

An Insight on Indigenous Cow Based Economy

Executive Summary

Cattle's rearing has been a traditional livelihood in India and is closely linked to agricultural economy. India has 199 million cattle heads which translates into 14.5 per cent of the world cattle population. Out of this, approx. 166 Million (83%) are indigenous. Almost 80% of indigenous cattle are non-descript and only 20% belong to breeds recognized by National Bureau of Genetic Resources. The cattle genetic resource of India is represented by 37 well recognized indigenous breeds and there are 13 recognized buffalo breeds.

Indigenous Cattle

Indigenous cattle, in India, are robust and resilient and are particularly suited to the climate and environment of their respective breeding tracts. They are endowed with qualities of heat tolerance, resistance to diseases and the ability to thrive under extreme climatic stress and less than optimal nutrition.

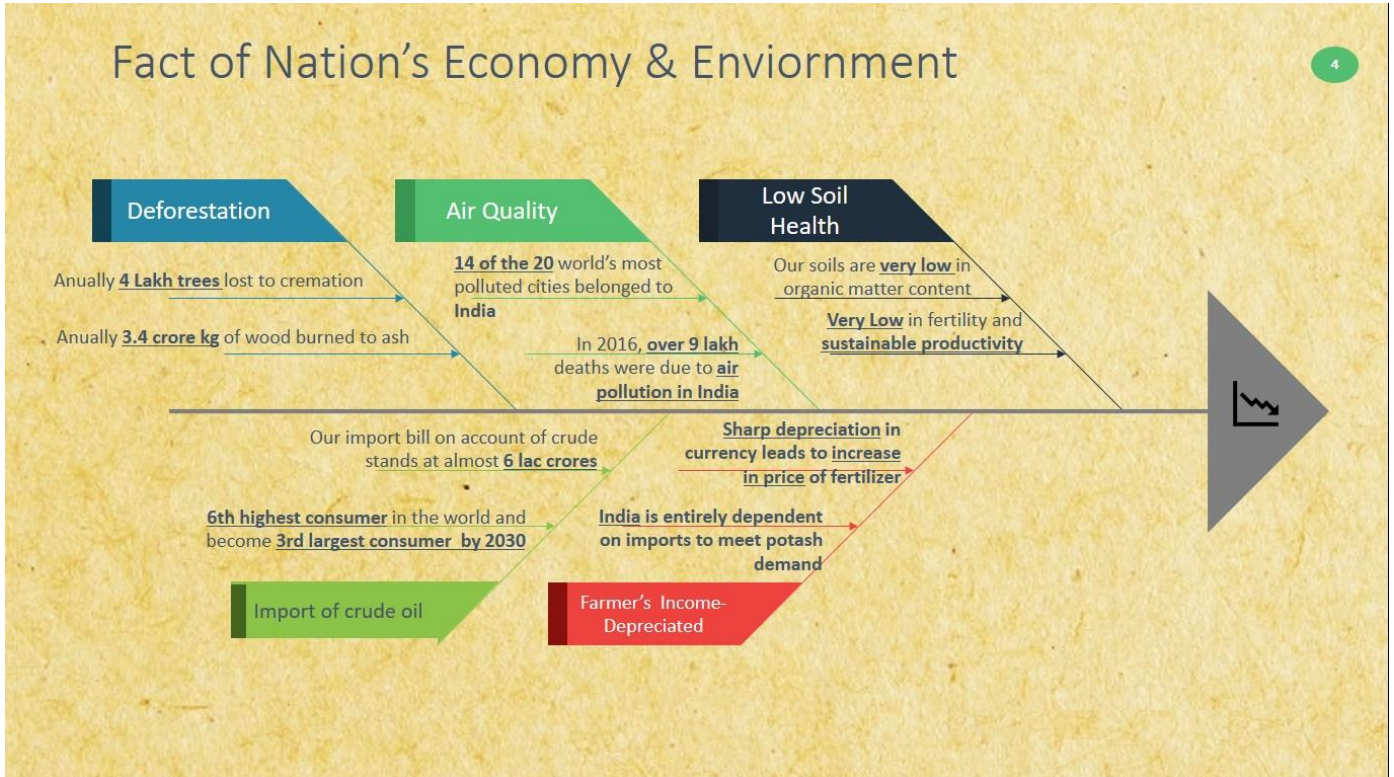
Indigenous breeds are well adapted to our agro-climatic conditions and are resistant to many tropical diseases and can survive and produce milk on poor feed and fodder resources. Some of **these breeds are well known for their high milk and fat production**. However, the production potential of these animals has deteriorated over a period of time due to lack of selection

