

# Cow Comfort

**Dr Umar Farooq**  
CEO Dairy Champion



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# Cow Comfort

## Highlights



## Overview of Dairy Sector in Pakistan

**18.9%** - Agriculture contribution to national GDP

**11.1%** - Livestock contribution to national GDP

**56** Billion Ltrs - Annual Milk Production

**85** Mio - Animal population (39 mio Buffaloes & 46 mio Cows)

**35%** - rural income derived from livestock

**4%** - of total production of milk is processed through formal sector



Source: *Economic Survey of Pakistan 2017-18*



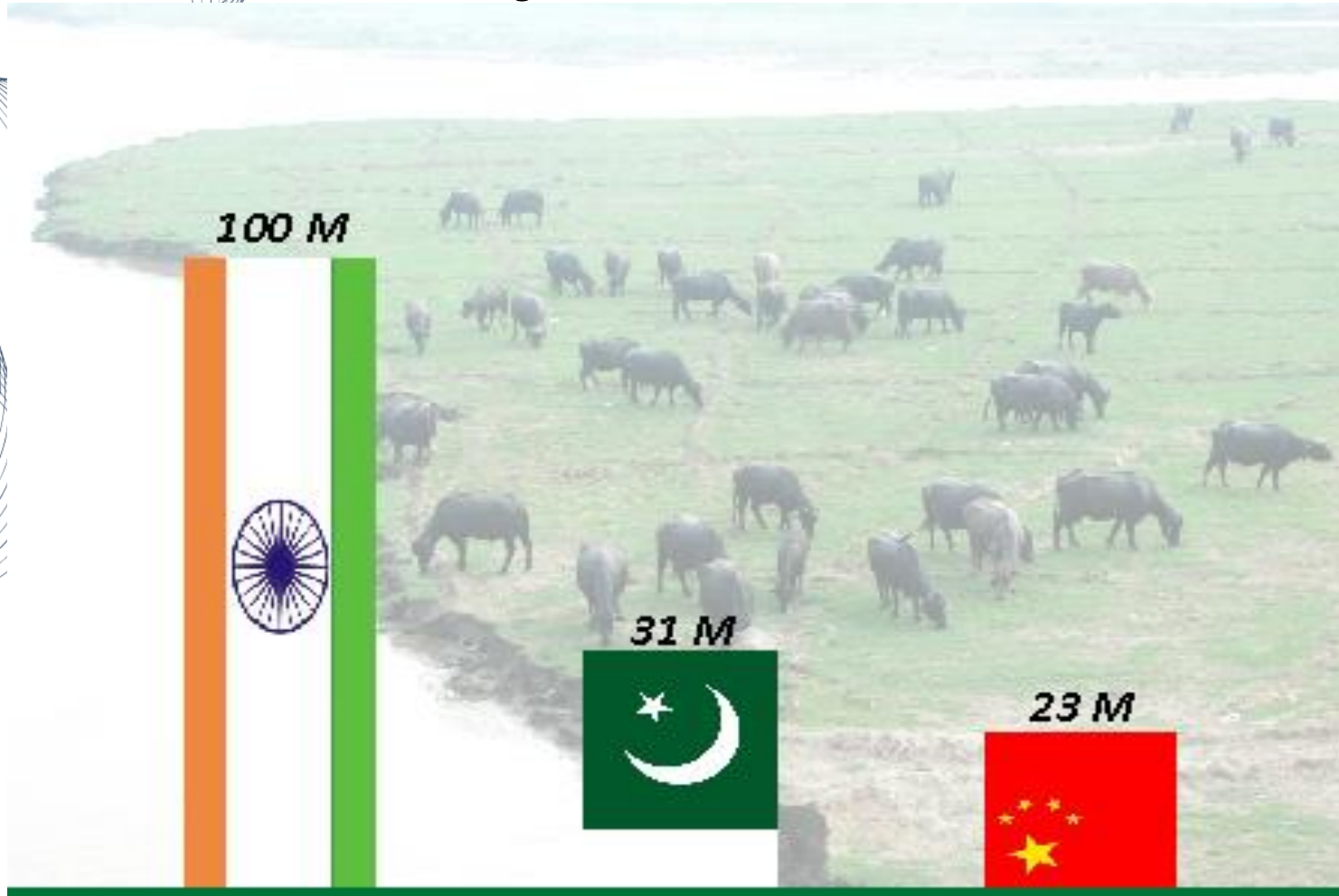
Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Overview of Dairy Sector in Pakistan



Source: *Economic Survey of Pakistan 2017-18*



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

## Top 5 World Milk Production Countries - 2017

No.	Country	Mio. t ECM
1	India	171
2	US	92
3	Pakistan	46
4	Brazil	34
5	Germany	33.5



