

# Key points in the selection of the sugarcane ethanol production model

## *Scale of the distillery and the mechanization level in cane production*



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# Assessment of distilleries

Agricultural technology

Industrial technology

Manual

Mechanized

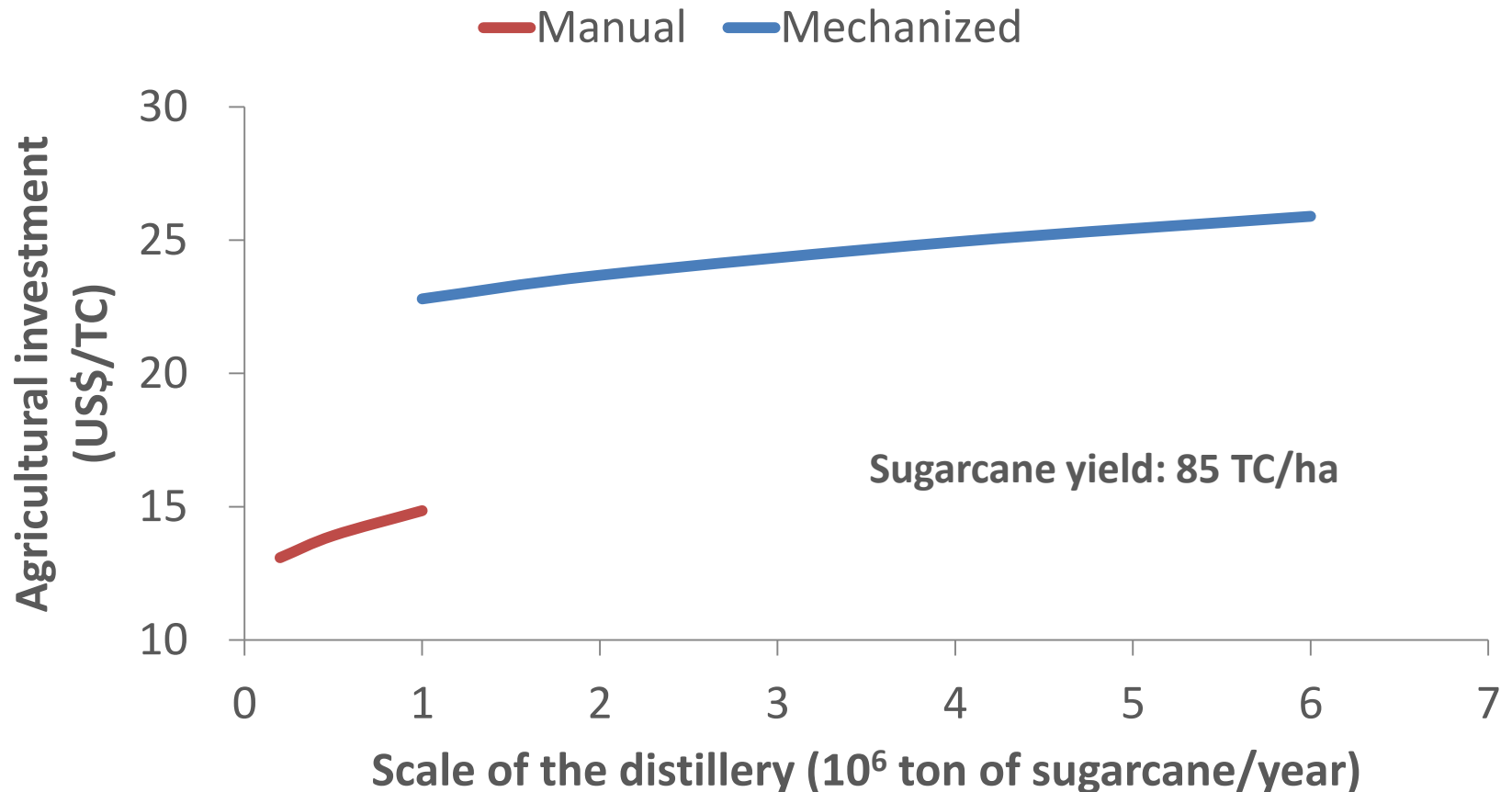
Base

Optimized



# Effect on sugarcane production

## Investment on agricultural sector



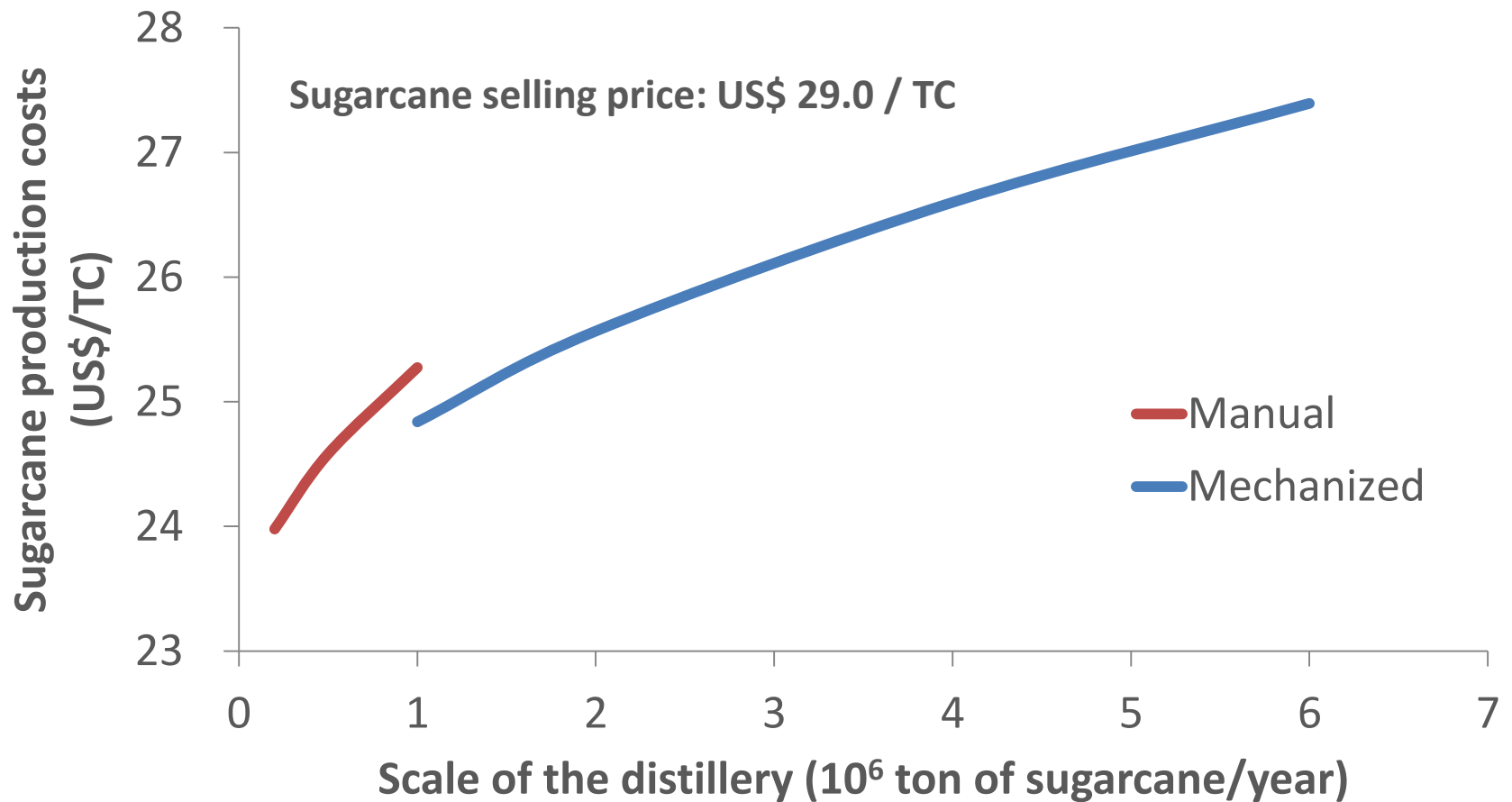
# Effect on sugarcane production

## Jobs on agricultural sector

Scale of the distillery (10 <sup>6</sup> ton/year)		Manual			Mechanized			
		0.2	0.5	1.0	1.0	2.0	4.0	6.0
Jobs	Manual operations	156	390	780	35	70	140	210
	Mechanized operations	13	33	67	101	203	406	609
	Transport	14	39	87	32	73	175	295
	Total	183	462	933	168	346	721	1114
Jobs / 10 <sup>6</sup> ton	Manual operations	780	780	780	35	35	35	35
	Mechanized operations	67	67	67	101	101	101	101
	Transport	69	77	87	32	37	44	49
	Total	916	924	933	168	173	180	186