Project Objective

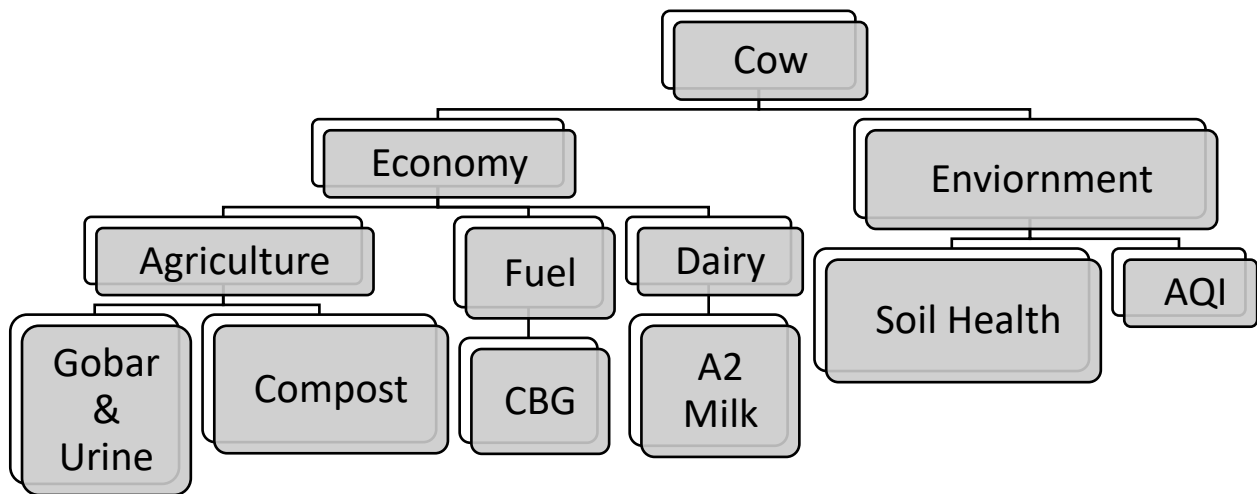
The overall objective of the project is to conserve and improving indigenous breed of cow. The specific objectives are as follows.

- Self-Sustenance of Indigenous cow in lactating and non- lactating stage
- To provide best market rate for organic or chemical free produce of farmers
- Create awareness among small and marginal farmer about importance and significance of indigenous cows in farming

Service of Nation's Economy and Environment by Indigenous Cow



A Basic Model of Cow Based Economy



Increase Soil health with help of Organic Carbon rich Cow dung compost

Our soils are very low in organic matter content and thus have poor soil fertility. In view of poor soil fertility and shrinking land and water resources, the singular option for India is through increase in productivity.

Organic carbon is an index of good soil health and application of organic manures helps in maintaining high organic carbon content of the soil. Our soils have very low organic matter content. Therefore, without regular application of organic manures and recycling of crop residues, we cannot hope to maintain good soil health to sustain productivity and ensure high responses to NPK fertilizers. With rapid urbanization the bulky organic wastes are increasing and their disposal and profitable use in agriculture in rural areas is hampered because of transportability and cost constraints. The green manuring practice is almost forgotten.

Soil organic carbon (SOC) is the key constituent which dictates soil physical condition, chemical properties including nutrient status and biological health of a soil. Long-term Fertilizer Experiments (LTFE) proved beyond doubt (Table 1) that balanced fertilization and more so with FYM maintained and/or improved SOC status (Singh and Wanjari, 2017).