Source: IFCN – Dairy Report 2017



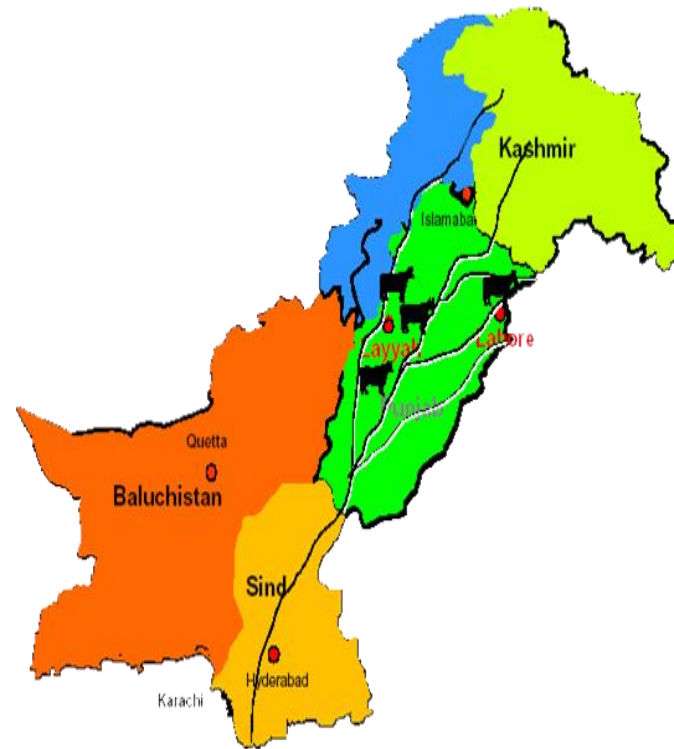
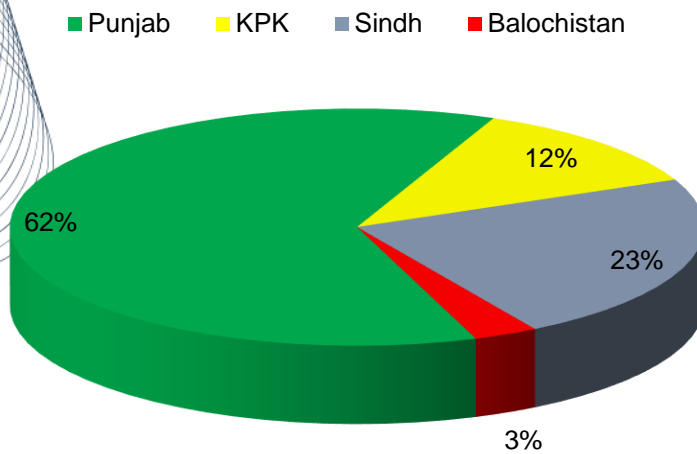
Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Overview of Dairy Sector in Pakistan



