



# Implementing guidelines and tools to measure socio-economic impact of the dairy sector

(An invitation to a stepwise process)

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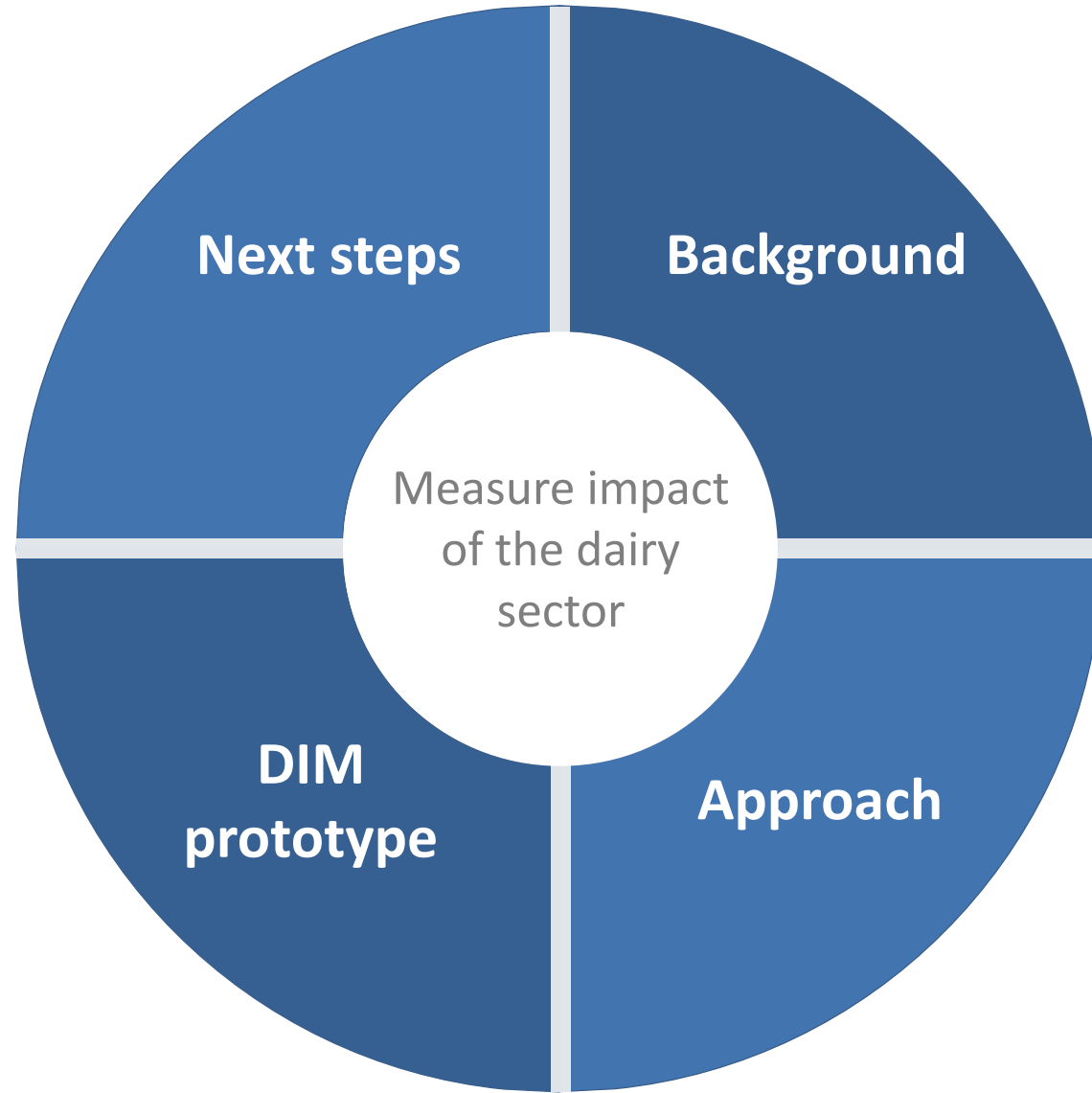


