



SUSTAINABILITY INDICATORS IN NAVARRA(SPAIN)

APPLICATION TO DAIRY SHEEP

J.M. Intxaurrendieta , P.Eguinoa, J.M.Mangado

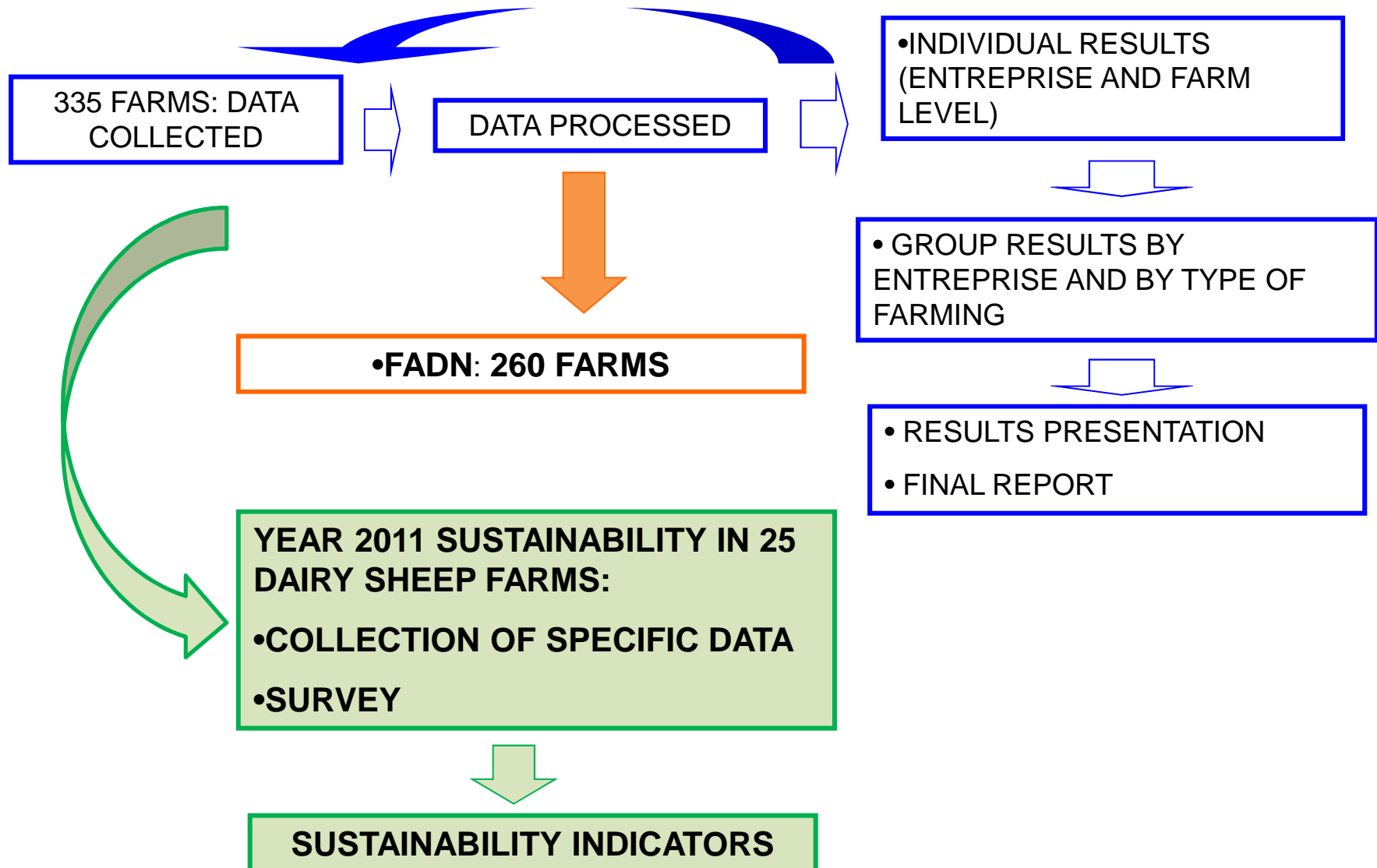
PACIOLI 22

Dublin, 29nd of September 2014



- INTIA AND FADN
- SUSTAINABILITY INDICATORS
- RESULTS OF SOME INDICATORS APPLIED TO DAIRY SHEEP
- ENVIRONMENTAL INDICATORS AND FUNCTIONAL UNITS
- IS SUSTAINABILITY RECOGNISED BY THE CAP?

INTIA : ACCUNTANCY OFFICE



SUSTAINABILITY INDICATORS

ECONOMIC	SOCIAL		ENVIRONMENTAL
Autonomy	Farm ownership	I N T E R N A L	Livestock and territorial base
Risk and diversification	Generation of Employment		Land management
Costs	Quality of life		Nutrient balance
Stability	Quality of labour		Effluent management
Profitability	Gender indicators	E X T E R N A L	Landscape and Biodiversity
	Animal welfare		Energy
	Environment valuation		GHG emissions
	Product quality and closeness to consumers		

E
C
O
N
O
M
I
C

Profitability	FNI (Farm Net Income)/FAWU (Family Annual Work Unit)
	$(RFL \text{ (Remuneration of Family Labour)} + \text{Wages paid}) / AWU$
	$(RFL + \text{Wages paid}) / \text{hour}$
	NM(Net margin)/liter of milk
	Gross margin(without subsidies)/sales
	Gross margin/ Total Output
	FNI (without subsidies)/sales
	FNI/Gross Product
Autonomy	Autonomy without subsidies
	Financial autonomy
	Feed autonomy
	Autonomy on labour
	Autonomy on land availability
Risk and Diversification	Production variability
	Number of customers per type of production
	Significance of production with the largest share
	Significance of customer with the largest share
	Financial risk
	Volatility of feed and milk prices
Cost structure	Structural costs/Total output
	Structural cost/LU
	Significance of volatile inputs
	Costs and price of the main product(milk)
Stability	Gross Margin stability
	Net Margin stability
	Main product price stability (milk)