Table 1: Soil organic carbon (SOC) status (g kg⁻¹) in long-term fertilizer experiments

Location	Control	N	NP	NPK	NPK + FYM
Akola	3.1	4.3	4.9	5.4	7.9
Bangalore	4.8	5.1	5.2	5.5	5.8
Barrackpore	5.5	6.8	7.2	7.2	9.0
Jabalpur	4.2	5.2	4.2	6.8	8.9
Ludhiana	2.8	3.9	3.9	4.2	5.3
New Delhi	3.4	4.3	4.6	4.6	5.2
Palampur	7.9	8.8	9.3	10.2	13.7
Pantnagar	6.1	9.1	9.9	9.8	15.6
Parbhani	5.7	5.4	5.9	6.2	6.8
Ranchi	3.5	4.2	4.2	4.0	4.9

(Source:- National Academy of Agricultural Sciences “Soil Health: New Policy Initiatives for farmers welfare” , Policy No.3, May 2018)

Indigenous Solution for Agri- Based Industry

Organic fertilizers have been tested scientifically in Indian Council of Agriculture Research (ICAR), institutions and State Agricultural Universities (SAUs) on various crops and soil types and found suitable for improving soil health and crop productivity. The organic fertilizers presently available may supplement (N,P) by nearly 20-25%. Biofertilizers when applied along with compost @ 5t/ha or vermicompost @ 2t/ha, fertilizer saving is almost 50%. The advantages of these organic fertilizers are that they are eco-friendly and not only provide nutrients for maintaining soil fertility but also improve soil physical & biological health.

Service to Indian Economy & Environment

Reduction in Import Bill

Hon'ble Prime Minister has set a goal for our Country to reduce the import bill by 10% by the year 2022. Crude oil imports drain our foreign exchange, putting enormous pressure on our currency & thereby weakening our bargaining power with the rest of the world. We need to have our own “Indian Fuel of global relevance”

Compressed Bio Gas(CBG):-SATAT, the initiative is aimed at providing a Sustainable Alternative Towards Affordable Transportation (SATAT) as a developmental effort that would benefit both vehicle-users as well as farmers and entrepreneurs.

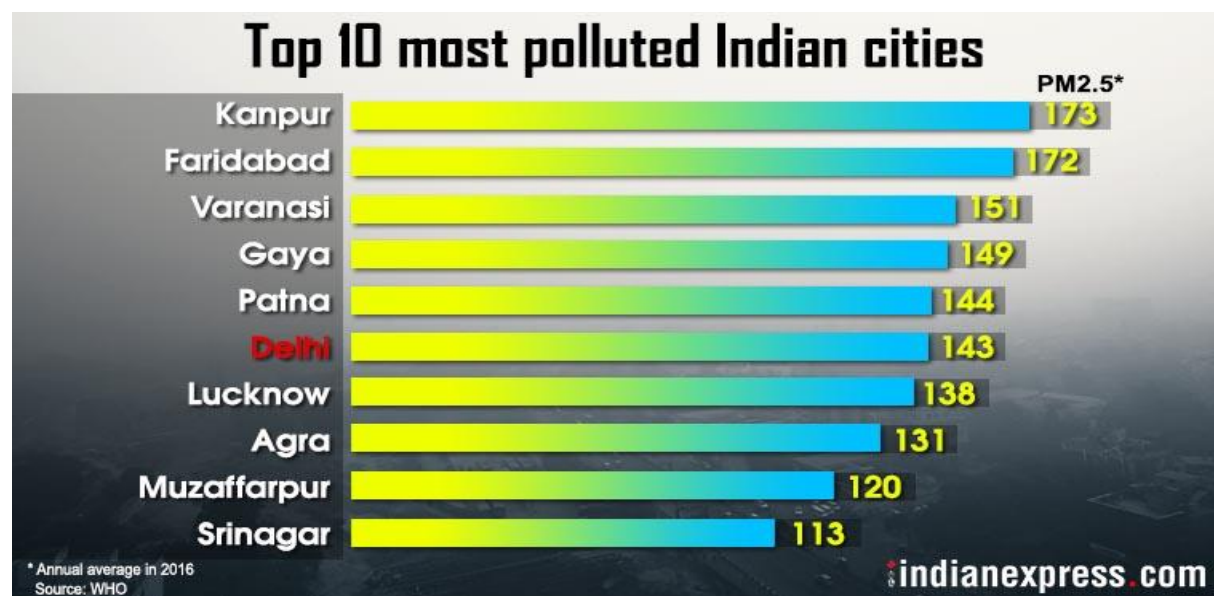
Use of Compressed Bio Gas (CBG) will also help bring down dependency on crude oil imports and in realizing the Prime Minister's vision of enhancing farmers' income, rural employment and entrepreneurship.