Ulaanbaatar, 8<sup>th</sup> MSP Meeting  
11-15 June, 2018

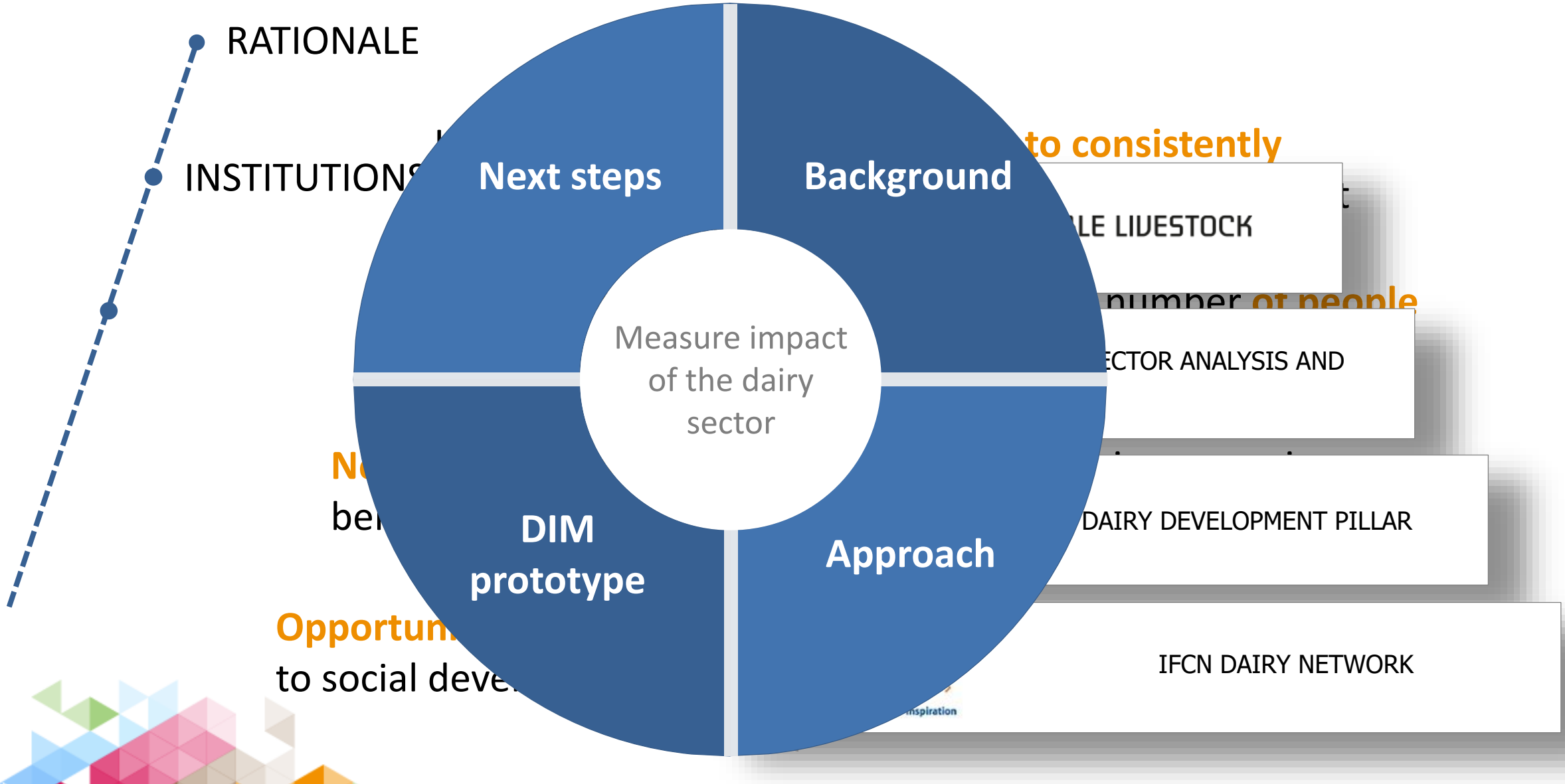


Food and Agriculture  
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#LivestockAgenda