Source: *Economic Survey of Pakistan 2017-18*

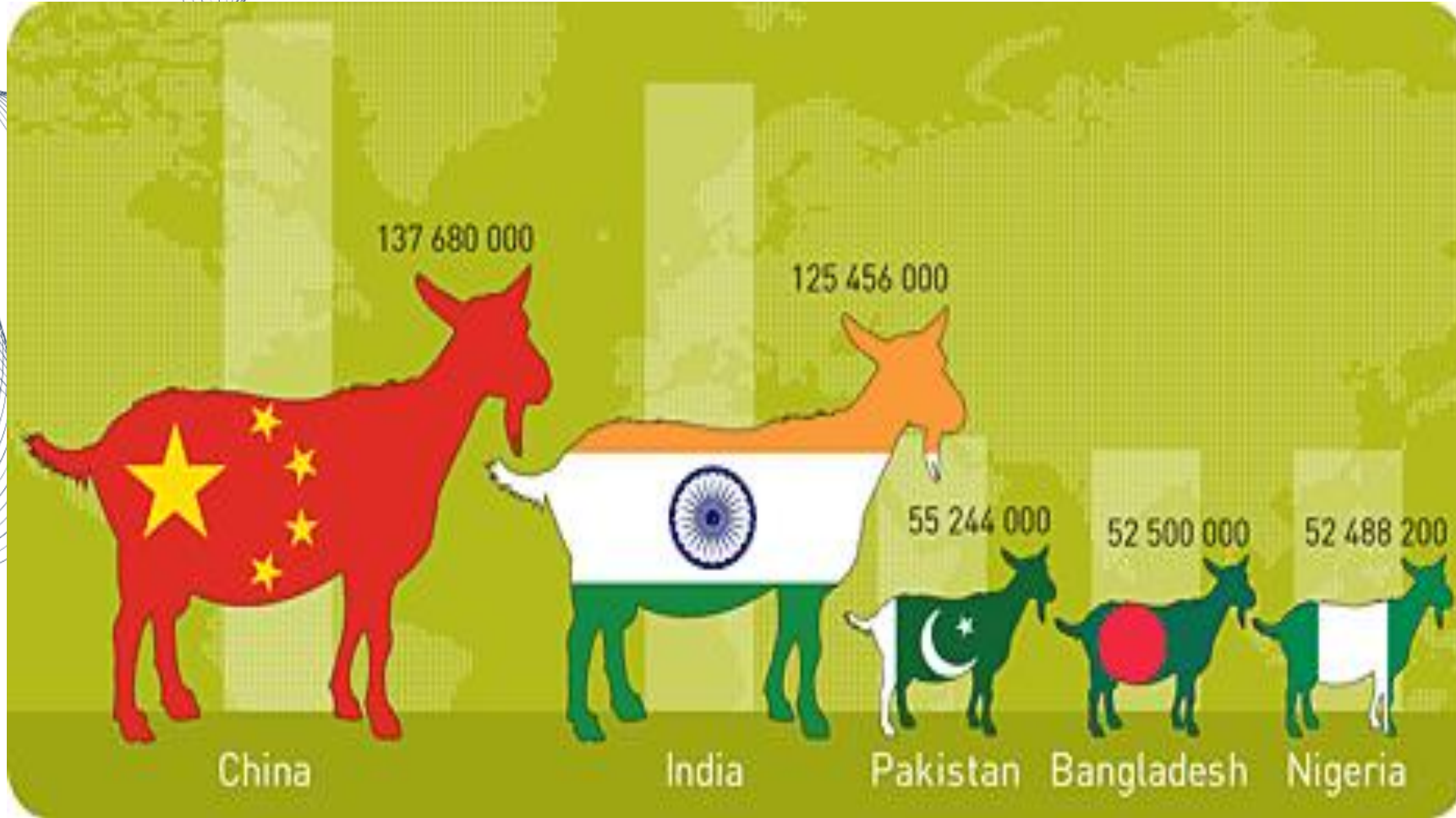


Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



**BUT still need to import milk powder!**

**Demand Growing**  
**10% to 20%**

**- Supply -**  
**Major Bottleneck**

**Supply only growing by**  
**2-4 %**



Funded by  
the European Union

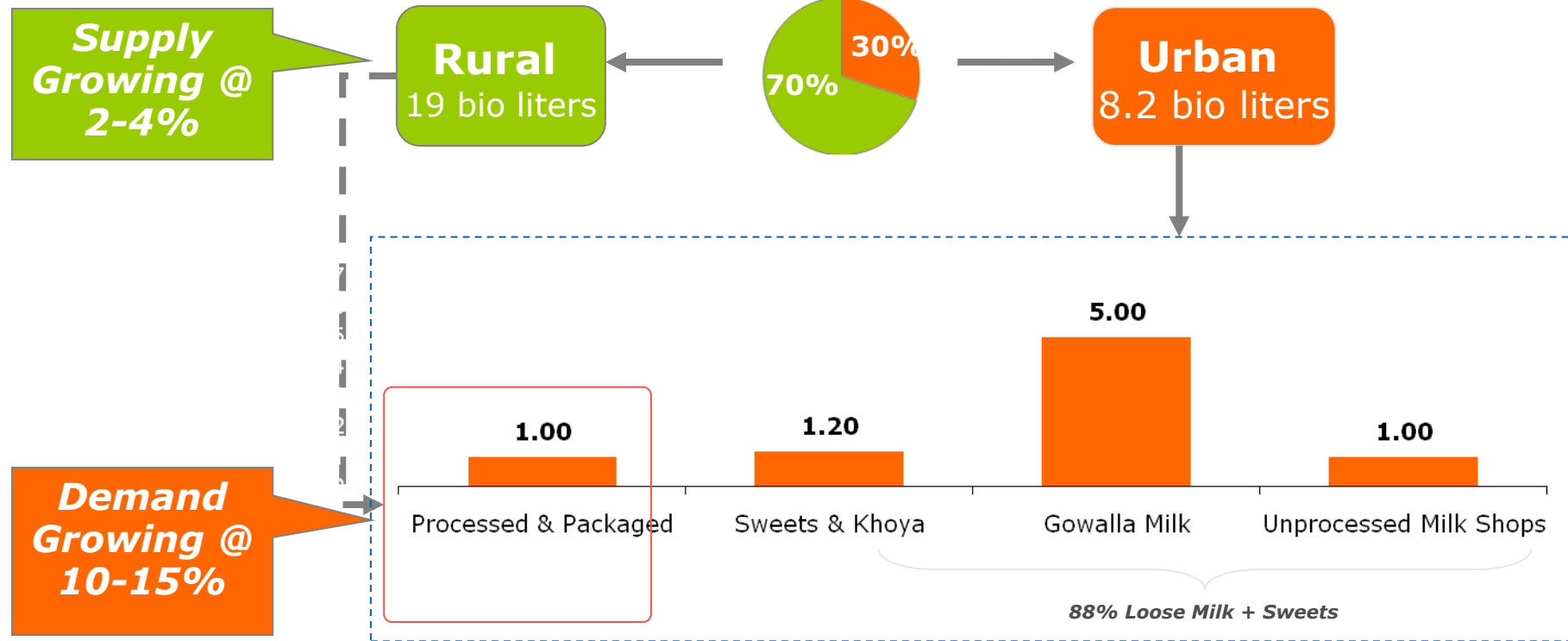


**RBWR TA**  
Revival of Balochistan  
Water Resources



# Fresh Milk Not Growing with Demand

Pakistan Milk Production<sup>1</sup> 31 bio. liters



1 Total milk production ~31 bio liters with 27 bio liters available for human consumption

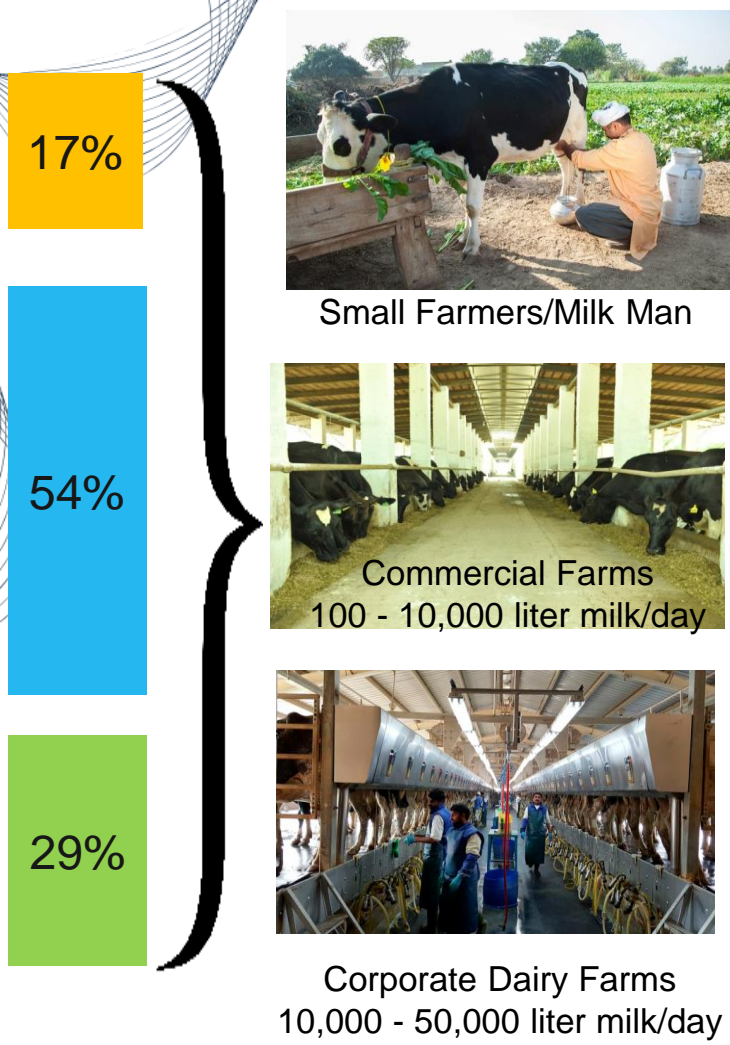


Funded by  
the European Union

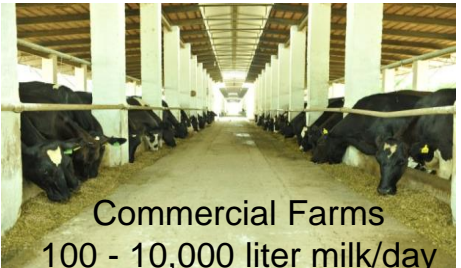


**RBWR TA**  
Revival of Balochistan  
Water Resources

# Overview of Dairy Sector in Pakistan



Small Farmers/Milk Man



Commercial Farms  
100 - 10,000 liter milk/day



Corporate Dairy Farms  
10,000 - 50,000 liter milk/day



Funded by the European Union



RBWR TA  
Revival of Balochistan Water Resources



# Key Challenges

Farms Sustainability

Quality & Food Safety

