

Feasibility study

Contribution of partners needed

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Objective feasibility study

- a cost price analysis
- an assessment of the return on investment
- a definition of efforts needed
- a risk assessment
- technological assessment
- political analysis of potential risks of implementation
- environmental impact assessment (with information from GWP5 Grow out husbandry)
- a sociological and market impact assessment and
- a stakeholder identification

to introduce the products in the market

Feasibility study will be based on:

- the technical assessment (WP 28),
- market information (WP 29),
- resource and cost analysis (Task 30.1) and
- the results of the tested strategies (Task 30.2)
- Species leaders: country choice, system design, estimation of investments and costs
- SME's: country choice, system design, estimation of investments and costs
- Other GWP7 work packages: technical assessment
- GWP5: ecological assessment

What will be the outcomes?

Per fish species we can calculate:

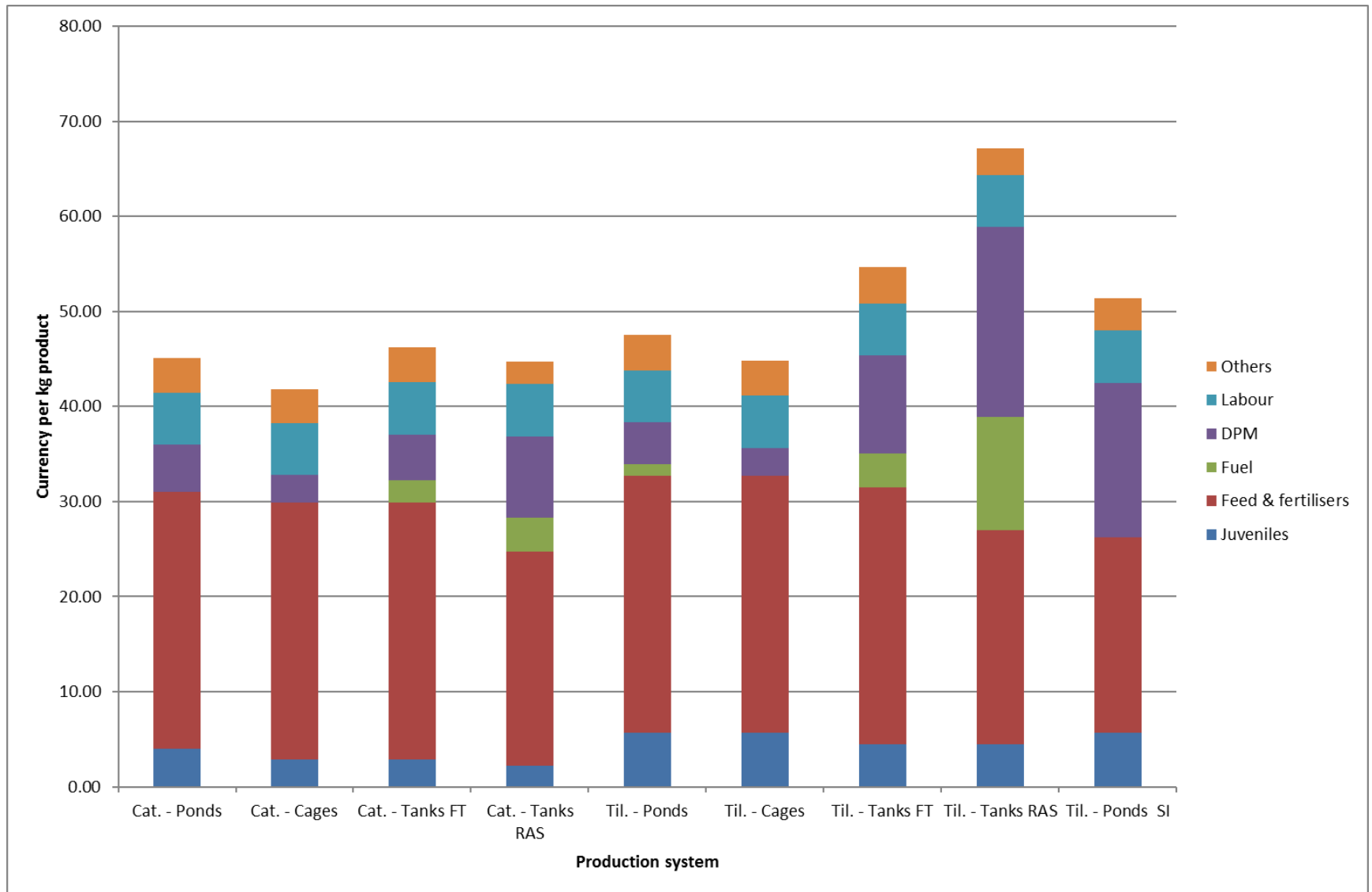
- Cost price
- Cash flow
- Return on investment
- Break even point
- Scenario's for major changes in input/output

This will be done for the grow out phase in one production system (the one most commonly used) and in one country (the one we have best data of).

