Government of India

Ministry of Agriculture and Farmers Welfare

Department of Animal Husbandry, Dairying and Fisheries

NPBB and related CSS: Target & Budget provisions *vis a vis* current implementation status

Date: 23rd February 2017
Venue: Anand, Gujarat

DADF SCHEMES

❖ **NATIONAL PROGRAMME FOR BOVINE BREEDING & DAIRY DEVELOPMENT (NPBBDD)**

    o NATIONAL PROGRAMME FOR BOVINE BREEDING **(NPBB)**
    o RASHTRIYA GOKUL MISSION **(RGM)**

❖ **NATIONAL KAMDHENU BREEDING CENTRE (NKBC)**

❖ **NATIONAL MISSION ON BOVINE PRODUCTIVITY (NMBP)**

National Programme for Bovine Breeding (NPBB) & Rashtriya Gokul Mission (RGM)

NPBB Components

1. Extension of field AI network
2. Strengthening of existing AI centres
3. Monitoring of AI Program
4. Development & Conservation of Indigenous Breeds
5. Managerial Grants to SIA and Grants linked to Activities
6. Manpower Development
7. Strengthening LN Transport and Distribution system
8. Procurement of Bulls for NS & AI
9. Control of infertility & reduction of intercalving period

Monitoring of AI Program

Key Performance Indicator (As per approved Project Plan)	EOP Target
Identification of females covered through AI	25548000
Identification of AI born calves	10409000
Tagging Applicators	72928
Data entry (No. of Transactions)	10051100
Computerization for implementation of INAPH (Data centers)	11685
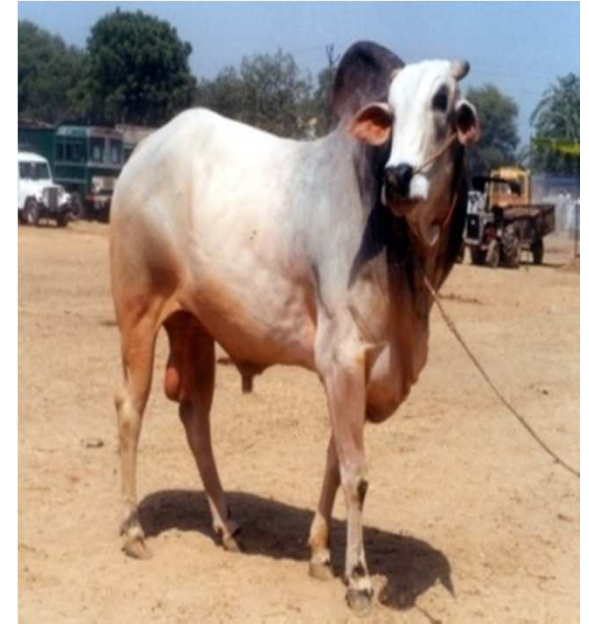
RASHTRIYA GOKUL MISSION

PRESENT STATUS

- 299.9 MILLION BOVINES
  - 191 MILLION CATTLE
  - 108.7 Million Buffaloes
  - 0.30 Million Mithuns
  - 0.1 Million Yak
  - 151.17 million indigenous Cattle (83% of Total Cattle Population)
- INDIGENOUS GENETIC RESOURCES
  - 40 breeds of cattle
  - 13 breeds of buffalo

- MILK PRODUCTION & PRODUCTIVITY
  - 155.49 million tonnes (largest milk producer)
  - 1647 kg per year (world average 2233 kg)
    - av pro of indi 927kg/year
  - 29.48million tonnes contributed by indigenous cattle (20.14% of total milk)

IMPORTANCE OF INDIGENOUS BREEDS

- QUALITIES OF INDIGENOUS BREEDS
  - heat tolerance
  - resistance to diseases, tick resistant
  - withstands extreme climatic conditions
  - acclimatised to breeding tract
- MILK
  - high fat & protein content
  - high SNF content
  - high proportion of A2 allele
- ISSUES
  - Low Productivity -Non descript- 927 kg /year
    Descript -1500-2500 kg/year
  - small population size
  - small herd size (2-3/farmer)
- Potential to enhance the productivity of indigenous breeds through professional farm management and superior nutrition is immense.