RATIONALE

INSTITUTIONS

Next steps

Background

Measure impact of the dairy sector

DIM prototype

Approach

to consistently

LE LIVESTOCK

number of people

ECTOR ANALYSIS AND

DAIRY DEVELOPMENT PILLAR

IFCN DAIRY NETWORK

Opportunity to social dev



## Dairy Impact Assessment Model (prototype)

### Steps

● **Define working and conceptual framework**

● **Determine basic elements to measure**

● Conform a task force group

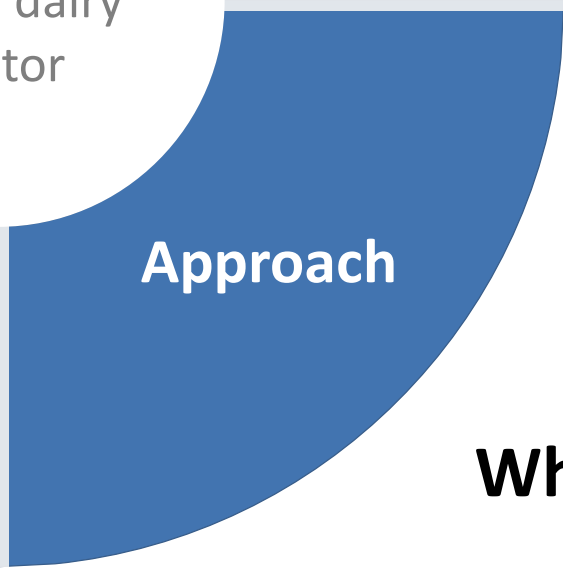
● The selection of a core set of indicators to measure social impact

● The development of a model to link input and output indicators

● Testing and refining methods / models

Background



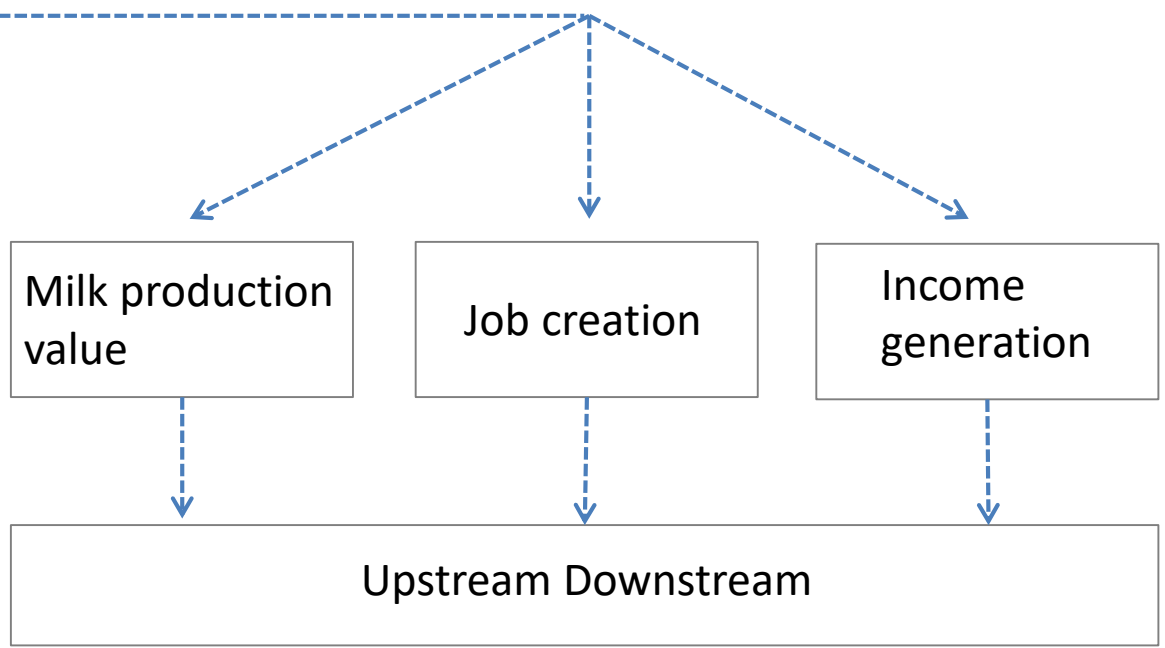


Approach

# Dairy impact analysis approach

## What to measure (SCOPE)

- Current contribution of dairy
- What if analysis
- Return on Investment
- Social ROI