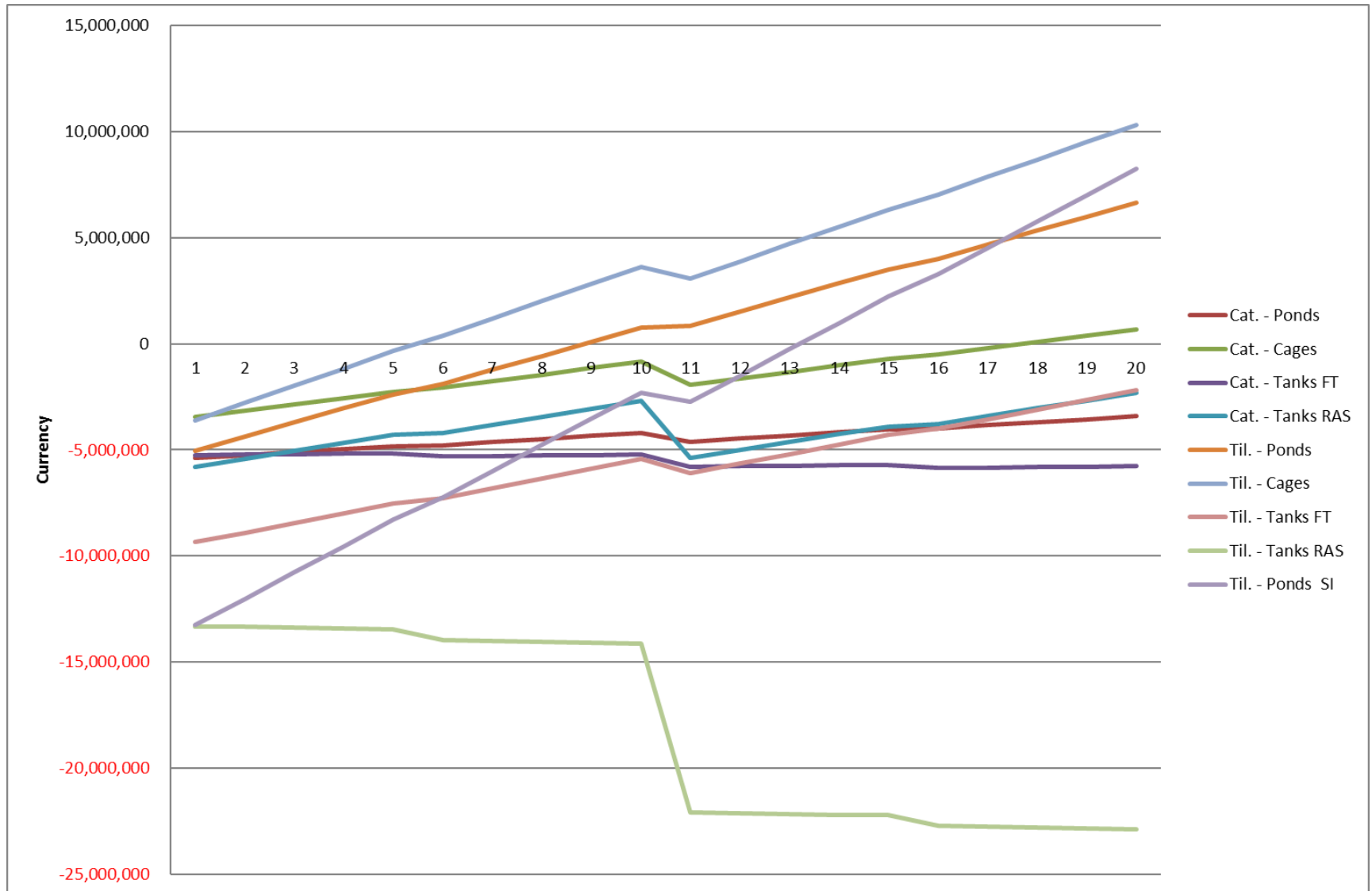
Two types of models used in previous projects on aquaculture

- Based on actual farm data (all indicators possible):
 - Tilapia and catfish in Ethiopia
 - Tilapia in Nigeria
 - Black tiger shrimp in Bangladesh
- Based on statistical farm data (STECF) per fish species and estimates of the changes technical parameters and in costs and profits (then only limited indicators possible):
 - Organic aquaculture in Europe
 - Fish welfare in aquaculture in Europe

Example cost price



Example cumulative cash flow in 20 years



Example of effect different scenario's on internal rate of return (> 12%)