There are multiple benefits from converting agricultural residue, cattle dung into CBG on a commercial scale:

- Responsible waste management, reduction in carbon emissions and pollution
- **Additional revenue source for farmers**
- Boost to entrepreneurship, rural economy and employment

- Support to national commitments in achieving climate change goals
- Reduction in import of natural gas and crude oil
- Buffer against crude oil/gas price fluctuations

The potential for Compressed Bio-Gas production from various sources in India is estimated at about 62 million tonnes per annum.



(Source:- Ministry of Petroleum & Natural Gas Petroleum Minister to launch SATAT initiative to promote Compressed Bio-Gas as an alternative, green transport fuel, Press Information Bureau, Dt:- 28 Sep 2018)

Improve Air Quality & Promote Forest Conservation

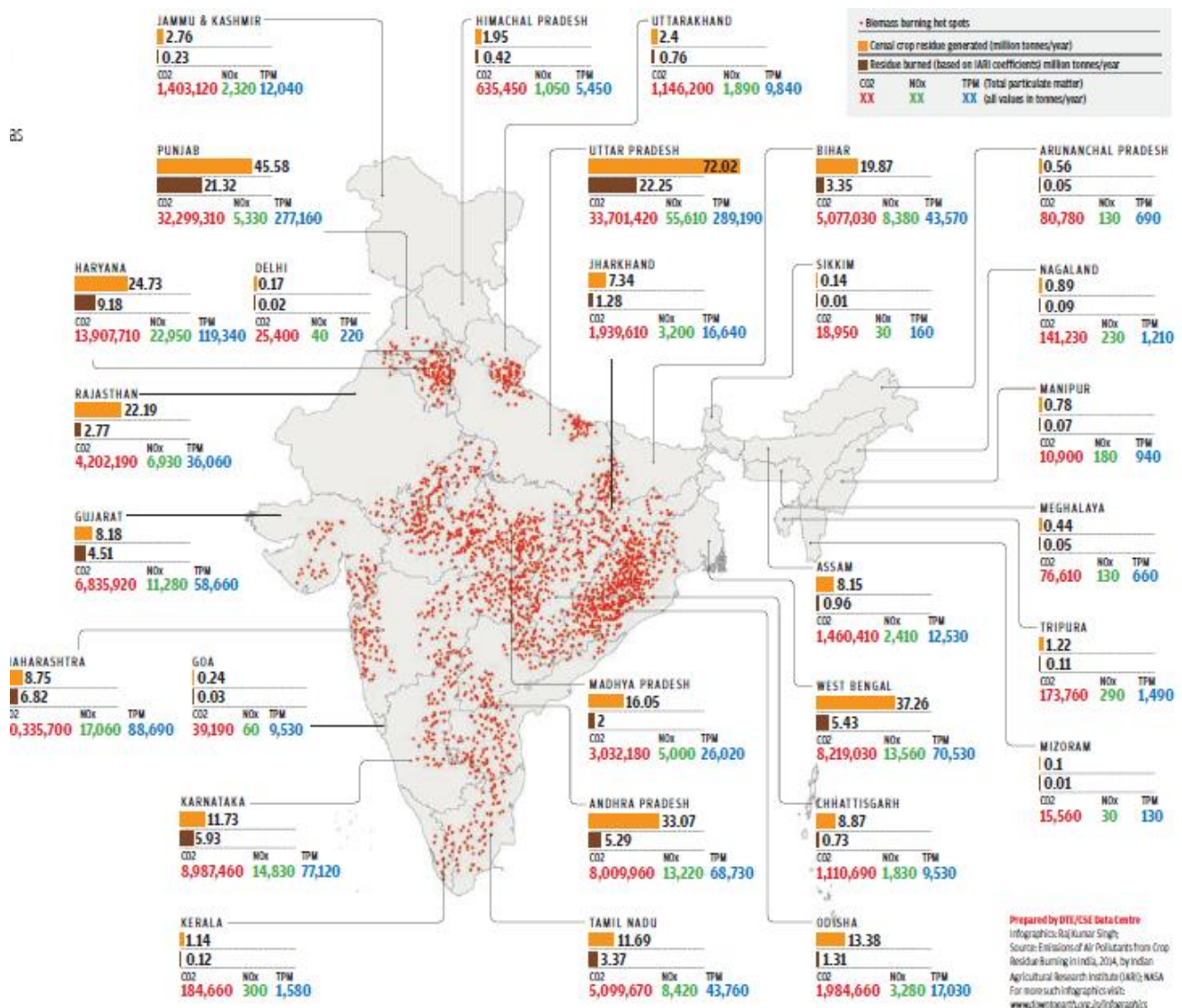
Depletion air quality

In 2016, a World Health Organization (WHO) study found that fourteen of the twenty world's most polluted cities belonged to India. Kanpur, in Uttar Pradesh, emerged as the city with the highest PM2.5 level, standing at 173 (17 times higher than the limit set for safety). It is estimated that in 2016, over 9 lakh deaths were caused due to air pollution in India. Some other cities with high PM 2.5 levels include Faridabad, Varanasi, Gaya, Patna, Delhi, Lucknow and Agra. Delhi, as the capital of the country, too gained notorious reputation as a result of its severely poor air quality.

In the past, there have been multiple instances where the presence of heavy smog in the national capital has led to the declaration of public health emergencies, flight cancellations, school closures and inevitable political acrimony.

The sources of air pollution are multiple. Vehicular emissions, crop burning, depleting tree covers, generation of dust- particularly from construction sites, and poor waste management – all contribute towards the declining air quality.

(Source:-Observer Research Foundation, Indian Cities and air pollution, Ramanath Jha, 04/07/2019).



Above Image red dots represent place of crop residual burning.

Improve in air quality & Forest Conservation: -

Gobar Logs