**E
N
V
I
R
O
N
M
E
N
T**

Energy	Energy consumption/ha
	Energy consumption/AWU
	Total energy consumption/net margin
	Energy Efficiency (including feed energy)
	Energy efficiency (SOLAGRO)
	Use of Renewable energy
	Total energy consumption/litre of milk
Nutrient balance	N "SURPLUS"/Ha
	N "SURPLUS"/1000 l milk
	N "SURPLUS"/100 Kg meat
	Efficiency N
	P2O5 "SURPLUS"/ha
	P2O5 SURPLUS/1000 L milk
	P2O5 SURPLUS/100 Kg meat
Effluent management	P2O5Efficiency
	Lung and slurry pit capacity (legality)
	Rainfall collection
	Spilt cleaning water collection
GHG emissions	Waste recycling
	Kg CO2eq/ha
	Kg CO2eq/AWU
	Kg CO2eq/Net Margin
Natural elements and biodiversity	Kg CO2eq/litre of milk- CARBON FOOTPRINT
	% natural habitats in the farm surface
	% herd who enjoy natural habitats
	Ecotones.
	No. of crop species
	Other elements in the farm with high ecological value
	Threatened or endangered species.
UAA uses and management	Local /Natives species/breeds
	%UAA of permanent pasture
	%UAA temporary meadow
	% UAA annually sown
	% UAA under irrigation
	% UAA treated with pesticides
	% UAA receiving organic matter
Livestock/land balance	Sustainable management of UAA
	LU/ha UAA
	Kg organic N/UAA
	LU/forage surface area
	% use of own forage. Feed autonomy
Use of commons or other Natural Areas.	

S O C I A L

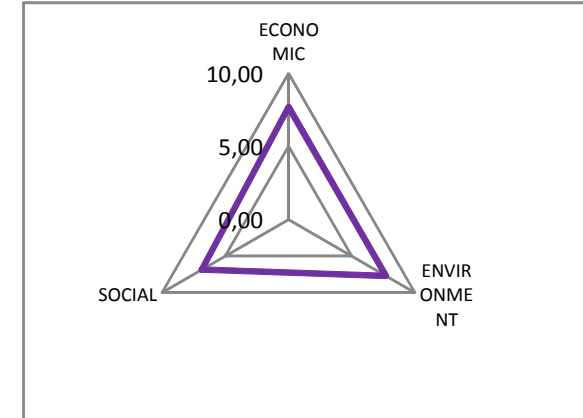
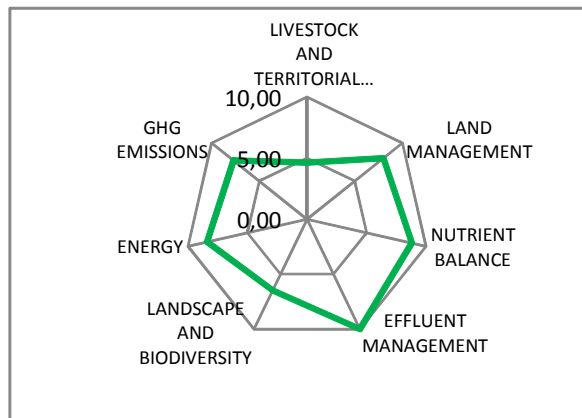
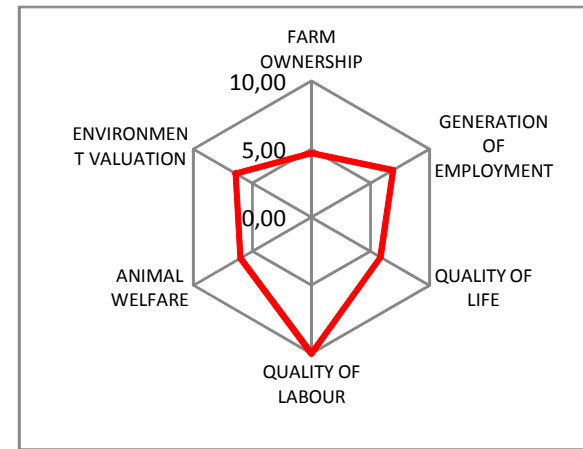
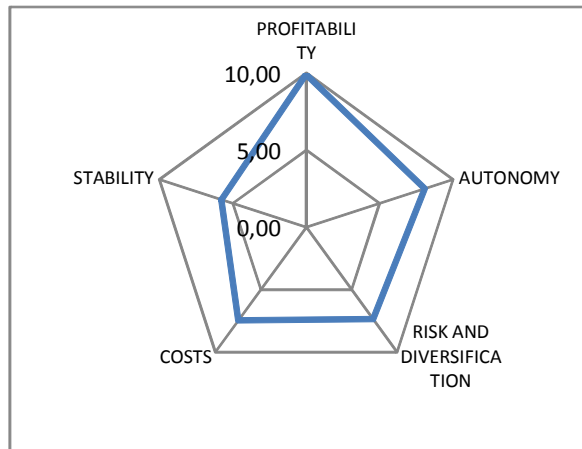
Farm ownership	Professionalism Gender (% women) Age % AWU < 40 years Social economy Continuity Family farming
Generation of employment	Land occupation (UAA/AWU) Tangible assets(less land)/Family AWU Dependence on subsidies Required milk litres for reference income
Quality of life	Time availability Training and education Free days/ week Holidays (days/year) Personal assessment
Work quality	Autonomy in decisions Ergonomic and psycho-sociological quality Personal assessment Hours worked (on labour agricultural agreement) Level of work concentration (max. month/average)
Animal welfare	Frequency of visits to livestock Grazing of productive livestock Composite indicator aggregation. Binary (yes=1, no=0) for: Availability of building sheds in grazing areas, productive livestock grazing, and rational grazing. Availability of building sheds for livestock. Composite indicator aggregation. Binary (yes=1, no=0) for: More than 10 m per livestock unit, free movement stable, level of cleanliness temperature, adequate number of drinking and feeding troughs.
Landscape and tradition	LIVESTOCK MOVEMENTS * Transhumance * Use of common pastures and Natural Parks. * Pasture management APPRECIATION OF SURROUNDINGS * Crops chromatism * Other uses of natural resources * General environmental care BREEDS * Endangered breed * Local breed.
Product quality and closeness to consumer	Microbiological requirements GDO/PGI Other certifications Absence of GMOs in concentrates Complementary activities (agro tourism, visits...) Forms of marketing
Gender	Feminization index Labour situation of women Gender gap in training Involvement of women in decision-making Satisfaction degree of women