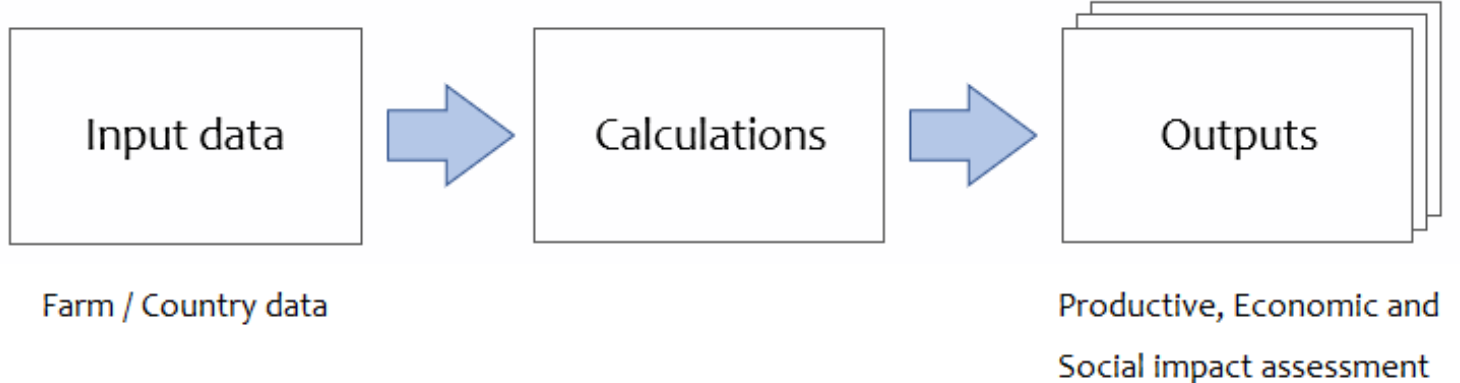


The Dairy Impact Assessment Model is a Microsoft Excel based tool to assess the social and economic impact of dairy developments in a milkshed / region / country.

The model is available in two tiers :

- 1. Basic version (data source = user data input)
- 2. Advanced version (data source = IFCN estimates)

Following figure describes the flow of information:





# Input variables

## Dairy Facts

1. Total milk production in the country/ region per year
2. Total number of dairy cows/ buffaloes in the country/ region
3. Total number of dairy farms
4. Total milk delivered in the country/ region
5. Total milk equivalents exported in the country/ region per year
6. Total milk equivalents imported in the country/ region per year
7. Total population in the country/ region
8. Total agriculture GDP per year
9. Value added percent share of dairy sector

## Production Value

### Upstream value chain

10. Milk yield per cow per year
11. Fat
12. Proteins
13. Milk price of formal market (excluding VAT) per kg milk
14. Milk price of informal market for farm
15. Cattle returns (including other returns) per kg milk
16. Coupled Subsidies
17. Total decoupled subsidies
18. Other subsidies incl. VAT balance
19. VAT rates on milk at farmgate

### Downstream value chain

20. Milk consumption per capita
21. Milk retail price in formal sector
22. Milk retail price in informal sector
23. VAT per litre Milk equivalent
24. FOB Milk equivalent price
25. Milk equivalent import price
26. Processing industry subsidy

## Impact on Employment

27. Labour hours per cow per year
28. Standard manhours per full-time job per year
29. Working days per full-time job per year
30. Proxy variable for upstream full-time direct jobs
31. Proxy variable for downstream full-time direct jobs
32. Proxy variable for upstream full-time indirect jobs
33. Proxy variable for downstream full-time indirect jobs
34. Proxy variable for upstream full-time jobs (informal)
35. Proxy variable for down-stream full-time jobs (informal)

## Impact on Farm Income

36. Minimum wage for off farm work
37. Poverty line per capita per day

### Based on Typical Farm Data

#### For average farm

38. Number of adult equivalent family members
39. Farm household cash income per year
40. Off farm income per year
41. Return to labour from dairying (incl. subsidies)

#### For large farm

42. Number of adult equivalent family members
43. Farm household cash income per year
44. Off farm income per year
45. Return to labour from dairying (incl. subsidies)

46. Average wages in the typical average farm
47. Type of production system of average farm

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# Output variables

Dairy Impact Assessment GERMANY	
Dairy Facts	Impact on Employment
<p><b>36,78</b> Million Ton Milk Produced</p> <p>69 Thousand farms</p> <p>4,2 Million Cows</p> <p>96% Milk delivered</p> <p>49,6% Milk exported from production</p> <p>47,7% Milk imported on demand</p>	<p><b>281.364</b> Full time jobs created</p> <p>158.739 Number of farm jobs</p> <p>122.625 Number of up/down-stream jobs</p> <p>3 Number of jobs / 1000 litres milk / day</p> <p>15 Cows per full time job</p> <p>9 Jobs / million USD sales</p>
Production Value	Impact on Farm Income
<p>27.936 Million USD Sum of dairy value</p> <p>15.679 Million USD On farm value</p> <p>28% of agriculture GDP</p> <p>2.198 Million USD Farm subsidies</p> <p>2.373 Million USD Government VAT revenues</p> <p>1.610 Million USD Net trade value</p>	<p><b>80 cows</b> Average farm</p> <p><b>192%</b> Above Poverty line</p> <p><b>62%</b> of Local wages potential</p> <p><b>500 cows</b> Large farm</p> <p><b>622%</b> Above Poverty line</p> <p><b>132%</b> of Local wages potential</p>