RASHTRIYA GOKUL MISSION

The Rashtriya Gokul Mission aims to conserve and develop Indigenous Breeds in a focused and scientific manner.

OBJECTIVES:
• To promote indigenous cattle rearing and conservation in a scientific manner.

• To enhance productivity of indigenous breeds and increase economic returns from animal products in a sustainable manner.

• To propagate high genetic merit bulls of indigenous breeds.

Gokul Grams under RGM

| State/UT | Establishment of Gokul Gram/Cow Sanctuary | | | | | | | |
| | 1st Year | | 2nd Year | | 3rd Year | | Total | |
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Andhra Pradesh	1	500	-	500			1	1000
Chhattisgarh	1	44.8	1	701.8			2	746.6
Gujarat	1	1446.44	-	2735.9			1	4182.34
Haryana		0	2	1000	-	500	2	1500
Karnataka			1	150	-	350	1	500
Madhya Pradesh			1				1	
Maharashtra	1	900	1	900	1	900	3	2700
Punjab			1	610	-	584.5	1	1284.5
Uttar Pradesh	1	814	-	153	1	268	2	1082
Total		**3805.24**		**6750.7**		**2602.5**	**14**	**12995.44**

National Kamdhenu Breeding Center (NKBC)

NKBC: Andhra Pradesh

COST SHEET

SN	Activities	Cost (Rs. in Lakh)
1	Procurement of Breeding Stock	
1.1	Eighteen cows/buffaloes and 2 bulls per breed of 50 indigenous breeds (1000 animals) @ Rs. 90000/animal	900
1.2	Transportation of cattle	5
2	Cattle Sheds	
2.1	Adult cow/buffalo shed	
2.1.1	Cow and buffalo sheds (civil)	579
2.1.2	Farm automation and comforting equipment	302
3	Calf Pens	29
4	Isolation shed	23
5	Quarantine shed	19
6	Semen Station	
6.1	Bull sheds	43
6.2	Semen processing lab building (combined with ET)	
6.3	Semen station Equipment (combined with ET)	

COST SHEET (Contd..)

SN	Activities	Cost (Rs. in Lakh)
7	Embryo Transfer Technology Laboratory	
7.1	Building	80
7.2	ET Lab equipment	250
8	Rain Water Harvesting	15
9	Veterinary Dispensary	
9.1	Building	20
9.2	Furniture and Equipment	7.5
10	Bio Gas Plant	84
11	Agricultural Equipments including harvesters drippers	
11.1	Farm equipment shed and stores	10.5
11.2	Equipment and machinery	42
12	Ration Balancing : Computers	3
13	Urine Distillation Plant	3
14	Weighing Balance	3
15	Vermicompost pits	11
16	Silage pits	15
17	Chaff Cutter	10
18	Chaff Cutter Shed & Drying Yard, feed gowdown	5
19	Compound walls and gates for Bio security	40
	TOTAL	**2499**

INDIGENOUS BREEDS TO BE INDUCTED

SN	Name of the State	No. of Breeds	Breed selected by the State
1	Karnataka	1	Krishna Valley
2	Maharashtra	2	Pandharpuri & Deoni
3	Gujarat	5	Gir, Jaffarabadi, Banni, Kankrej & Mehsana
4	Uttarakhand	1	Red Sindhi
5	Punjab	1	Sahiwal
6	Haryana	1	Murrah
7	Rajasthan	2	Rathi & Tharparkar
8	Andhra Pradesh	2	Punganur & Ongole

Total: 15 Breeds (10 Cattle + 5 Buffaloes)

CURRENT STATUS

- Breeds for induction in the centre has been selected

- Animal Purchase has been initiated

- Civil works for sheds started

NKBC: Madhya Pradesh

COST SHEET

SN	Activities	Cost (Rs. in Lakh)
1	Purchase of 25 indigenous breeds	375
2	Construction of cow sheds @ 10X6 ft per cow (Shed to house 1000 dairy cows including space for drain middle alley 20 X 153 X 25)	765
3	Construction of isolation shed	50
4	Construction of calf pen (600 calves) @ 30 sqft for each calf	180
5	Administration block	22.5
6	Feed & fodder store room	120
7	Tractor (75 HP) with Agriculture implements	100
8	Compund wall (Chainlink fencing)	70
9	Milking machines of Shed/BMC	150
10	Bio-Gas Plant (Incl. Generator)	80
11	Overhead tank with water supply pipeline 50000 L capacity	50
12	Tube well	12
13	Other Capital Items	525.5
	TOTAL	2500