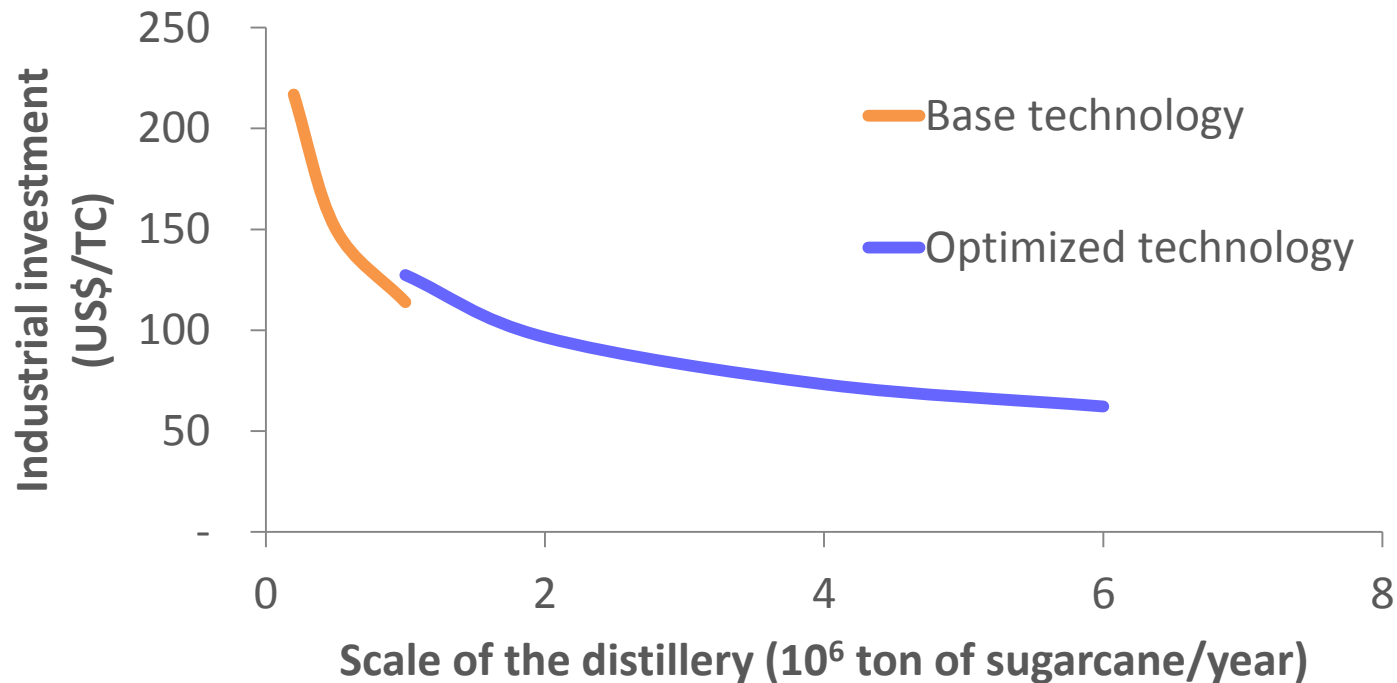
# Effect on sugarcane production

## Sugarcane production cost



# Effect on sugarcane processing

## Industrial investment and jobs

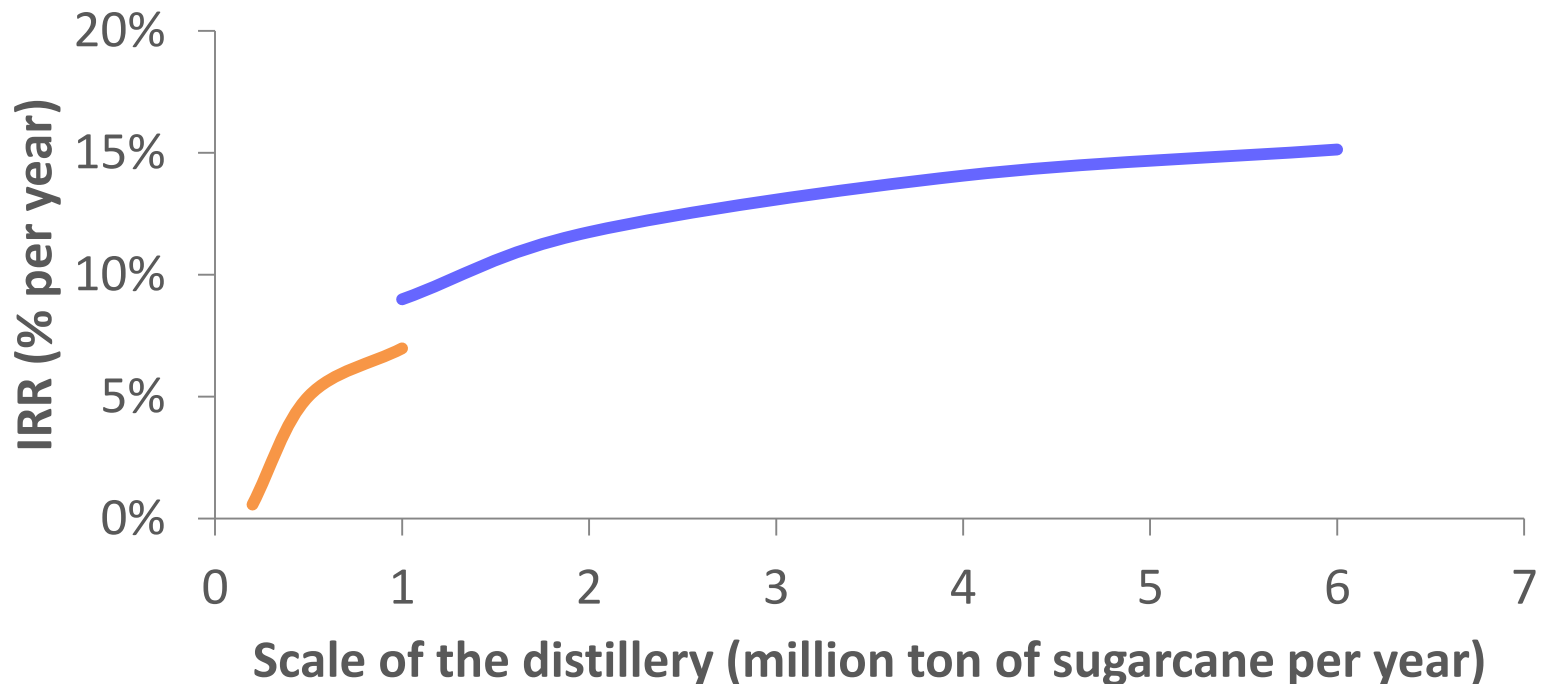


Scale of the distillery (10 <sup>6</sup> ton/year)	Base			Optimized			
	0.2	0.5	1.0	1.0	2.0	4.0	6.0
Jobs per 10 <sup>6</sup> ton of sugarcane	500	200	120	160	80	40	30