An environment-friendly technique says around **7 million cremations every year** are done in India, where each **requires 400 kg of woods**. During a survey, the team found that at times 50 cremations- mostly using wood- take place at Nigambodh Ghat simultaneously. They also got to know that several gaushalas and dairies in the city face an acute problem of disposing cow dung. Use of cow dung logs may present a highly successful alternative to wood as well as clean & green disposal of dairy waste



400KG (APPROX) OF WOOD IS USED UP IN EACH CREMATION ...

... Already, Delhi is reeling under diminishing forest cover

Year	Forest Cover (in sqkm)
2009	123
2015	111
2017	113

according to the Forest Survey of India

20 gaushalas from where cow dung is being

2 MACHINES USED Prototype drying machine and log creators

The tech was tested at Nigambodh Ghat

- Prototype drying machine can dry up to 500kg of dung
- Dried dung is the converted into logs weighing 1kg
- These logs are added with wood shavings and sugar cane husk
- 900 degree Celsius Heat that can be generated
- from cow dung logs
- 7% reduction in NO and 13% cut in CO emissions from these logs, according to research

(Source: - Times of India, IIT-Delhi Kids help last rites go green with cow dung logs, 21/10/2018, <https://timesofindia.indiatimes.com/city/delhi/iit-delhi-kids-help-last-rites-go-green-with-cow-dung-logs/articleshow/66299257.cms>)

Cow Dung briquettes mixed with agriculture waste could be used for cremation which will conserve environment.

“Study shows that nearly 33,000 bodies are cremated in Varanasi annually. This consumes 16,000 tonnes of wood and generates 800 tonnes of ash. The plan involves establishment of 63 hybrid crematoria that would utilize cow dung cakes along with wood on the 180 km stretch along the Ganga from Varanasi to Ballia”

Cow Mutra - Rural Youth Employment

In various gaushala worker wakes up in morning to collect morning urine of calves, calf and cow to supply it to manufactures for gau mutr ark which not only provide them employment but also gives gaushala some money for shed requirement

Every morning, at around 4 am, workers at the Keeshav Shruti Go Shaala at Bhayander, in Thane district, head to the tabelas (cow sheds), bucket in hand. The aim is to collect the first urine of the cows, all 230 of them (including males and calves). Every day, the go shala collects 200 litres of gomutra (cow urine), which is then sent to a distillation unit next door where it is filtered, bottled and then shipped across the country in bottles priced.