INDIGENOUS BREEDS TO BE INDUCTED

SN	Name of the State	No. of Breeds	Breed selected by the State
1	Punjab	2	Sahiwal & Nili Ravi
2	Gujarat	3	Gir, Kankrej & Jaffarabadi
3	Rajasthan	2	Rathi & Tharparkar
4	Madhya Pradesh, UP & Maharashtra	6	Malvi, Nimari, Kenkatha, Gaolao, Bhadawari & Khillar
5	Uttarakhand	1	Red Sindhi
6	Haryana	2	Hariana & Murrah
7	Uttar Pradesh	1	Gangatiri

Total: 17 Breeds (13 Cattle + 4 Buffalo)

CURRENT STATUS

- Breeds for induction in the centre has been selected
- Selection Committee for Animal Purchase formed
- Layout plan for Civil Work prepared.
- Tender documents are to be initiated once layout is approved.

National Mission on Bovine Productivity (NMBP)

NATIONAL MISSION ON BOVINE PRODUCTIVITY

- The mission is approved by EFC during its meeting held on 05.8.2016 with an allocation of Rs 825 crores with following four components:

a) PASHUSANJIVNI

b) ADVANCED BREEDING TECHNIQUES

c) NATIONAL BOVINE GENOMIC CENTRE FOR INDIGENOUS BREEDS

d) E PASHUDHAN HAAT

(A) PASHU SANJIVNI

Challenges

- 88 million animals in milk -records on breeding, productivity, treatment and vaccination not maintained.

- Not possible to separate animals/animal products obtained from healthy animals and from diseased animals- spread of diseases in animals and zoonotic diseases among human beings.

- Difficulty in expanding trade as country lack Animal Identification and Traceability (AIT) and unable to meet Sanitary and Phyto-sanitary (SPS) conditions (OIE)

Implementation

- UID of 88 million animals in milk using 12 digit bar-coded polyurethane tags

- *Nakul Swasthya Patra* - Animal Health Cards to 85 million animals in milk - Vaccination, Breeding, Production on the lines of Soil Health Card

- MSPs and SOPs for Animal Identification and Traceability (AIT)

- Uploading data on National Data Base (INAPH)

- National Call Centre for interaction and promotion of E-pashu haat portal

- Implementing Agency: State Implementing Agency-SLDB through State AH. departments; Milk Federations, CCBF/CHRS/CFSP&TI

PROJECT AS APPROVED BY EFC

S. No	Component	Approved by EFC (Centre: State)	Allocation approved by EFC
1.	**Pashu Sanjivni**		
a)	Procurement Tags (85 million @ Rs 8/tag and replacement of tags @ 5% per annum)	60:40	80.50
b)	Health cards (@ Rs 4/card)	60:40	34
c)	50,000 Tag applicators (@ of Rs 700/tag)	60:40	3.50
d)	50,000 Tablets/computerization @ Rs 6000	60:40	30
	Sub Total		**148.00**

(B) Advanced Breeding Technique

Challenges

- Out of 300 million bovines only 88 million are in milk leaving large unproductive animals including 84 million males.

- Due to increase mechanization in agriculture utility of males as draught animals has been reduced tremendously.

- Large population of males is also increasing stress on resources available with poor livestock rearers.