RESULTS:INDIVIDUALIZED REPORT

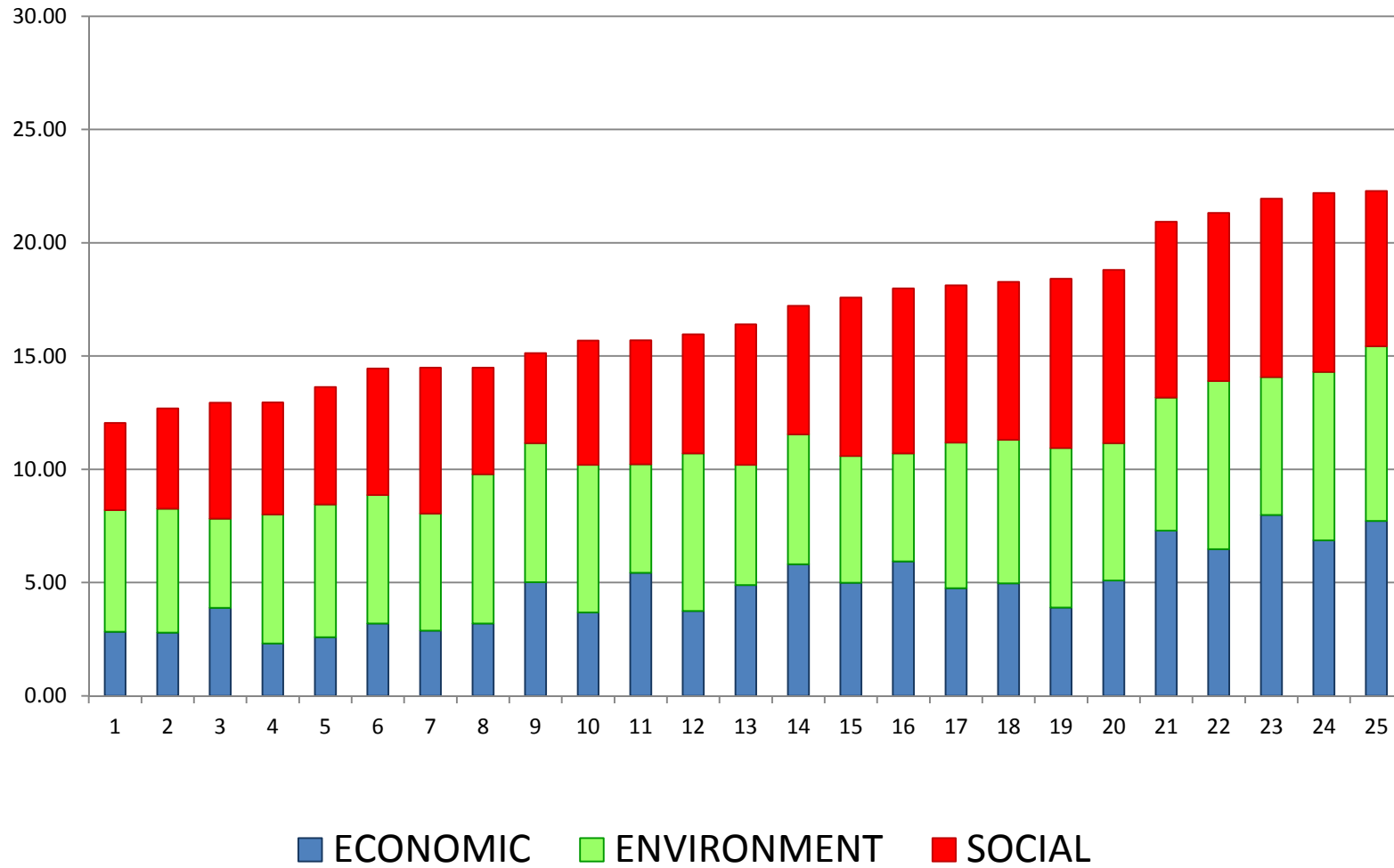
ECONOMIC	7,72
PROFITABILITY	9,90
AUTONOMY	8,08
RISK AND DIVERSIFICATION	7,38
COSTS	7,49
STABILITY	5,77

ENVIRONMENT	7,71
LIVESTOCK AND TERRITORIAL BASE	4,63
LAND MANAGEMENT	8,00
NUTRIENT BALANCE	8,80
EFFLUENT MANAGEMENT	10,00
LANDSCAPE AND BIODIVERSITY	6,48
ENERGY	8,39
GHG EMISSIONS	7,68

SOCIAL	6,86
FARM OWNERSHIP	6,37
GENERATION OF EMPLOYMENT	4,71
QUALITY OF LIFE	6,92
QUALITY OF LABOUR	5,85
ANIMAL WELFARE	10,00
ENVIRONMENT VALUATION	6,00
QUALITY OF PRODUCTS AND CLOSENI	6,41
GENDER	8,60