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# Outputs - Basic dairy facts

## Dairy Impact Assessment: Germany

### Dairy Facts

### Income

#### Milk Production



36,8

Million Ton (ECM)

#### Turnover



15.679

Milk Production Value  
(Million USD/year)

#### Number of farms



69

Thousands

#### Sector Impact



of Agriculture GDP

#### Number of cows



4

Million cows

#### Employment



281.364

Total jobs created  
(direct-indirect)

#### Production / cow



8038

Litres cow / year

#### Income Impact



#### Milk Deliveries



To formal markets

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# Outputs - Basic dairy facts

## Dairy Impact Assessment: Netherlands

### Dairy Facts

### Income

#### Milk Production



16,0

Million Ton (ECM)

#### Turnover



6.214

Milk Production Value  
(Million USD/year)

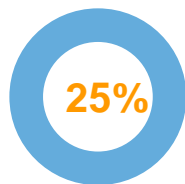
#### Number of farms



18

Thousands

#### Sector Impact



of Agriculture GDP

#### Number of cows



2

Million cows

#### Employment



91.255

Total jobs created  
(direct-indirect)

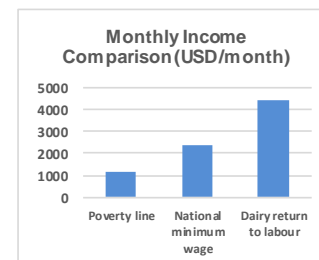
#### Production / cow



8892

Litres cow / year

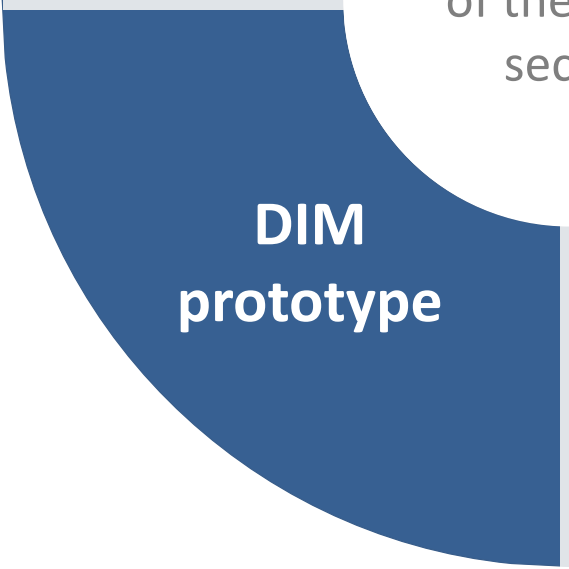
#### Farm Income Impact



#### Milk Deliveries







To formal markets




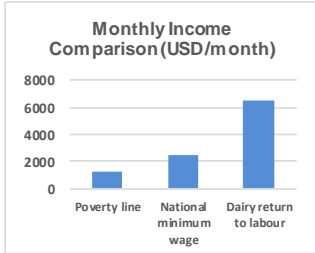



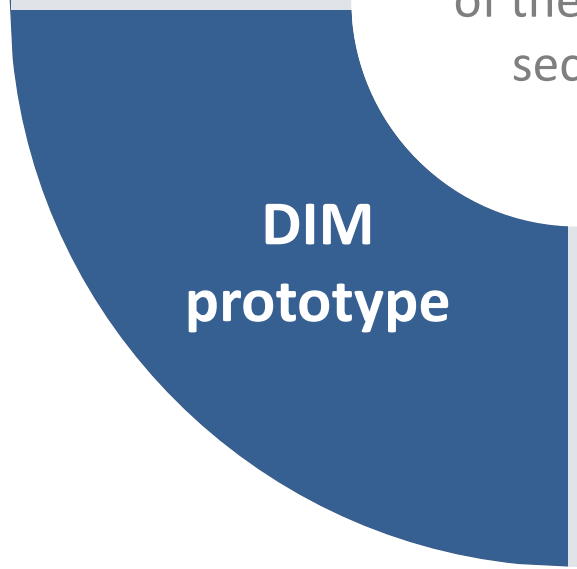
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# Outputs - Basic dairy facts

