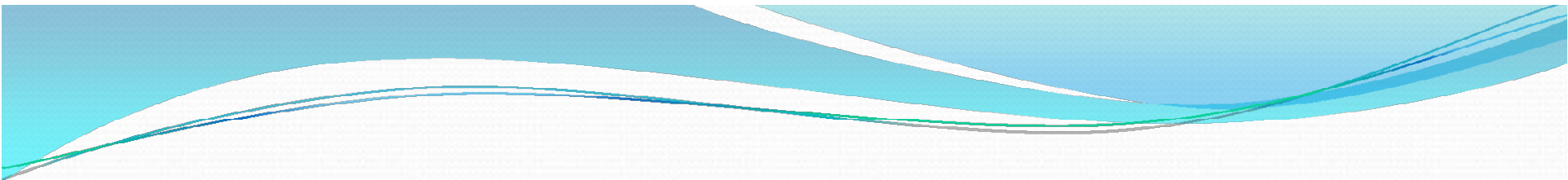# Knowledge-Policy Convergence: Livestock biodiversity in India

Debanjana Dey
Post-doctoral Policy Fellow
DST-Centre for Policy Research
Indian Institute of Science, Bangalore.

- Planetary boundary framework (Rockstrom et al., 2009)

  -- transformative knowledge.

  -- the importance of complexity and inter-linkages among different biophysical subsystems or processes and that if tipping points are reached, the resulting changes may be unpredictable and possibly irreversible.

- How do we identify these boundaries?

  -- Linear model

- What is the relationship between science and policy in India?

  --using the case of livestock biodiversity.

Policy- Livestock biodiversity

- No livestock biodiversity policy in the country.

- Policies for conservation of indigenous breeds

- setting up breeding farms for indigenous breeds of different species (under Union and state) for the purpose of conservation of breeds and their improvement and production of elite bulls

- For example, for cattle, the emphasis has been on increasing the utility function i.e. milk production of indigenous and crossbreds cows

- Conservation of breeds at risk- RedSindhi, Sahiwal, Vechur, Panganur and Tharparkar breeds among cattle (10th FYP)

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Policy- Livestock biodiversity – contd.

- National Project for Cattle and Buffalo Breeding (2000) – streamline breeding operations and conservation of indigenous breeds.

- Conservation of Threatened Breeds of Livestock (2008) was launched to conserve large and small animals, poultry and duck breeds.

- Breed survey, 2013 to ascertain the number of breeds of livestock species and to genetically upgrade them '*for optimum achievement for its product*' (GOI, 2015).

- National Livestock Policy, 2013 – identification of '*utility genes*' from the diverse genetic resources of indigenous livestock and poultry in the country and their conservation for utilization in breeding and research purposes.

Livestock Biodiversity Science

- Identifying the breeds and conserving their genetic resource to increase their utility.

- All India Coordinated Research Projects (AICRP) and Network Projects for Cattle, Buffalo, Sheep, Goat, Pig and Poultry for **improving the productivity and increasing the production of livestock products** like milk, meat, egg, wool etc.

AICRPs and Network Projects	Research Objective
AICRP - Goat Improvement	Technology demonstration, introduction of genetically superior goat breeds (14 breeds) to enhance production and reproduction, performance recording of goats. Improvement under semi-intensive system and their breeding tract.
AICRP –Pig	Assess economically important traits of exotic pig breeds (Landrace and Large White Yorkshire) and their diseases. To study the performance of indigenous pigs and crossbreeding them with exotic breeds and study their performance, produce superior strains, control incidence of diseases etc.
AICRP - Cattle Research	Frieswal Project –crossbreeding Indigenous breed project- genetic improvement of important cattle breeds (Gir, Kankrej and Sahiwal) Progeny testing of crossbred bulls and genetic improvement of cattle.
Network Project on Sheep Improvement	Evaluation and improvement of indigenous sheep breeds (Marwai, Deccani, Nellore, Madras red, Magra) by selection and inter-se mating for mutton and wool production.
Network Project on Buffalo Improvement	To produce superior bulls of buffalo breeds (Murrah, Jaffarabadi, Surti, Pandharpuri, Swamp, Bhadawari, Nili-Ravi),quality semen production in order to enhance milk production.

Source: Author's Compilations

National Bureau of Animal Genetic Resources (NBAGR)

"for conservation and management of livestock and poultry genetic resources, with an aim to identify, characterize and evaluate the important genetic traits and to conserve them for sustainable utilization"

Research Categories

- Documentation: Livestock information system
- Phenotypic and genetic characterization
- Genetics and genomics
- Registration and conservation

S&T contents

- Systematic surveys to characterize, evaluate and catalogue domesticated animal and poultry genetic resources.
- Genetic characterization and diversity assessment in indigenous breeds to understand the utility of indigenous breeds and to increase them.
- Ex-situ and in-situ conservation and management of livestock genetic resources.

Insights

- The very conceptualization of livestock biodiversity was based on a narrow concept of 'breed only'.

- Though biodiversity is defined as 'variability within and between species and of ecosystem', the ecosystem has been taken for granted.

  ---If livestock biodiversity which is a subset of biodiversity is of concern, then the very existence of a livestock should not be defined or understood in relation to its economic valuation, but farmers or pastoral communities and specific agro-ecological systems.

Is the community-based knowledge and policy relationship different from the formal science and policy relationship?

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Maldhari pastoralist - Banni grassland

- Convergence of knowledge and policy different.
- It is built on different knowledge system and values.

  - A system that has generated rules and norms to govern the livestock breeds, grassland ecosystem and community themselves.

- - Knowledge of ecosystem

  - Absence of one Instrumental Value

  - Valuing Nature and Breed Evolution

  - Community as Decision Maker