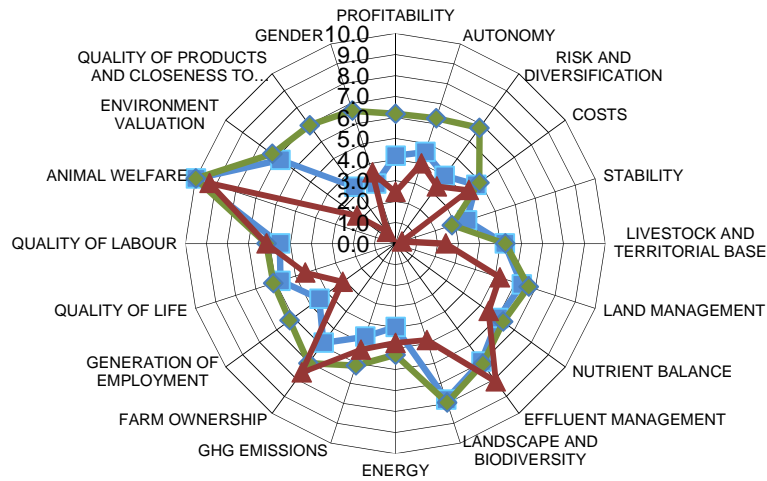


THREE DIMENSION RATING

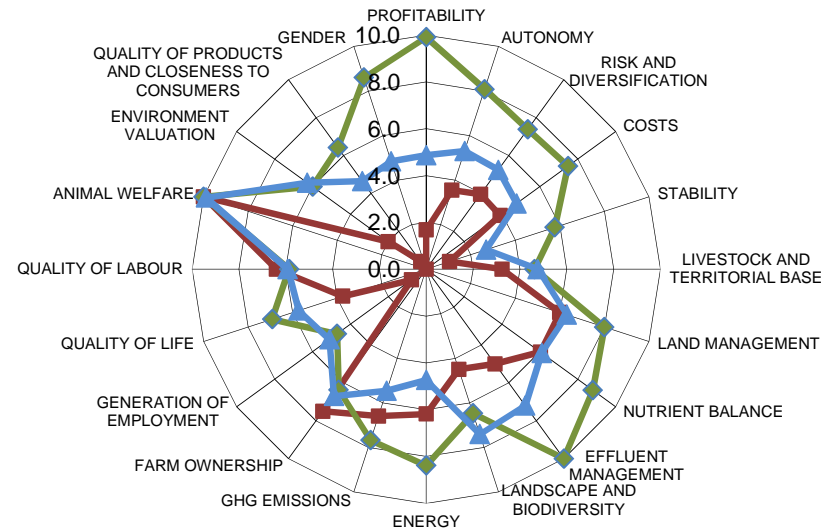


RESULTS ACCORDING TO PRODUCTION SYSTEM AND HIGHEST, LOWEST, AVERAGE SCORE

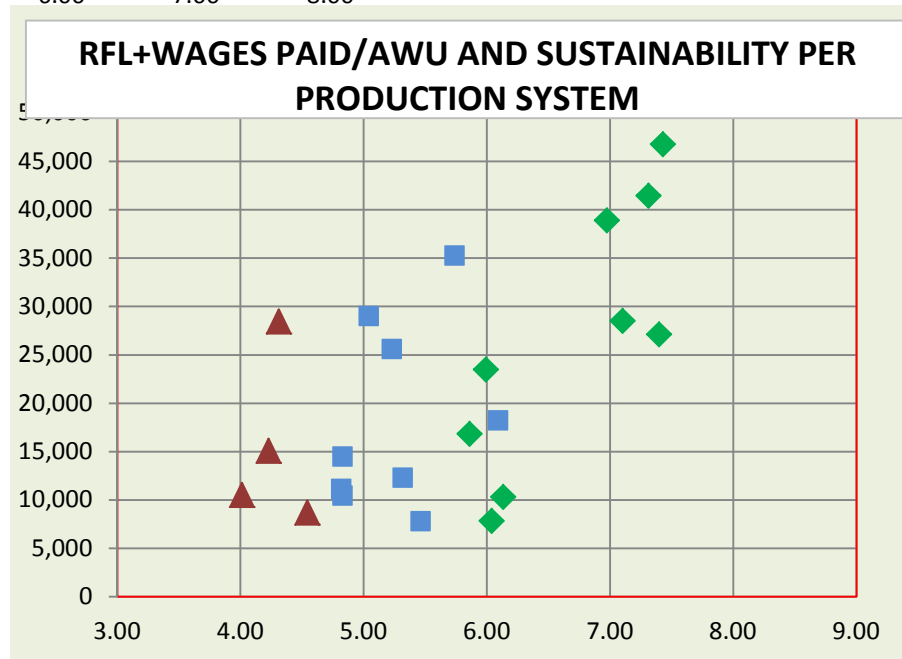
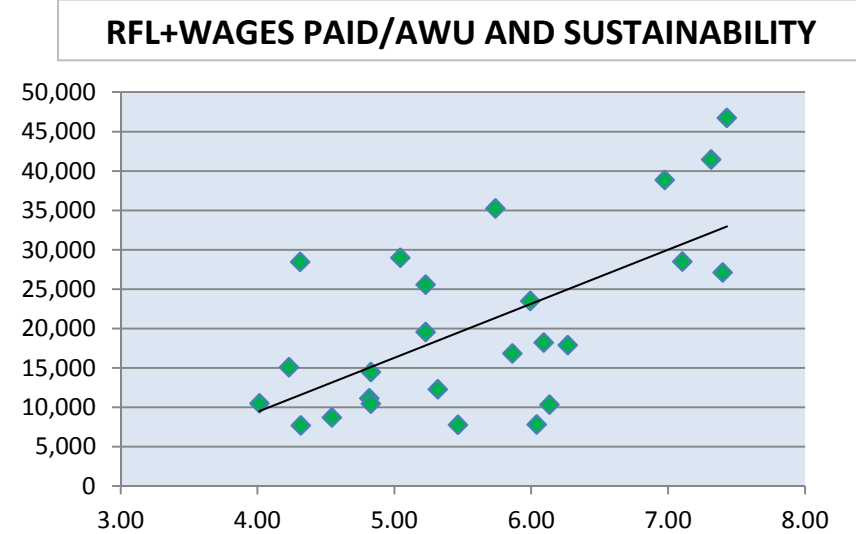
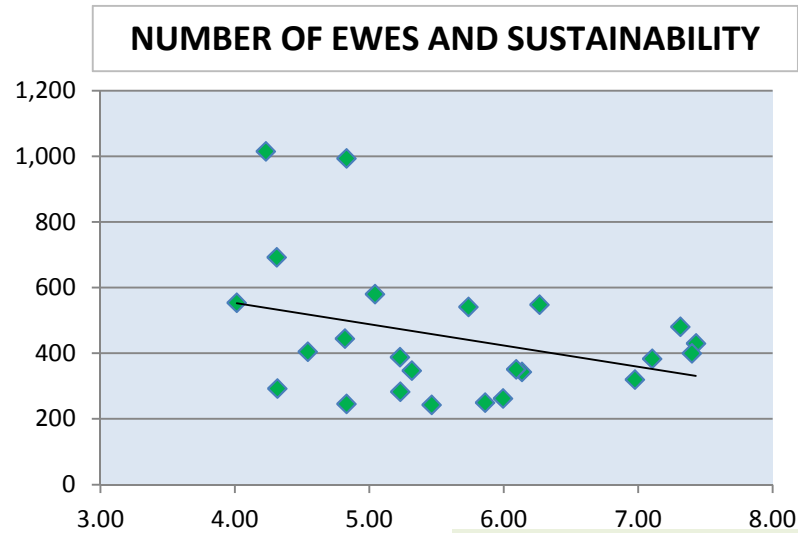
PRODUCTION SYSTEM: LC, LM, FOREIGN



FARMS WITH HIGHEST, LOWEST AND AVERAGE SCORE



SIZE ,PROFITABILITY AND SUSTAINABILITY



ENVIRONMENTAL INDICATORS AND FUNCTIONAL UNITS

The total amount of something (production, income, GHG emissions) is not useful to compare farms with different dimension. So, as in other management ratios, one functional unit is needed. In this study four references are used:

- Product
- Land-Livestock Unit
- Labour
- Income

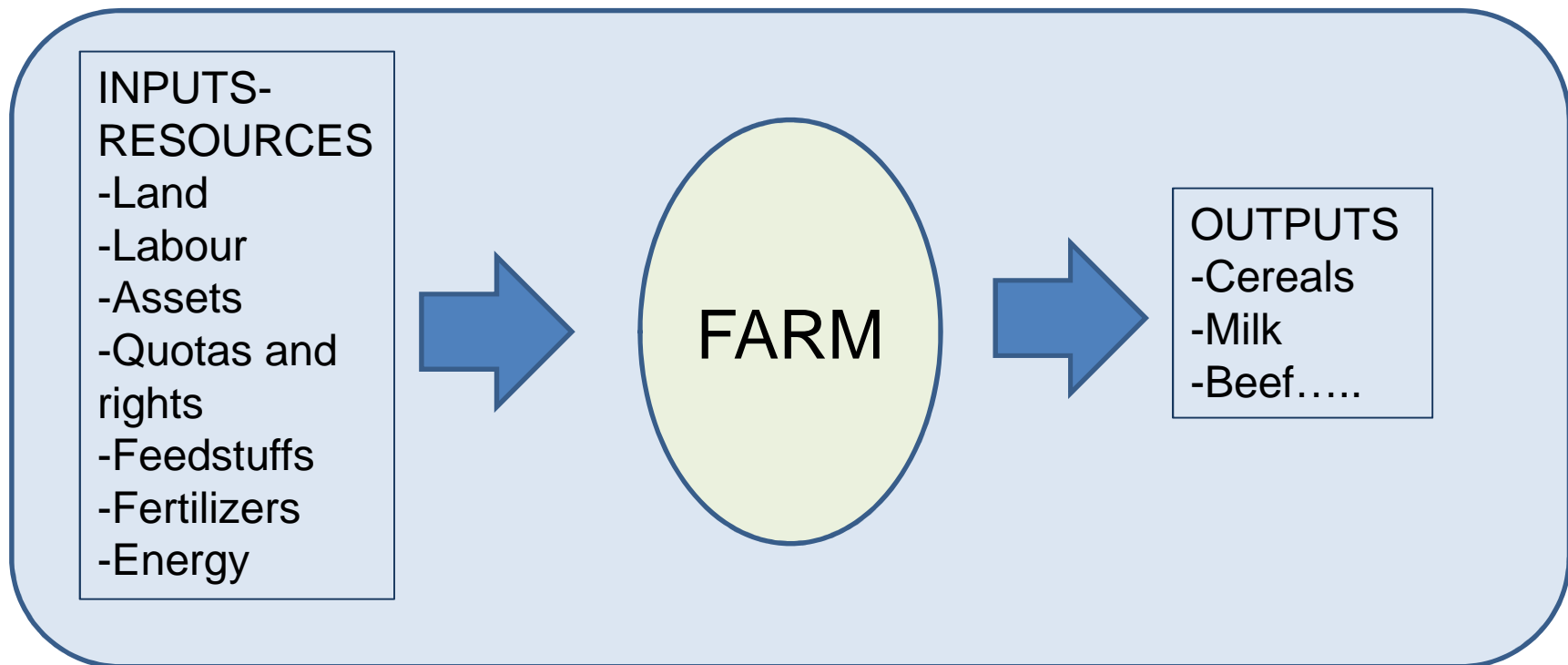
WHICH IS THE BEST?

DELPHI SURVEY

In case of choosing only one functional unit which is the most appropriate?:	%
Land (Ha)	36,4
Livestock Unit (LU)	13,6
Unit of product (Kg)	31,8
Labour (AWU)	18,2

FADN and SUSTAINABILITY:GLOBAL APPROACH

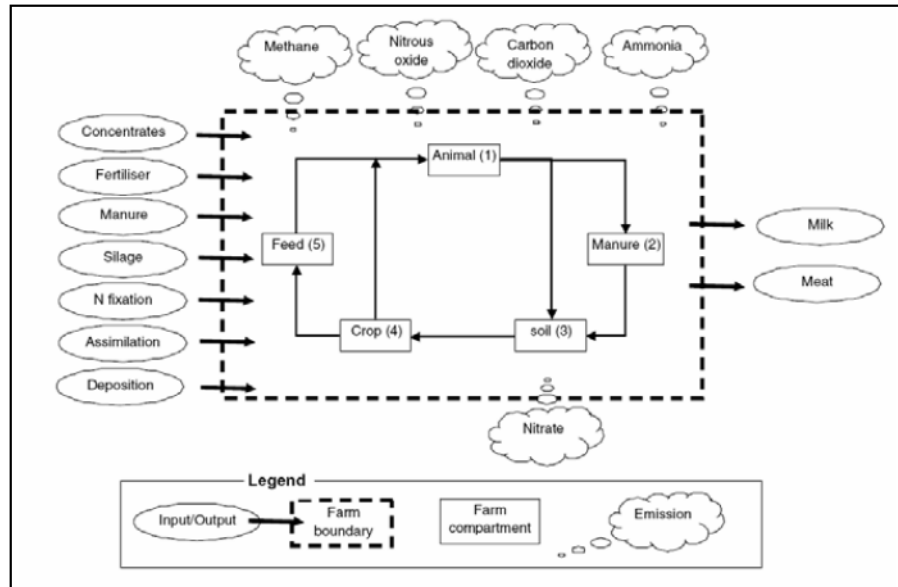
- STRENGTHS OF FADN :FARM UNDERSTOOD AS AN INTEGRATED WHOLE WITH AVAILABILITY OF ECONOMIC DATA OBTAINED FROM THE ACCOUNTS.