Dairy Impact Assessment: USA	
Dairy Facts	Income
<b>Milk Production</b>  <b>92,3</b> Million Ton (ECM)	<b>Turnover</b>  <b>41.233</b> Milk Production Value (Million USD/year)
<b>Number of farms</b>  <b>46</b> Thousands	<b>Sector Impact</b>  <b>13%</b> of Agriculture GDP




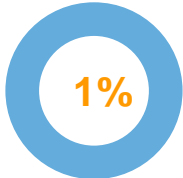
<b>Number of cows</b>  <b>9</b> Million cows	<b>Employment</b>  <b>1.881.732</b> Total jobs created (direct-indirect)								
<b>Production / cow</b>  <b>10330</b> Litres cow / year	<b>Farm Income Impact</b>  <p>Monthly Income Comparison (USD/month)</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Monthly Income (USD/month)</th> </tr> </thead> <tbody> <tr> <td>Poverty line</td> <td>~1000</td> </tr> <tr> <td>National minimum wage</td> <td>~2500</td> </tr> <tr> <td>Dairy return to labour</td> <td>~6500</td> </tr> </tbody> </table>	Category	Monthly Income (USD/month)	Poverty line	~1000	National minimum wage	~2500	Dairy return to labour	~6500
Category	Monthly Income (USD/month)								
Poverty line	~1000								
National minimum wage	~2500								
Dairy return to labour	~6500								
<b>Milk Deliveries</b>  <b>100</b> To formal markets									




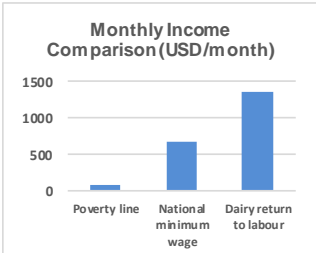



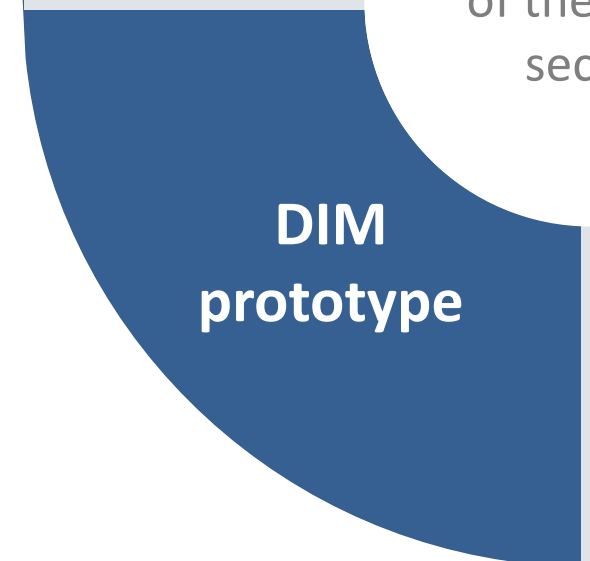
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# Outputs - Basic dairy facts

Dairy Impact Assessment: China	
Dairy Facts	Income
<b>Milk Production</b>  <b>29,7</b> Million Ton (ECM)	<b>Turnover</b>  <b>17.009</b> Milk Production Value (Million USD/year)
<b>Number of farms</b>  <b>1.300</b> Thousands	<b>Sector Impact</b>  <b>1%</b> of Agriculture GDP

<b>Number of cows</b>  <b>5</b> Million cows	<b>Employment</b>  <b>689.467</b> Total jobs created (direct-indirect)
<b>Production / cow</b>  <b>6676</b> Litres cow / year	<b>Farm Income Impact</b> 
<b>Milk Deliveries</b>  <b>77</b> To formal markets	



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# Outputs - Basic dairy facts

## Dairy Impact Assessment: Bangladesh

### Dairy Facts

### Income

#### Milk Production



3,9

Million Ton (ECM)

#### Turnover



322

Milk Production Value  
(Million USD/year)

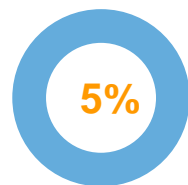
#### Number of farms



1.432

Thousands

#### Sector Impact



of Agriculture GDP

#### Number of cows



4

Million cows

#### Employment



1.976.539

Total jobs created  
(direct-indirect)