Feed price per kg	Mutation			
		Til. - Ponds	Til. - Cages	Til. - SI ponds
15.00	0%	-	20.5%	-
13.50	-10%	17.4%	30.0%	-
16.50	10%	-	-	-
Fish price per kg	Mutation			
		Til. - Ponds	Til. - Cages	Til. - SI ponds
40./48.	0%	-	20.5%	-
36./43.2	-10%	-	-	-
44./52.8	10%	21.5%	34.9%	-
Subsidy on initial investments (PSI)				
		Til. - Ponds	Til. - Cages	Til. - SI ponds
	0%	-	20.5%	-
	25%	13.6%	23.9%	-
	50%	17.9%	28.2%	16.3%

Required data: System design (1)

		Ponds	Cages	Tanks FT	Tanks RAS
Production	ton/y	100	100	100	100
Start weight	g	5.0	5.0	5.0	5.0
Final weight	g	500	500	500	500
Growth period	months	9.0	9.0	9.0	6.0
Cycles	#/y	1.0	1.0	1.0	2.0
Stocking density	#/m2-3	5	100	500	417
Mortality	%	50	30	30	10
Final density	#/m2-3	3	70	350	375
Harvest density	kg/m2-3	1.3	35.0	175.0	187.7
Productivity	kg/m2-3/y	1.3	35.0	175.0	375.3
Rearing area	m2-3	80,000	2,857	571	266
Space utilisation	%	70	100	30	20
Farm space	ha	11.43	0.29	0.19	0.13

Required data: System design (2)

		Ponds	Cages	Tanks FT	Tanks RAS
Feed conversion	kg/kg	1.8	1.8	1.8	1.5
Feed use	ton/y	180	180	180	150
Electricity	kWh/kg	0	0	0.4	0.6
Electricity use	kWh/y	0	0	40,000	60,000
Efficiency generator	kWh/l	3.0	3.0	3.0	3.0
Fuel use	m3/y	0.0	0.0	13.3	20.0
Labour					
- high	#/100 ton	1.0	1.0	1.0	1.0
- middle	#/100 ton	1.0	1.0	1.0	1.0
- low	#/100 ton	5.0	5.0	5.0	5.0

Required data: Investments

Item	Price	Currency	per unit	Depreciation	
				period	percentage
Infrastructure	80,000	birr	piece-1	20	5.0%
Office/storage	150,000	birr	piece-1	20	5.0%
Greenhouse	2,000	birr	m-2	10	10.0%
Ponds	33.5	birr	m-2	20	5.0%
Cages	375	birr	m-3	10	10.0%
Tanks	3,750	birr	m-3	20	5.0%
Piping	100	birr	m-1	20	5.0%
Pumps	50,000	birr	piece-1	5	20.0%
Water treatment	500,000	birr	piece-1	20	5.0%
Equipment	100,000	birr	piece-1	5	20.0%
Generator	80,000	birr	piece-1	5	20.0%
Unforeseen	15		%	10	10.0%

Required data: Inputs / outputs (1)

Item	Price	Currency	per unit	Remarks
Outputs				
African catfish (whole)	40.00	birr	kg ⁻¹	500 g (data report)
Tilapia (whole)	48.00	birr	kg ⁻¹	250 g (data report)
Inputs				
Juvenile African catfish	1.00	birr	piece ⁻¹	5 g (estimate Andries Kamstra)
Juvenile Tilapia	1.00	birr	piece ⁻¹	5 g (estimate Andries Kamstra)
Feed	15.00	birr	kg ⁻¹	data Ethiopia 2012
Fertiliser	10.00	birr	kg ⁻¹	average Dap/ureum/lime (data report)
Electricity net	0.55	birr	kWh ⁻¹	data Ethiopia 2012
Fuel	18.00	birr	l-1	data Ethiopia 2012

Required data: Inputs / outputs (2)

Item	Price	Currency	per unit	Remarks
Land lease	1700.00	birr	ha ⁻¹	data Ethiopia 2012
Maintenance	2.00	%	y ⁻¹	% of initial investments (literature)
Insurance	0.30	%	y ⁻¹	% of initial investments (literature)
Labour:				
- high	204,000	birr	y ⁻¹	data Ethiopia 2012
- middle	102,000	birr	y ⁻¹	data Ethiopia 2012
- low	48,096	birr	y ⁻¹	data Ethiopia 2012
General costs:				
- fixed	100,000	birr	farm-1	estimate Andries Kamstra
- variable	0.10	birr	kg production ⁻¹	estimate Andries Kamstra
Financial				
Inflation rate	10.00	%	y-1	data report
Interest rate	12.00	%	y-1	data Ethiopia 2012

Who's help is needed?

- Species leaders: country choice, system design, estimation of investments and costs
- SME's: country choice, system design, estimation of investments and costs
- Other GWP7 work packages: technical assessment
- GWP5: ecological assessment

We will combine all this expert information, so that:

A financial analysis, an assessment of return on investment, a definition of efforts needed and a risk assessment will result

Discussion question

- Is all this information available?
- Do you think it is realistic to make an analysis on basis of actual farm data?
- Do you have questions?

Please ask your
questions if you
have some

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