- **90% non descript cattle with over 85% poor farmers which is an unproductive asset – needs to be made productive – change from subsistence to commercial**

Genetic Improvement

A: **Genetic Improvement of the existing breedable population**:

1. Sex Sorting of high genetic merit bull semen for more female population
2. Fast replication of elite germplasm through Advanced Reproductive Techniques - Establishment of IVF and ETT labs
3. Research & Development:
   - Development of sperm sorting machine through NBGC-IB and coordinated efforts through IITs/NITs/ICAR & DBT
   - Standardization of sperm sorting technology for Indian conditions

B: **Creating a Higher Genetic Merit improved breedable population**

1. **Sex Sorting of high genetic merit bull semen for more female population**
    - Establishment of sex sorted semen production facility
    - Semen sex sorting equipment to be imported from US
    - 150 sorting machines at 10 A Grade Semen stations and 5 CCBFs
    - Strengthening of concerned semen stations / CCBF / CHRS
    - Distribution of sorted semen to IVF / ETT labs and field AI centers
    - Embryo creation and multiplication through IVF/ ETT
    - AI of elite and non-descript
    - Recovery of cost of IVF/ETT / semen by SIAs through appropriate pricing
2. **Research & Development**
    - o Development of sperm sorting machine through IITs/NITs/ICAR & DBT
    - o Standardization of sperm sorting technology for Indian conditions

3. **Fast replication of elite germplasm through Advanced Reproductive Techniques**

- Establishment of IVF and ETT labs – at 50 semen stations premises (A grade SS) / 7 CCBF

- Identification of elite bull mothers – elite embryo creation through IVF/ETT / AI by HGM bull semen of the HGM Bull mother

- Use of embryo from IVF – ETT for transfer embryo in non-descript cattle as surrogate mother.

- Recovery of cost of germplasm and goods and services

PROJECT AS APPROVED BY EFC

S. No		Component	Approved by EFC (Centre: State)	Allocation approved by EFC
2.		**Advanced Reproductive technique**		
	a)	Introduction of sex sorted semen production technology at 10 semen stations (establishment cost of machines)	60:40	200.00
	b)	Cost of sex sorted semen production (for 1 year)	60:40	275.00
	c)	Research & Development activities	100*	25.00
	d)	Establishment of IVF/ MOET labs	100	94.00
		Sub Total		**594.00**

(C) National Bovine Genomic Centre for Indigenous Breeds (NBGC-IB)

JUSTIFICATION

- Advanced dairying nations have introduced genomic selection for faster genetic gain.

- Genomic selection methods developed exotic breeds like holstein friesian and jersey.

- Difficult to implement progeny testing programme for indigenous breeds due to small population size

- Traditional PT programme takes 7 years to prove a bull

NATIONAL BOVINE GENOMIC CENTRE FOR INDIGENOUS BREEDS (NBGC-IB)

- It is not possible for a single implementing agency to carry out programme of genomic selection. Following agencies may be part of consortium.

- Department of Animal Husbandry, Dairying & Fisheries

- ICAR Institutes- NDRI Karnal, CIRC, NBAGR and CIRB

- National Dairy Development Board

- National Institute of Animal Biotechnology

- Central Cattle Breeding Farms

- Central Herd Registration Scheme

- State Livestock Development Boards/State Animal Husbandry Departments

- State Milk Federations

- NGOs (BAIF Research Development Foundation)