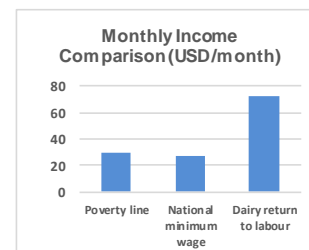
#### Production / cow



902

Litres cow / year

#### Farm Income Impact



#### Milk Deliveries

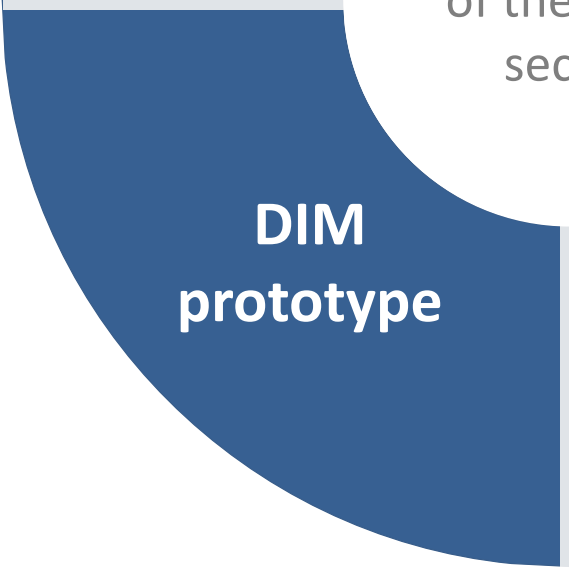


To formal markets

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# Basic structure

DIM - Basic prototype - Modular structure for calculation							
Areas	Indicators	Formulas to calculate indicators	Variables used in the formulas	Source of collection	Level of accuracy		
					High	Medium	Low
Milk collection facts	Indicator 1	Formula 1	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 2	Formula 2	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 3	Formula 3	Variable 1				
			Variable 2				
			Variable 3				
Employment	Indicator 1	Formula 1	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 2	Formula 2	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 3	Formula 3	Variable 1				
			Variable 2				
			Variable 3				
Turnover income	Indicator 1	Formula 1	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 2	Formula 2	Variable 1				
			Variable 2				
			Variable 3				
	Indicator 3	Formula 3	Variable 1				
			Variable 2				
			Variable 3				