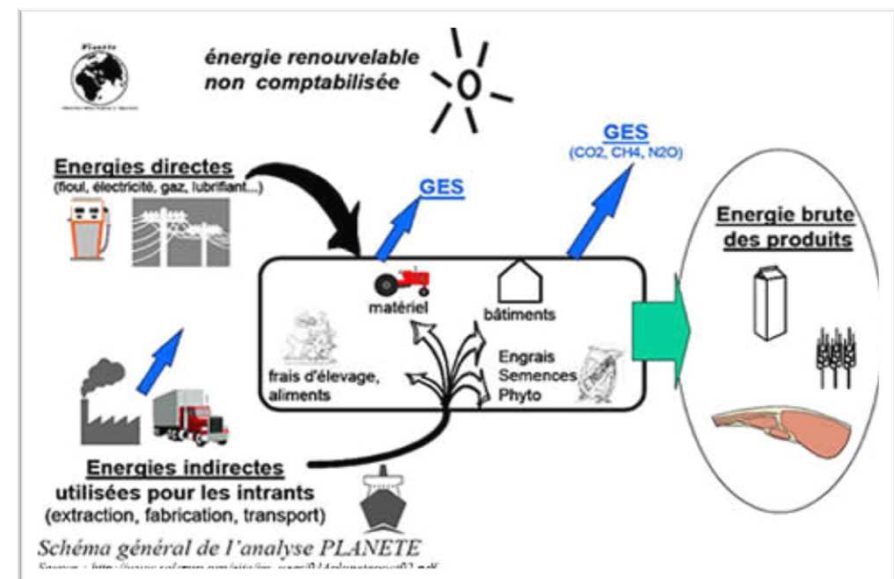
- SUSTAINABILITY INDICATORS MIGHT BE USEFUL IN ALL REGIONS AND TYPE OF FARMING

FOR NUTRIENTS AND ENERGY

NPK – Farm Gate Balance

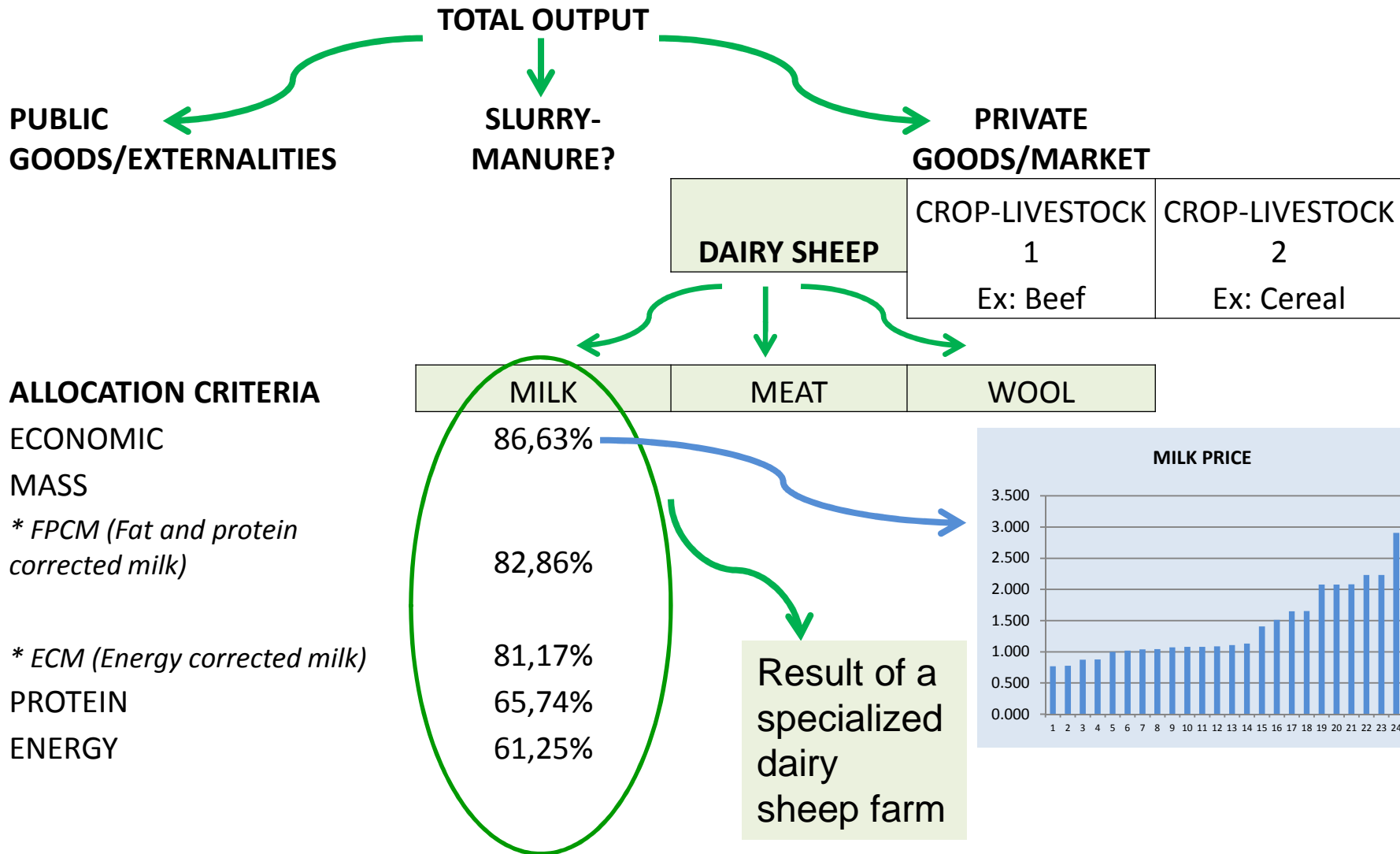


Energy balance – SOLAGRO



PRODUCT (MILK QUANTITY) AS FUNCTIONAL UNIT

THE PROBLEM OF ALLOCATION



LAND AS FUNCTIONAL UNIT

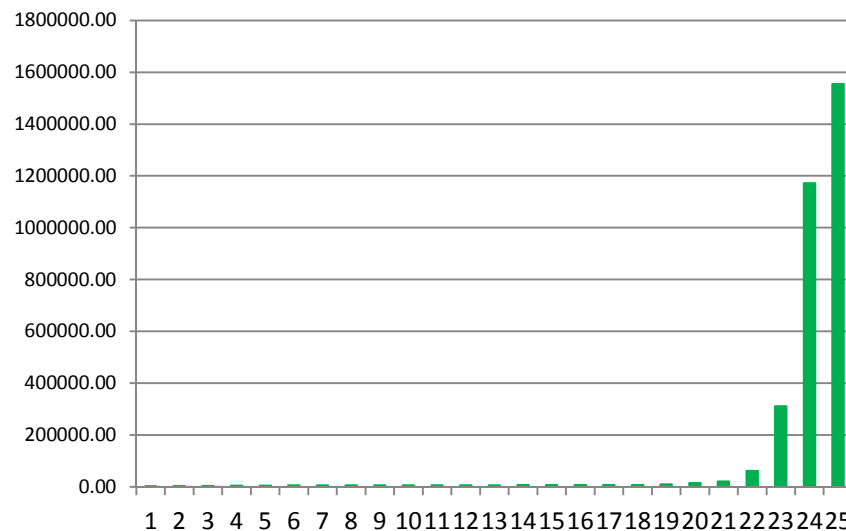
Regulation (EU) 385/2012:

Utilized agricultural area (UAA) is the total area taken up by arable land, permanent grassland, permanent crops and kitchen gardens used by the holding regardless of the type of tenure. **Common land used by the holding is not included.**