- Private Genotyping Laboratories

Consortium concept of Genomic Centre

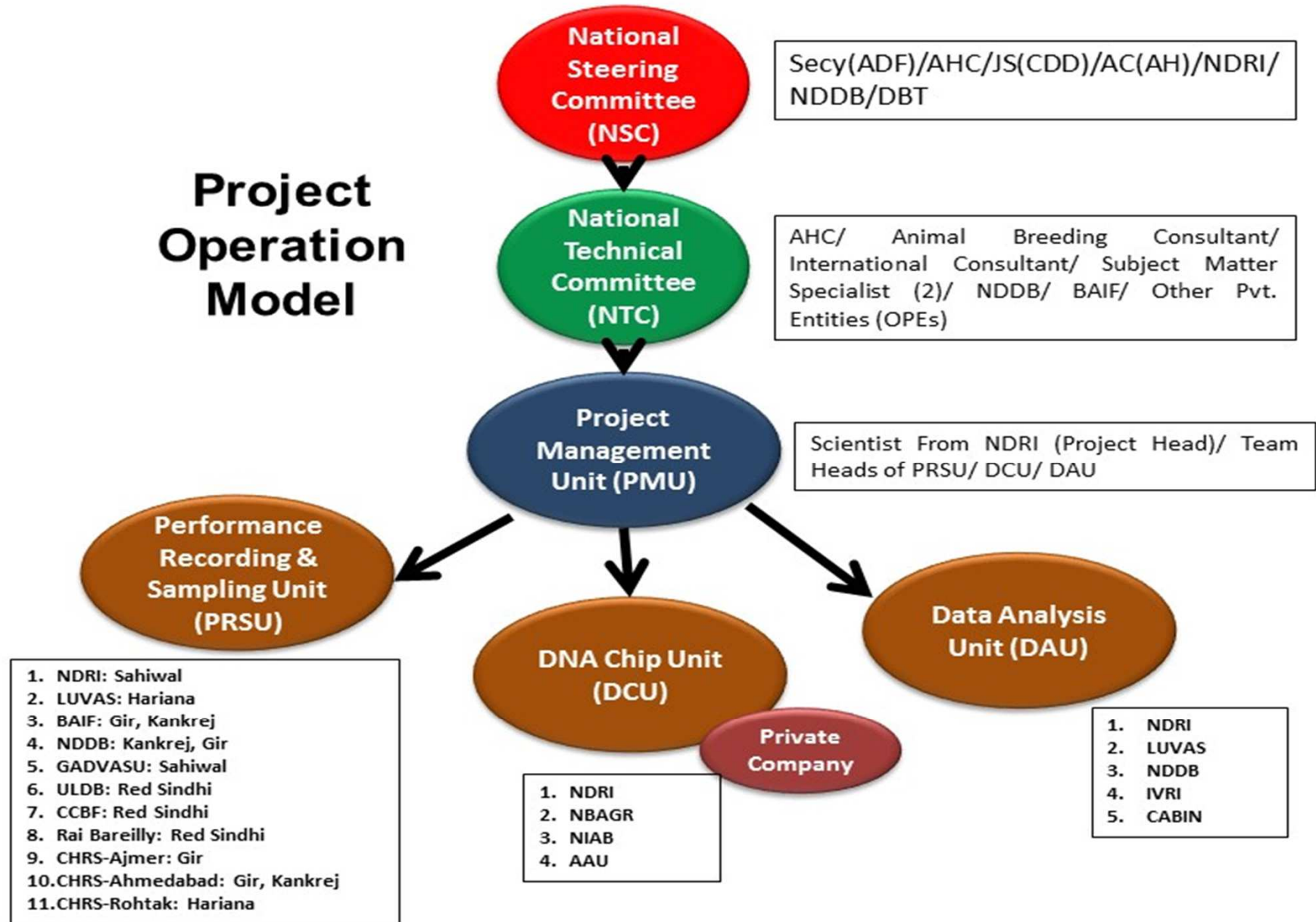| Capacity Building	Infrastructure	Stake Holders
• Dwindling Quantitative Genetics expertise. • Scientists involved in the process need to gain exposure on handling big data, GS prediction equation modeling & estimation of GEBV.	• Reference Population • Phenotypic Recording • Pedigree based population and DNA • Central Data Analysis Centre • Animal Identification system • Parentage	• Multiple agencies need to join hands • Organized Herds (Under ICAR & SAUs) + State Liv. Dev. Boards + NDDB & others • Join the consortium with performance records, DNA & Fund

Project Operation Model

National Steering Committee (NSC) — Secy(ADF)/AHC/JS(CDD)/AC(AH)/NDRI/NDDB/DBT

National Technical Committee (NTC) — AHC/ Animal Breeding Consultant/ International Consultant/ Subject Matter Specialist (2)/ NDDB/ BAIF/ Other Pvt. Entities (OPEs)

Project Management Unit (PMU) — Scientist From NDRI (Project Head)/ Team Heads of PRSU/ DCU/ DAU

Performance Recording & Sampling Unit (PRSU)
1. NDRI: Sahiwal
2. LUVAS: Hariana
3. BAIF: Gir, Kankrej
4. NDDB: Kankrej, Gir
5. GADVASU: Sahiwal
6. ULDB: Red Sindhi
7. CCBF: Red Sindhi
8. Rai Bareilly: Red Sindhi
9. CHRS-Ajmer: Gir
10. CHRS-Ahmedabad: Gir, Kankrej
11. CHRS-Rohtak: Hariana