High cost of Raw Milk



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

## Farms Sustainability

Genetic potential of animals

Animal Feed & Fodders

Technical Skill of field staff

Lake of skilled human resource at Farm level

Farm Mechanization

Lake of Financial support



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



## Reasons for Farm Non-Sustainability

Genetic potential of animals

Non pedigree animals

Lack of insemination tech & semen

Traditional Feeding (Wheat Straw , CSC)

Lack of fodder preservation techniques

Fodder scarcity months during year

Unavailability of drinking water 24 hours

Traditional Sheds

No cooling system in animal sheds

Vets with basic skill level

Lack of skilled labor

Dairy farming not as a core busnisses



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# Dairy Farm



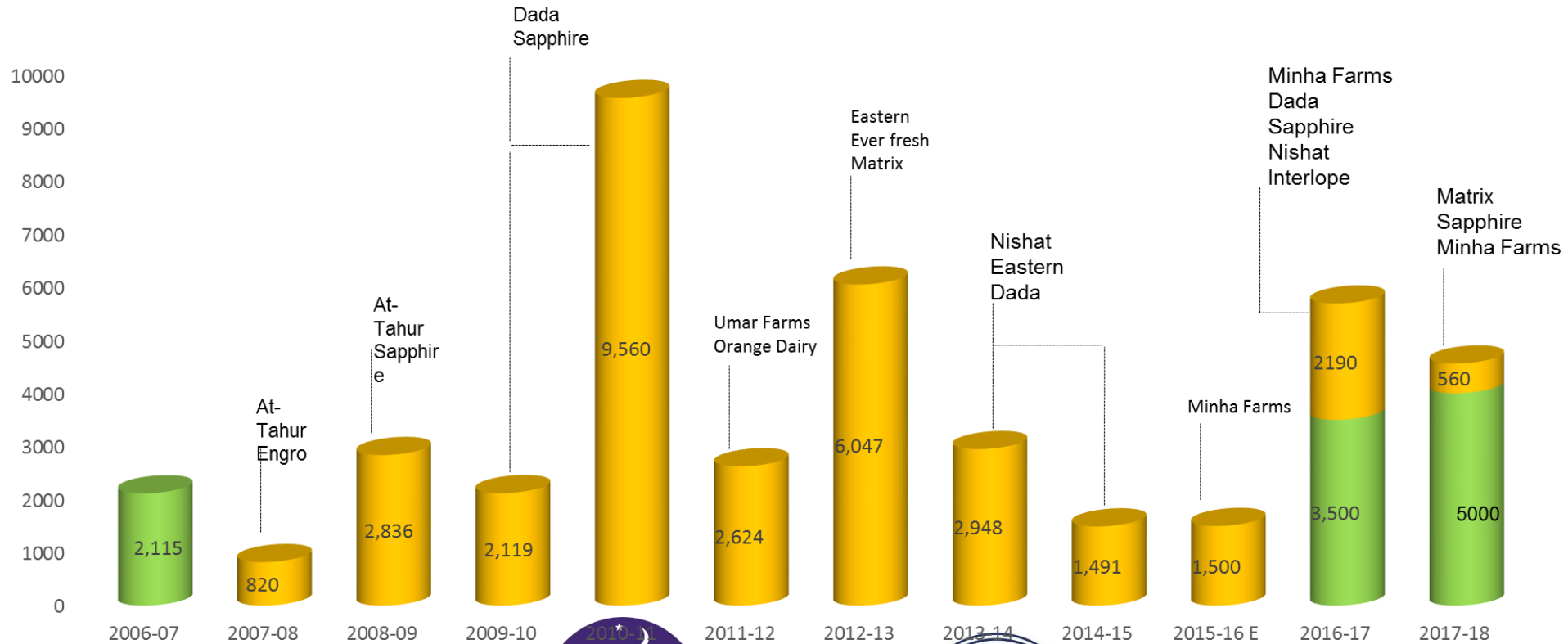
the European Union





## Genetic potential of animals

Import of high yield cow mainly from Australia



Funded by the European Union



Other farms



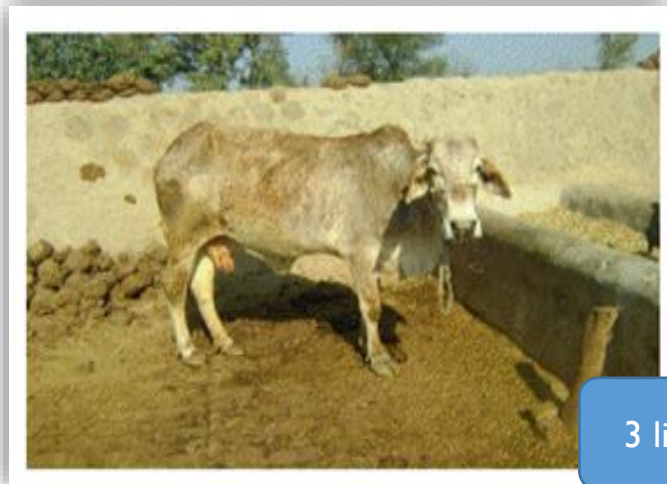
DAIRY SOLUTION (Pvt.) Ltd.