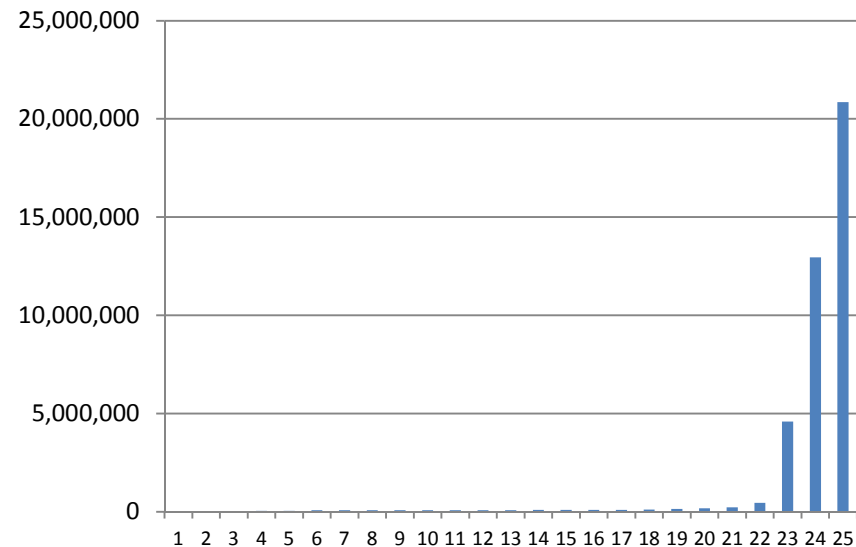


- Problem of productions without land(UAA): Pig, poultry and dairy in some regions, but also in some cases of grazing livestock (Common pastures)

Kg CO2-Equiv / Ha

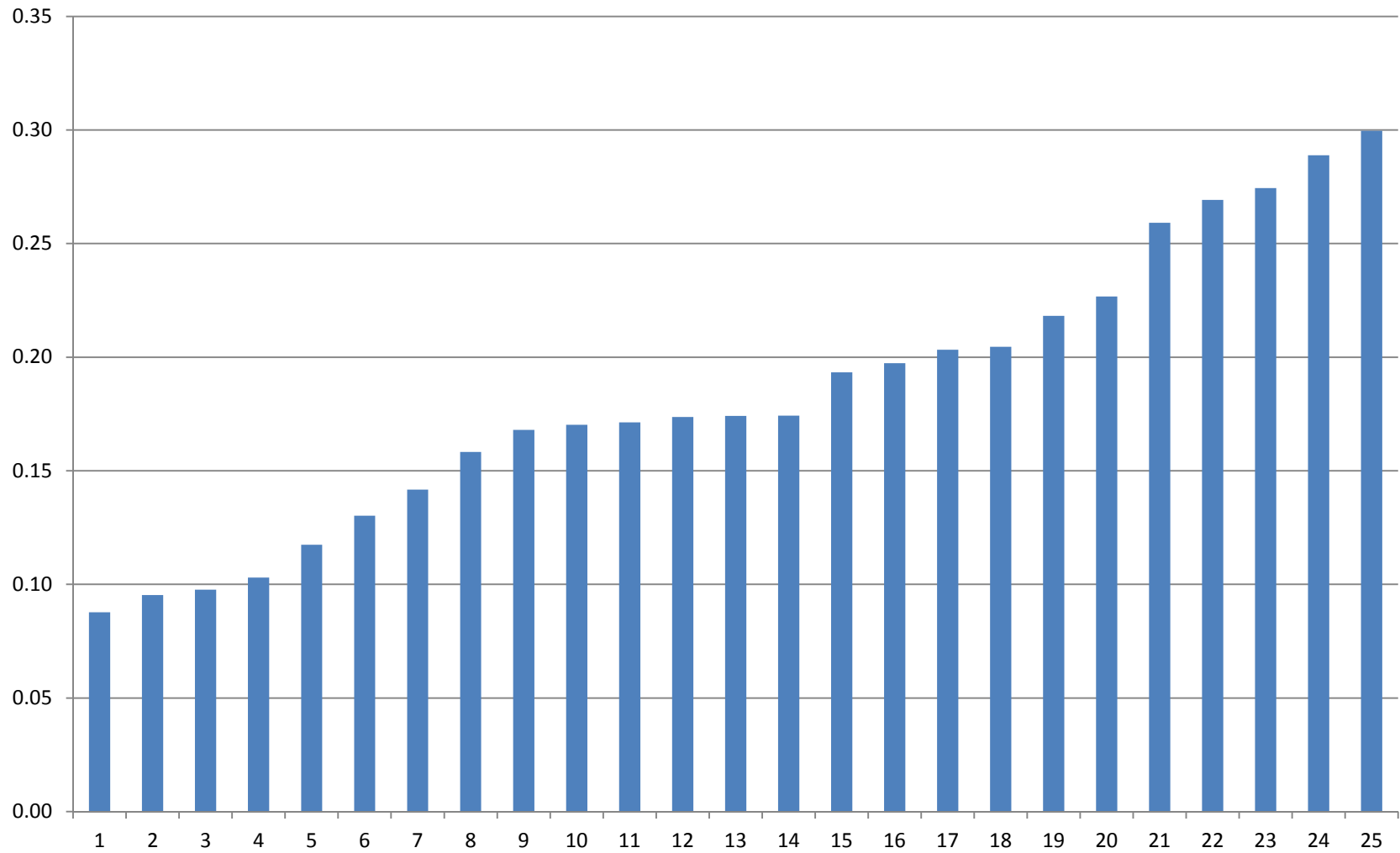


Energy (MJ/ha)