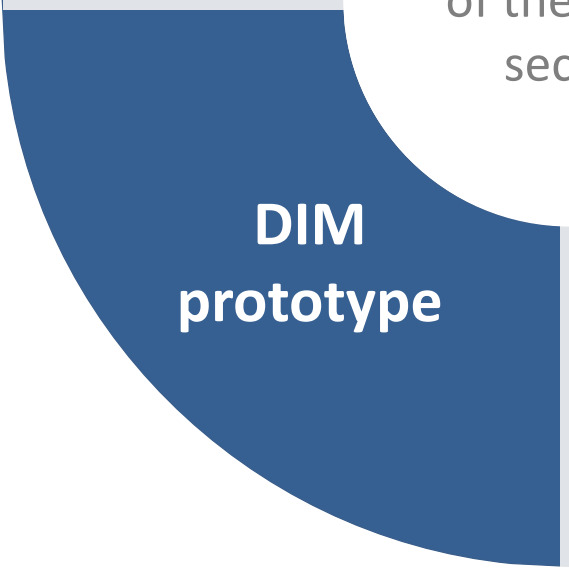


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# Basic dairy facts



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Output	Input
Output	Formulae: 1. Total production per cow * Cow nos.
Billion Ton Milk Produced	Formulae: 2. Yield per cow per year
Full time jobs created	Formulae: 3. = (Nos. of farm jobs + Nos. of jobs upstream + Nos. of jobs downstream)
Sum of dairy value	Formulae: 4. Total production dairy cows/cattle/business value + value of MAT Revenues + Net
Thousand farms	Formulae: 5. Total number of dairy farms in the country/region
Number of farm jobs	Formulae: 6. = (Cow nos. * Labour hours per cow) / Full Time Equivalent labour
Million Cows	Formulae: 7. Labour hours per cow per year
On farm value	Formulae: 8. Cow * Buffaloes nos
	Formulae: 9. Total turnover in formal markets + Farm turnover in informal markets
Milk delivered	Formulae: 10. Standard manhours per full-time job per year
Farm turnover in formal markets	Formulae: 11. = Total volume of milk delivered / Total milk produced
Number of up/down-stream jobs	Formulae: 12. Milk delivered * ( Milk price + Cattle returns + Subsidies ) 13. = Upstream & downstream direct jobs in formal dairy markets + Upstream & downstream indirect jobs in formal dairy markets + upstream & downstream jobs in informal dairy market
Milk exported from production	Formulae: 14. 28. Milk price of formal market (excluding VAT) per kg milk 15. 29. Cattle returns (including other returns) per kg milk
Direct Jobs in formal dairy market upstr	Formulae: 16. 30. Proxy variable for upstream full-time direct jobs 17. = Milk non-delivered * ( Milk price + Cattle returns + Subsidies )
Farm turnover in informal markets	Formulae: 18. 31. Prox variable for downstream full-time direct jobs 19. = (Milk delivered / day) * ( Down-stream jobs per litre milk produced per day)
Direct Jobs in formal dairy market down	Formulae: 20. 21. Prox variable for downstream full-time direct jobs 21. = Milk non-delivered (milked, deadstocked, others) per kg milk excl. VAT
Milk imported or demand	Formulae: 22. Total population in the country/region
Indirect Jobs in formal dairy market ups	Formulae: 23. = (Milk delivered / day) * ( Down-stream indirect jobs per litre milk produced per day)

# DIM prototype

## Data reference

### Impact on Employment

#### Upstream value chain

27. Labour hours per cow per year	hr per cow	The labour hours per cow (incl. Family and hired labour) input by farms in a region/ country/ milkshed in a year.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 43.5 hours per cow estimated in Germany in 2016.
1. Total milk production in the country/ region per year	M	The volume of raw milk produced per cow in a region/ country/ milkshed in a year in million ton of natural content. In case of region or milkshed, it refers to the quantity of raw milk produced in a region/ country/ milkshed in a year.	The data is derived from the self estimation, the national statistics or the records with the regional agency.	From national statistics like 34 Million Ton/ year in Germany in 2016.
28. Standard manhours per full-time job per year	hrs	The standard working days per full-time job in a region/ country/ milkshed in a year.	The data is derived from the self estimation, the national statistics or the records with the regional agency.	From national statistics like 8038 kg per cow per year in Germany in 2016.
10. Milk yield per cow per year		The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 4.2 Million cows in Germany in 2016.
29. Working days per full-time job per year	Days	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 4.5% in Germany.
21. Total number of dairy cows/ buffaloes in the country/ region	No. of jobs/	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 0.30-0.50 in Western Europe and 20-50 in South Asia.
30. Proxy variable for upstream full-time direct jobs	1000 litres milk per day	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 3.5% in Germany.
12. Proteins	No. of jobs/	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 0.1 in Western Europe and 65,000 dairy farms in Germany in 2016.
31. Proxy variable for downstream full-time direct jobs	1000 litres milk per day	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 32 USD/ 100kg in Germany in 2016.
3. Total number of dairy farms		The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 32 USD/ 100kg in Germany in 2016.
13. Milk price of formal market (excluding VAT) per kg milk	USD/ 100kg	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	From national statistics like 7 USD/ 100kg in Germany in 2016.
4. Total milk delivered to the country/ region	M	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	
14. Milk price of informal market for farm	USD/ 100kg	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	
15. Cattle returns (including other returns) per kg milk	USD/ 100kg	The fat percentage of the raw milk produced by the farmers in a region/ country/ milkshed in a year in natural content.	The data is derived from the expertise, the national statistics or the records with the regional agency.	

- Internal discussion re-shaping basic prototype and elements (Q3)
- Conform a task force group (Q4) - Guidelines
- Basic prototype elements ready to be tested (Q1/2- 2019)
- Testing phase in 3 regions (2019 linked to a project proposal)
- Model adjustments (2019 linked to a project proposal)
- Prototype available (2020 linked to a project proposal)

DIM  
prototype

# Thanks

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#LivestockAgenda

Next steps

Measure  
of the





GLOBAL AGENDA FOR  
SUSTAINABLE LIVESTOCK



**GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK**

8<sup>th</sup> MSP meeting Ulaanbaatar, Mongolia, 11-15.06.2018

## Action Network

Individual picture or text

# Livestock for Social Development

[www.livestockdialogue.org](http://www.livestockdialogue.org)

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#LivestockAgenda



Food and Agriculture  
Organization of the  
United Nations

SUSTAINABLE  
DEVELOPMENT  
GOALS

17 PARTNERSHIPS  
FOR THE GOALS