DNA Chip Unit (DCU)
1. NDRI
2. NBAGR
3. NIAB
4. AAU

Private Company

Data Analysis Unit (DAU)
1. NDRI
2. LUVAS
3. NDDB
4. IVRI
5. CABIN

IMPLEMENTATION ROAD MAP

o introduction of genomic selection procedures

o Proving genetic merit of the bulls available with EIAs

o Supply of high quality bulls of various indigenous breeds in the country-through EIAs implementing bull production programmes

Performance recording and sampling unit (PRSU)

▪This unit will remain responsible for collecting performance record of animals on animal production reproduction & growth parameters

▪These records will be collected on a predefined monthly target and complete the job within two years.

▪Target in first two years is 5000 animals belonging the previously mentioned target breeds

▪The envisaged partners are: CFSP&TI, ICAR institutes, NDDB/NDS, LDBs, Milk Federations, CCBFS, CHRS and UNIV farms.

Breeding value Prediction Unit (BVPU)

- This unit will remain at the heart of the whole project.

- The main functions of this unit are:
  a) GEBV prediction equation with valid assumption,
  b) Forecasting possible genetic gains
  c) Advising the PRSU and DCU on details modalities genetic mid course correction in the strategy required if any.

PROJECT AS APPROVED BY EFC

S N		Component	Approved by EFC (Centre: State)	Allocation approved by EFC
3.		**National Bovine Genomic Centre for Indigenous Breeds**		
	A	Creating and validating the customised genotyping chip for Indigenous Cattle Breeds	100	10.00
	B	Performance recording of Animals	100	15.00
	C	Sample collection logistics	100	3.00
	D	Genotyping of animals to be screened	100	7.00
	E	Hiring of Manpower	100	8.00
	F	HRD (Capability Enhancement)	100	5.00
	G	Travel (Internal)	100	3.00
	H	Equipments	100	30.00
	I	Building (NBGC-IB)	NA	0.00
		Sub Total		**81.00**

(C) National Bovine Genomic Centre for Indigenous Breeds (NBGC-IB)

NATIONAL BOVINE GENOMIC CENTRE FOR INDIGENOUS BREEDS (NBGC-IB)

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DNA Chip Unit (DCU)

- Development of customized SNP screening indigenous animals (BOS indicus) remain one of the core ambition of the project.

- The unit head of DCU will strategize the activities under the project & distribution of work among the project partners

- It will be expected that by the end of two years a customized indigenous cattle SNP chip having at least Sixty thousands SNP is ready.

- The essential feature of the chip will be to capture as many SNP as possible to differentiate a multi breed population for economic trades breed specific inheritance detection parentage verification & detection of individual specific DNA markers.

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a) GEBV prediction equation with valid assumption,

b) Forecasting possible genetic gains

c) Advising the PRSU and DCU on details modalities genetic mid course correction in the strategy required if any.

(D) E-Pashuhaat

E-Pashuhaat

epashuhaat/ईपशुहाट
Animals/Animal Genetics for Sale

सत्यमेव जयते

GOKUL MISSION

स्वच्छ भारत
एक कदम स्वच्छता की ओर

HOME   GERM PLASM MARKET PLACE ▾   FAQ   E-LEARNING   SERVICES   GET IN TOUCH   HELP DESK   LOGIN

14,222
No. Of Live Animals

3,31,73,238
Frozen Semen doses produced

2,46,92,483
Frozen Semen doses Sold

3,68,57,063
Stock of Frozen Semen Doses

412
No. Of Embryo

PROJECT AS APPROVED BY EFC

SN	Component	Approved by EFC (Centre: State)	Allocation approved by EFC
4	**E-Pashu Haat- Nakul Prajnan Bajar**		
a)	Development of software	100	0.30
b)	Manpower at State level	100	1.592
c)	Manpower at Center	100	0.108
	Sub Total		**2.00**

Thank You