Best Dairy Technology



RBWR TA  
Revival of Balochistan Water Resources

# Genetic Improvement



3 liter/day



16 liter/day



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



## Genetic potential of animals

Artificial insemination technician and provision of quality semen through DRDF



Trainings empower unemployed rural youth through AI trainings which allows them to become:

- Self-employed;
- Certified;
- and an integral part of DRDF's supply line

Developed intensive net work of quality semen distribution through out Punjab



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# Animal Feed & Fodders

## Silage - A Fodder Preservation Technique

- Introduction of silage technology in Pakistan
- Subsidy in fodder cutting machines
- Targeting ~25,000 acers of silage crop in 2018
- Development of silage vendors



## Concentrate Feed Mix (CFM) Quality Improvement

- 29 quality feed manufacturers developed
- Quality monitoring of CFM supplies



Funded by  
the European Union



**KBVVK TA**  
Revival of Balochistan  
Water Resources



# Training of Field Staff

IFC, World Bank



Elanco



Funded by  
the European Union



**RBWR** TA  
Revival of Balochistan  
Water Resources

## Training of Farmers

More than 22,000 farmers trained at Nestlé Training Farms in last five years

### Training Courses

- Basic dairy herd management: 2 days course
- Advance dairy courses: 1 week/1 month course

More than 330,000 farmers trained through Rural training camps, Awareness campaigns & Farmer days in last 5 years

Training commenced in 2016  
Farmers trained 2000 in four months

1 day training course for farmers



Funded by  
the European Union



RBWR TA  
Revival of Balochistan  
Water Resources



# Farm Mechanization

- Modern farm design support
- Farm Milk Development Schemes
- Introduction of new dairy technologies
- Linking farmers with machine suppliers
- Special discounted price for Nestlé farmers



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# COW COMFORT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Animal Performance Drivers

- Breed
  - Nutrition
  - Cow Comfort
- 
- We need to take all three in a balanced Farm
  - IF one is zero , It will make other two Zero



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# Dairy Farm -5 Freedom

## Freedom from Hunger & Thirst

- Ready access to fresh water
- Access to diet to maintain full health

## Freedom to express normal behavior

- Proper space
- Proper facilities
- Company of animal's own kind

## Freedom From Pain, Injury or Disease

- Presentation
- Rapid Diagnosis
- Rapid Treatment

## Freedom from discomfort

- Appropriate environment including shelter
- Comfortable resting area

## Freedom from Fear and Distress

- Restricted movements
- Ensuring conditions which avoid mental suffering



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Cooperate Dairy Farm Income drivers



## Secondary

Processed meat for humans  
Leather  
Offal into fertilisers



**Primarily** for Dairy Products



**Secondary** income the calf:  
Heifer replacements  
Veal  
Leather  
Pet food  
Foetal Bovine Serum  
Can be sold to other farmers



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# Cow Comfort means

## Physical Environment

- Free Stalls,
- Feeding area,
- Proper Floors,
- Ventilation,
- THI

## Social Environment

- Grouping
- Stocking density
- Competition

Natural Behaviors

Resting

Feeding

Ruminating

Productivity and Health



Funded by  
the European Union



DAIRY SOLUTION (Pvt.) Ltd.

Best Dairy Technology

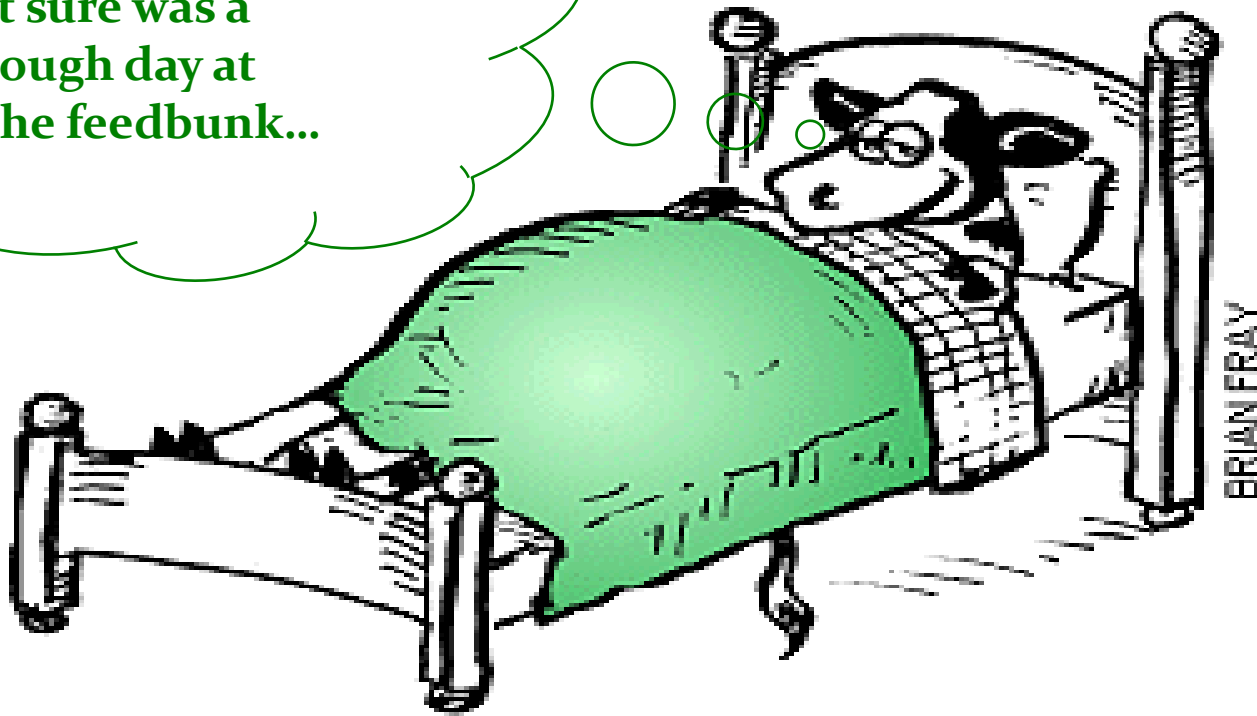


RBWR TA  
Revival of Balochistan  
Water Resources



# COW COMFORT?

This feels great,  
it sure was a  
tough day at  
the feedbunk...