FOR NUTRIENTS AND ENERGY: OUTPUT/INPUT

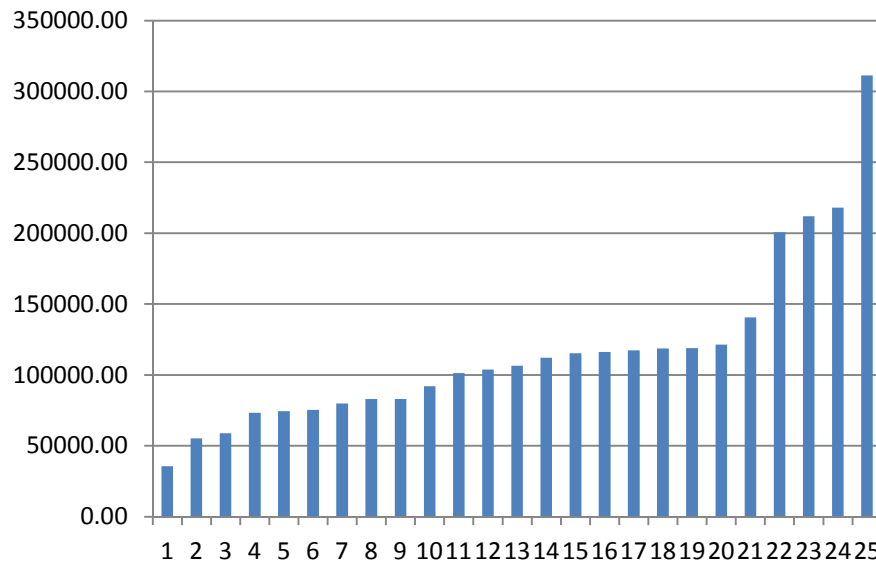
Energy Efficiency



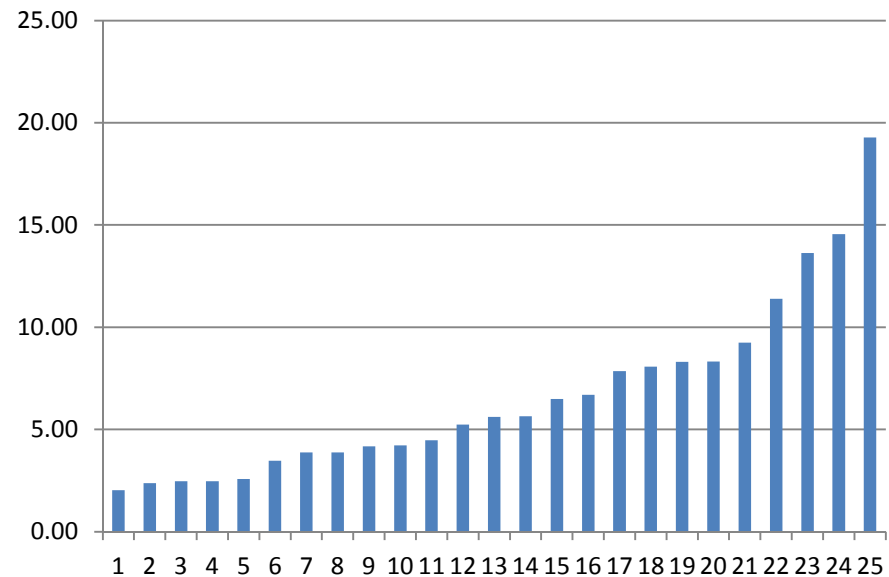
FOR GHG EMISSIONS: LABOUR AND INCOME

Objective of the RDP:
“promote resource efficiency and supporting the shift towards a **low carbon** and climate resilient **economy** in agriculture, food and forestry sectors”

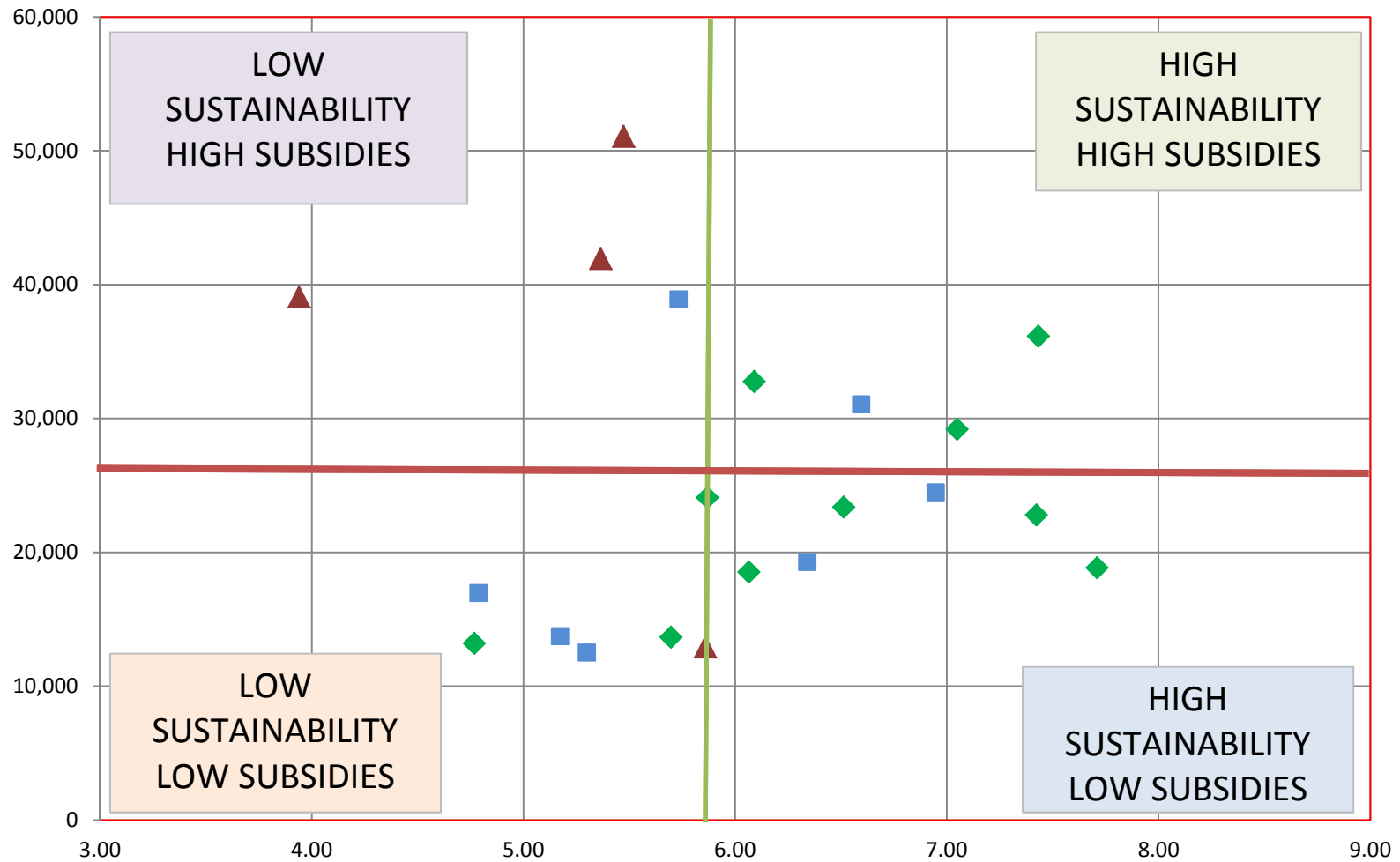
Kg CO2-Equiv / Annual Work Unit



kg CO2-Equiv / FNI



ENVIRONMENTAL SUSTAINABILITY AND SUBSIDIES



RELEVANCE OF EACH TYPE OF SUBSIDY IN 25 DAIRY SHEEP FARMS IN NAVARRA

SUBSIDIES LINKED TO

Market	974	3,83%
Environment	958	3,76%
Quality of products	489	1,92%
Territory	2.934	11,53%
Historical rights	12.973	50,98%
Inputs	112	0,44%
Investments	7.009	27,54%
TOTAL	25.449	100,00%

THANK YOU