“The Cow Urine market is estimated to be \$ 1 billion,” claims Radhika Miglani cofounder of Bengaluru-based A2 Naturals started in 2015 . While big players like Patanjali procures close to 10,000 litres of cow urine daily, individual units vary from around 500 litres to 25000 litres per month, she adds. Her company plans to sensitise Ayurveda doctors to cow-based medicines instead of antibiotics, persuade farmers to switch from chemical to natural farming and urge people to adopt a cow-based natural lifestyle. For us, she points out, use of urine is as much science and logic as anything else and we have consumers from Dubai to Varanasi to Kerala.

Increase in Supply of Milk

'Desi' cow to check drop in milk supply

Promotes Indigenous Breeds As Warming Threatens Dairy Biz

Dairy provides livelihood to 60 million rural households in India and the country continues to be the largest milk producer in the world but the impact of global warming could have an impact on overall milk production in the coming years.

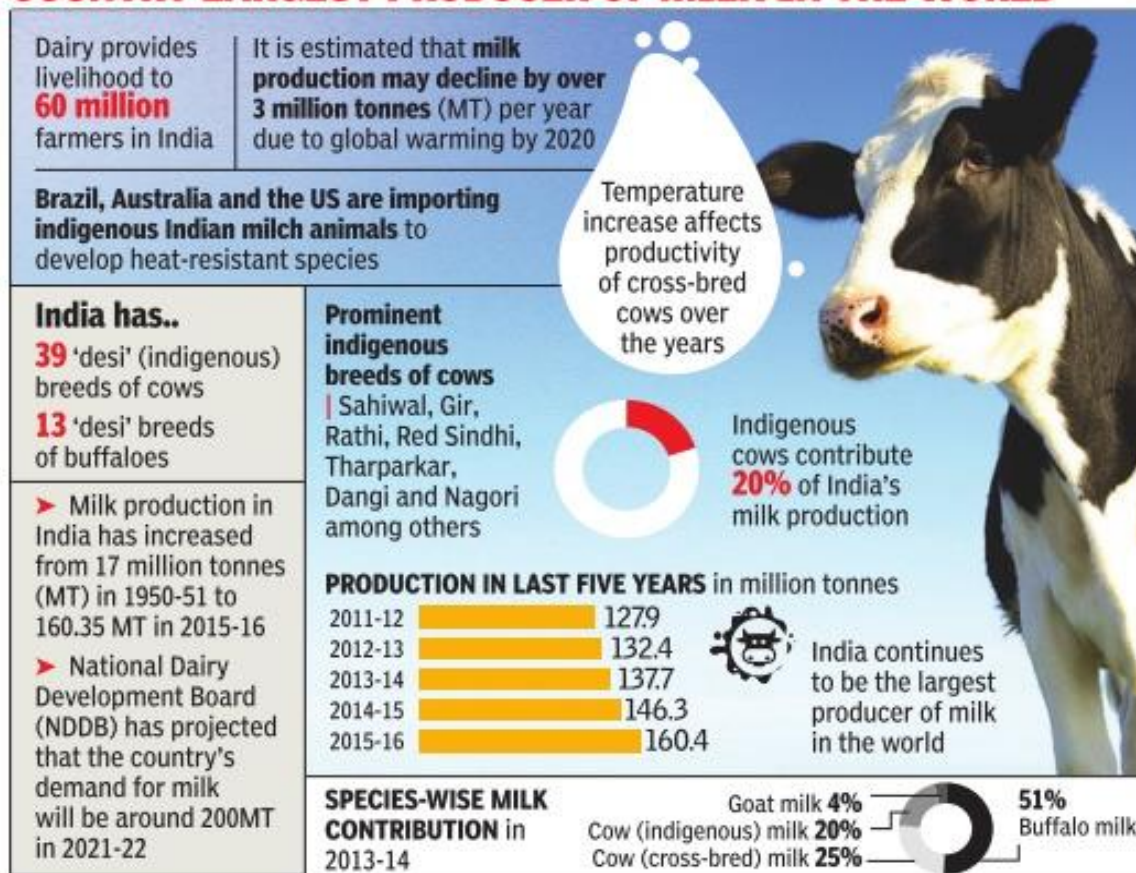
Indian dairy scientists estimate that climate change will lead to decline in milk production by over 3 million tonnes (MT) per year by 2020. The projections, shared by the National Dairy Development Board (NDDB) with the agriculture ministry, should be cause for worry considering the growing demand for milk in the country, estimated at 200 MT by 2021-22.