- Ventilation**
- Lighting**
- Nutrition**
- Reproduction**
- Profitability**
- Heat Abatement**
- Water**
- Bedding**
- Facility Design**
- Concrete Grooving**
- Shade**
- Milking Frequency**
- Parlor management**



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

## Cow Behavior & Comfort

### The “Big Picture”

- The behavior of dairy cows is dependent on their interaction with the physical environment
- Although the modern cow has been domesticated, it still has its inherent desire to satisfy natural needs
- The physical factors of the facility (shed design, flooring type, feeding table design, etc.) impose limitations on how cows will interact with conditions



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# The Problem



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



- Workflow Management
  - Operational Efficiency
    - Process Mapping
      - Controls
- Stress Management
  - Environmental
    - Heat
    - Animal Handling
- Hygiene & Waste Management



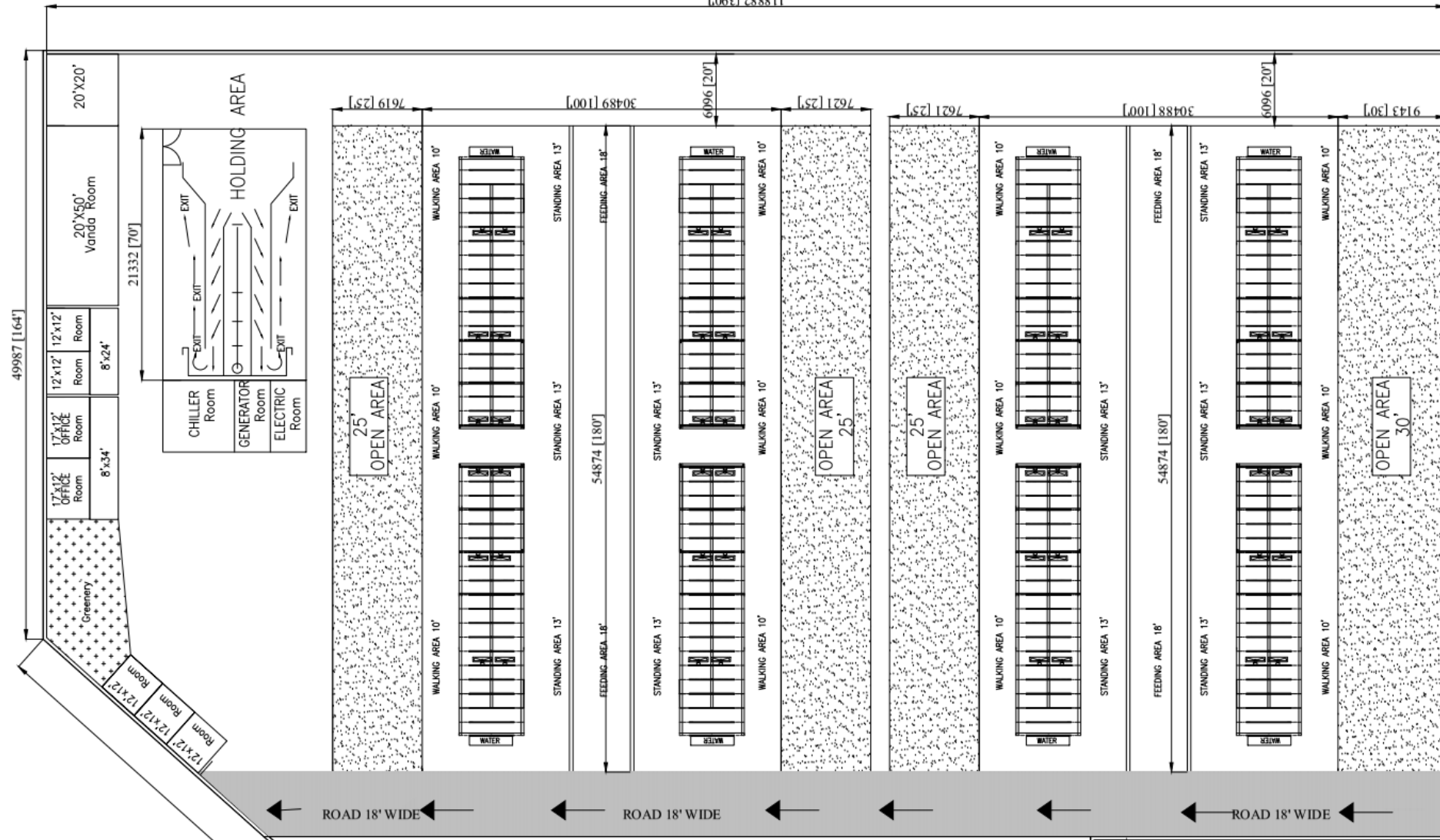
Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Shed Design & Layout



