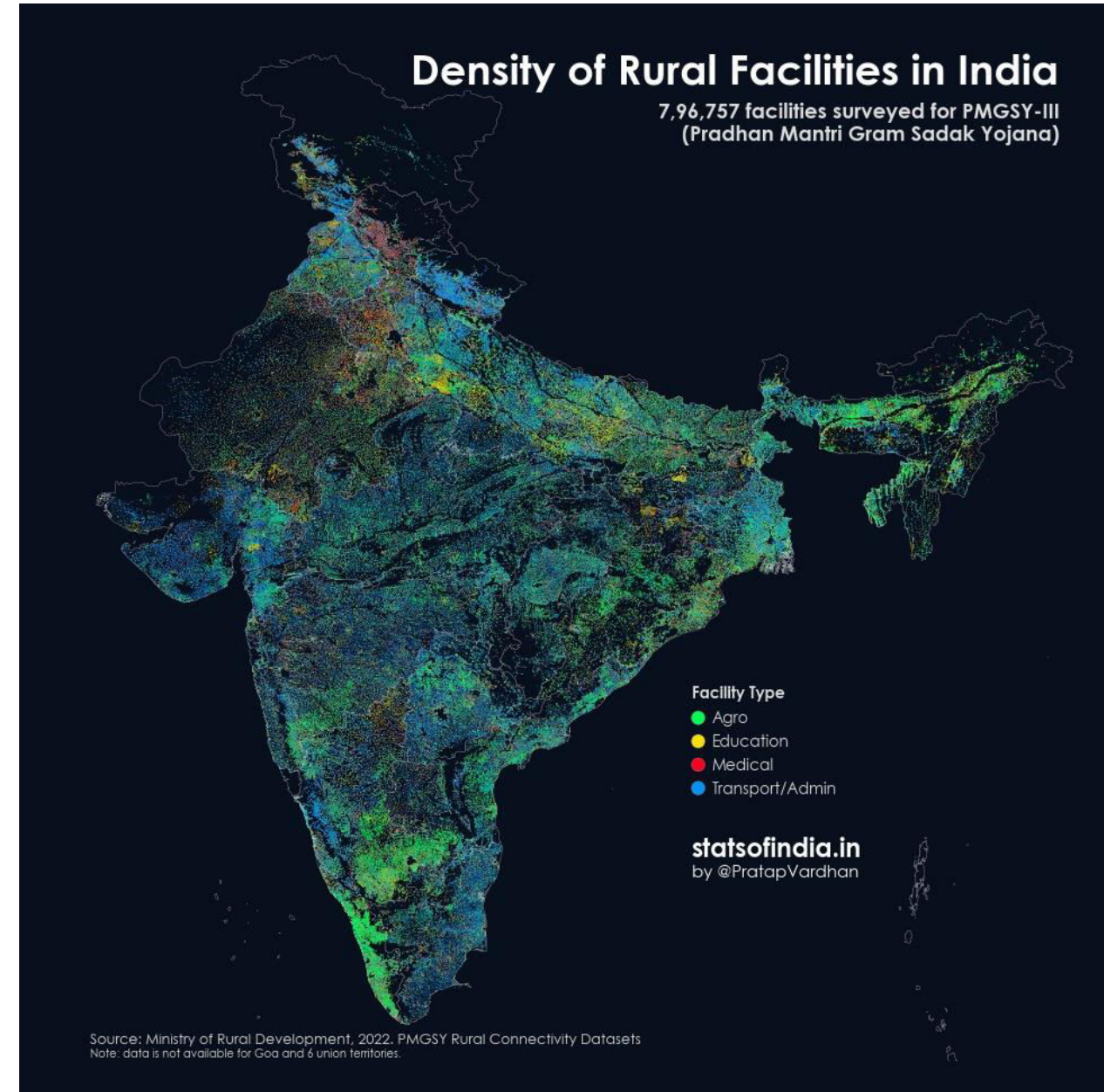
## >> Possible Areas of Intervention:

Stimulating the Rural Economy

- Open sourcing datasets powering the Pradhan Mantri Gram Sadak Yojana - Creative partnerships amongst academics, entrepreneurs and public administration to utilize available datasets for planning and implementing existing programs as well as developing new initiatives to facilitate livelihood generation in the rural hinterlands

## Edutech:

- Accurate dropout prediction a crucial open area for technology intervention
- Reliable edtech initiatives which do not exacerbate existing digital inequality for improving learning outcomes cost-effectively in the backdrop of the Pandemic
- Use of open technology platforms for teacher capacity building



Density of Rural Facilities in India
7,96,757 facilities surveyed for PMGSY-III
(Pradhan Mantri Gram Sadak Yojana)

Facility Type
- Agro
- Education
- Medical
- Transport/Admin

statsofindia.in
by @PratapVardhan

Source: Ministry of Rural Development, 2022. PMGSY Rural Connectivity Datasets
Note: data is not available for Goa and 6 union territories.

➢ India is slated to face major anthropogenic climate change adaptions challenges

➢ Extreme weather events - Technological support at the local government level is of paramount importance

➢ Technology has a major major role to play in developing early warning systems - reliable micro-climate predictions especially in flood and drought prone areas

➢ India's transition out of non-renewable energy sources to renewable energy sources will require a major workforce transition from one sets of skills to newer sets of skills for the renewables world that we plan to usher in

*Photos from NYT Report 2019

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**THANK YOU**