Though milk production has been steadily increasing with 2015-16 recording an output of 160 MT, the **impact of rising temperatures, especially on cross-bred cows**, will make the task of meeting domestic demand difficult and could eventually lead to a decline in per capita consumption.

At a time when the **world's major producers** including the **US, Brazil and Australia are importing Indian milch animals to develop heat resistant species**.

“The decline in milk production and reproductive efficiency due to rising temperature will be highest in exotic and cross-bred cattle followed by buffaloes. **Indigenous breeds will be least affected by global warming**,” agriculture minister Radha Mohan Singh told TOI.

COUNTRY LARGEST PRODUCER OF MILK IN THE WORLD



(Source:- Times of India (Bangalore Edition), Page 09,Monday, May 23, 2016)

- India has 299.6 million bovine populations out of which 190.9 million are cattle and 108.7 million are buffaloes. Of this, 80% of cattle are indigenous and Non-descript breeds.
- The bovine genetic resource of India is represented by 41 registered indigenous breeds of cattle and 13 registered buffalo breeds. Indigenous bovine is robust and resilient and are particularly suited to the climate and environment of their respective breeding tracts. The milk of indigenous animals is high in fat and SNF content.

From cow's waste we can make various product which are environment friendly, help us save our foreign exchange and restore our indigenous livestock

Provide healthier Milk rich in Amino Acid

Milk with A2 gene is rich in Amino Acid which make digestion of protein more easily digestible and good for kidney.

National Bureau of Animal Genetic Resources (NBAGR), Karnal has been active in surveying the A1/A2 situation in India since 2009. Their first report confirmed that A2 gene frequency in Indian breeds of cattle is around 98 % (almost 100 % in major milk breeds).

■ 22 varieties of indigenous cows have become extinct 'Desi' cow milk healthier

DC CORRESPONDENT
HYDERABAD, MARCH 24

While milk from indigenous or pure Indian-breed cow has proven to be healthier, 22 varieties of indigenous cows have become extinct in India over the years due to a lack of encouragement in breeding, according to experts.

Experts said milk from hybrid cows contained additional BCM-7 element, which was associated with paediatric diabetes, autism, and metabolic degenerative diseases.

To raise awareness about indigenous cow milk and support their rearing, Dr BRKR Government Ayurvedic College and Charaka Dairy have planned to organise a three-



day workshop and exhibition on "desi cows" from March 28. Ayurvedic college principal Dr N. Satya Prasad said the event would be held at People's Plaza, Necklace Road,

NUTRITION FACTS

- Desi cow milk has amino acid, which makes the milk protein easily digestible and good for kidney.
- It is a source of vitamins B2, B3 and A.
- It helps strengthen the immune system and greatly reduce the chances of peptic ulcer, colon, breast and skin cancer.

with several breeds of cows.

Of more than 50 breeds of Indian cows, only 29 are available now, Dr Prasad said. The influx of non-indigenous cow breeds and

the lack of encouragement for the commercial production of *desi* cow milk were primarily responsible for this, he added.

Charaka Dairy director Dr B.L.N. Sastry explained: "Though *desi* cows yield less milk, it has amino acid, which makes the milk protein easily digestible and good for the kidney. It is also a rich source of vitamins B2, B3 and A, which help increase immunity and reduce acidity. Desi cow milk also reduces chances of peptic ulcer, colon, breast and skin cancer." Terming it a "wholesome" food, Dr Sastry said *desi* cow milk had 25 types of minerals and helped reduce the formation of serum cholesterol. It was one of the best anti-oxidants, he said.

Conclusion

Cow is the back bone of India's Agro economy by protecting cow the whole chain of life is sustained. With improvement in soil health using cow manure/compost, the micro flora flourishes, biodiversity improves, forest thrive, ground water table goes up, rivers brim with pure water coming from forest springs and also, the agriculture yield bumper crops.

Shri Shri Ramesh Baba maharaj is a visionary who could envisage this deep study and understanding of ancient Indian literature scriptures and wisdom. To showcase this ancient knowledge in modern time, Shri Mataji Gaushala is trying to convey the Nation, Success Mantra of 'Organic Economy.'