Funded by  
the European Union

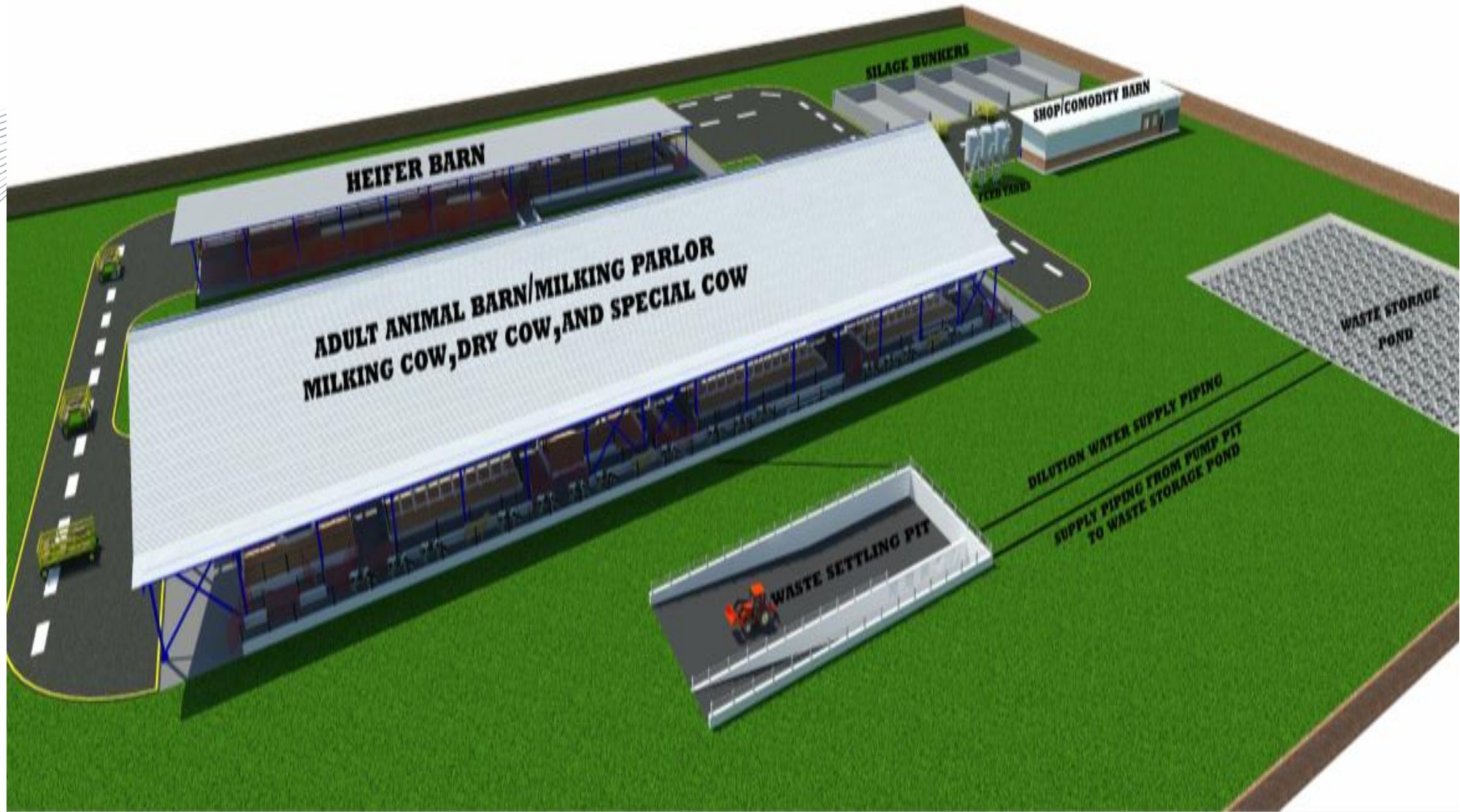


Best Dairy Technology



KBVVR TA  
Revival of Balochistan  
Water Resources

# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



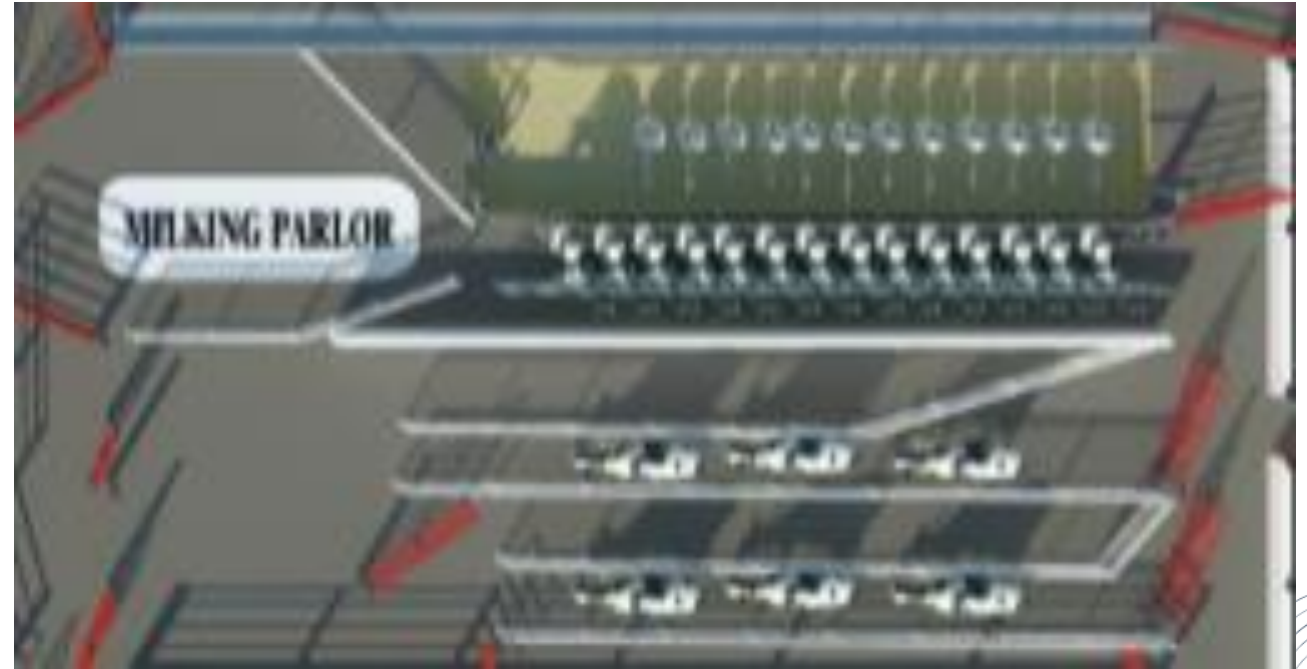
Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Front View



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Calf Shed



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBVWR TA**  
Revival of Balochistan  
Water Resources



# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Cooperate Dairy Farm



2. Architectural Drawings.pdf



3. Structural Drawings.pdf



4. Plumbing Drawings.pdf



5. Civil Works BOQ.pdf



6. Plumbing Works BOQ.pdf



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# How do cows spend their time? (Free-stall environment)

- **Basic behavioral needs:**

- 5.0-5.5 hours per day eating
- 12-14 hours per day lying (resting)
- 2.0-3.0 hours per day standing/walking in alley (grooming, agonistic, estrous activity)
- 0.5 hours per day drinking
- 20.5 to 21.5 hours per day (total needed)

- What's left? 2.5 to 3.5 hours per day for milking” **Total = 24 hours/day**



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# Question: Which is more important - eating or resting?



Funded by  
the European Union



**DAIRY SOLUTION (Pvt.) Ltd.**

Best Dairy Technology



Revival of Balochistan  
Water Resources

# Cows have strong behavioral need to rest ...

- Cows sacrifice feeding to make up lost resting
- Cows spend more time waiting in alleys to lie down than eating when overstocked
- Negative effects of short periods of deprivation are cumulative

Resting: 12-14 hours per day



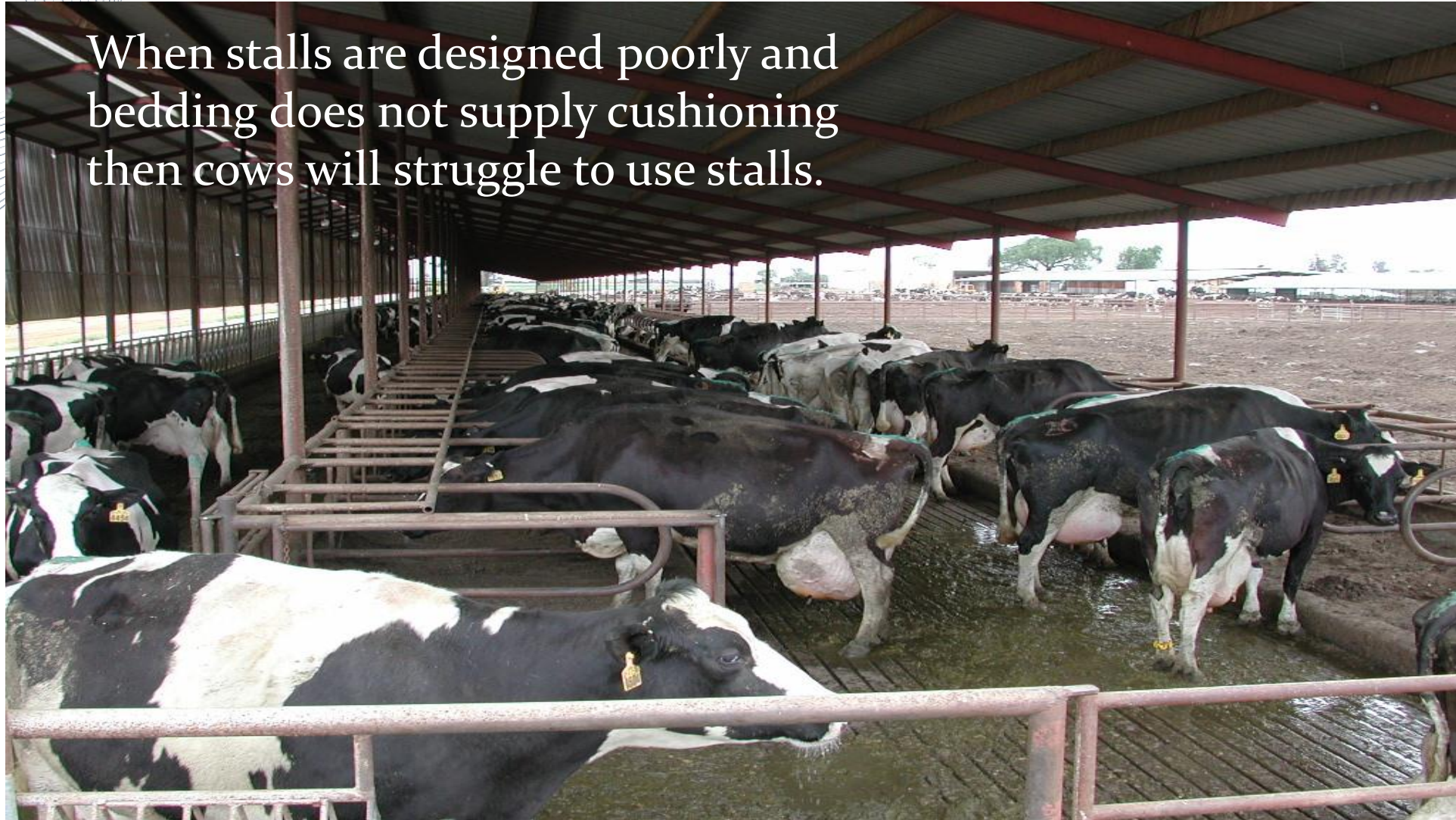
Funded by  
the European Union



**RBWR** TA  
Revival of Balochistan  
Water Resources



When stalls are designed poorly and bedding does not supply cushioning then cows will struggle to use stalls.



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# IMPROVING PUBLIC - PRIVATE EXTENSION SERVICES IN LIVESTOCK, DAIRY CARE & MANAGEMENT



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



## Can we measure if cows are comfortable?

### Cow Comfort Quotient (CCQ)

Cows lying properly/cows “in” stalls \* 100

80% is considered an outstanding goal

### Cud Chewing Index (CCI)

Cows chewing/cows “in” stalls \* 100

50% would be considered an outstanding goal

### Stall Use Index (SUI)

Cows lying properly/cows not actively feeding

SUI Appears to be one of the best at gauging true cow comfort



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

## Home Taking Message

1. **Shed design and cow management should allow 10 to 14 hours of lying time for each cow within a pen**
2. **Free stalls/bunkers should be sized to allow cows to for all natural resting postures (depending on breed)**
3. **Feeding area management should allow 5 hour per day feeding time for each cow**
4. **Stocking density of frees stalls should not exceed 120%**
5. **Special attention should be given to first-calf heifers and lame cows**
6. **The total impact of stocking density will be dictated by the interaction of design, grouping strategies and social interaction**



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources



# QUESTIONS

??????



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources

# THANK YOU



Funded by  
the European Union



**RBWR TA**  
Revival of Balochistan  
Water Resources