# Effect on sugarcane production

## Return on Investment (integrated)

- Manual and Base technology
- Mechanized and Optimized technology





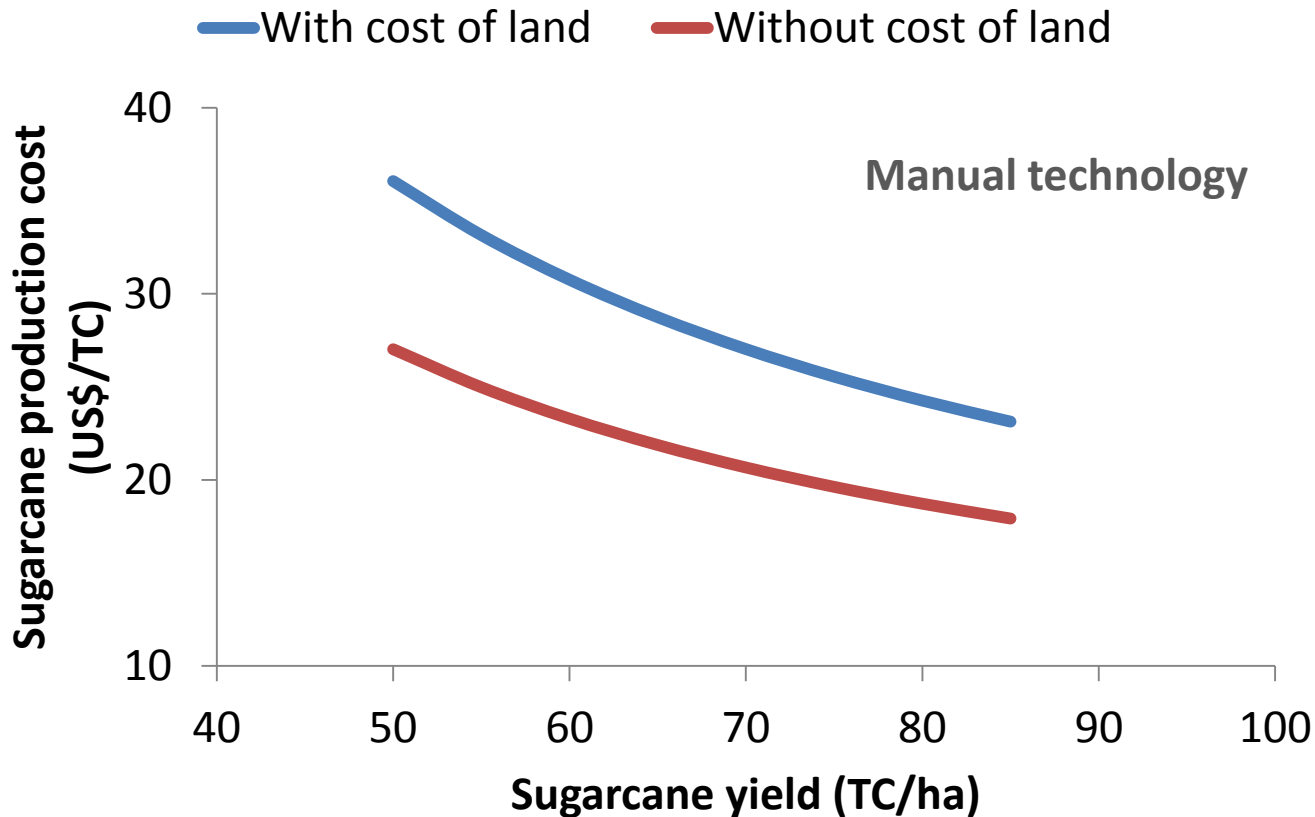
# Assessment of microdistilleries





# Microdistilleries

## Sugarcane production cost – small properties



# Microdistilleries

## Key assumptions (optimistic)

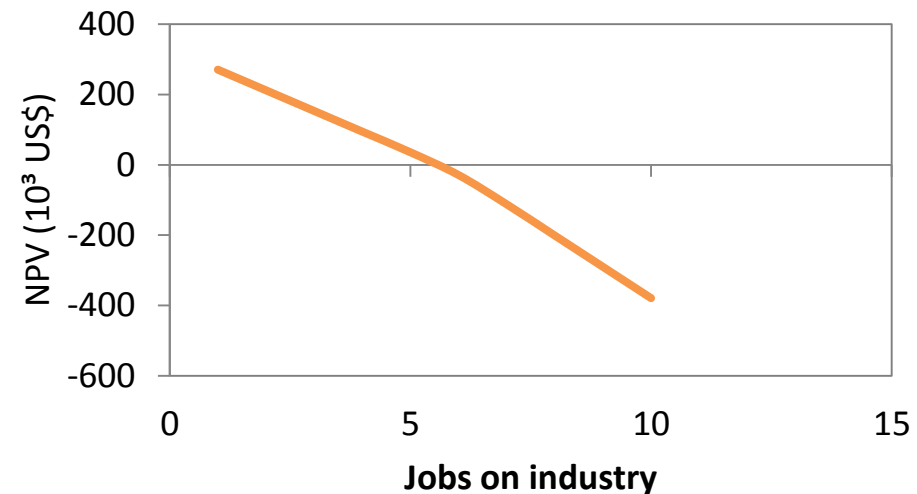
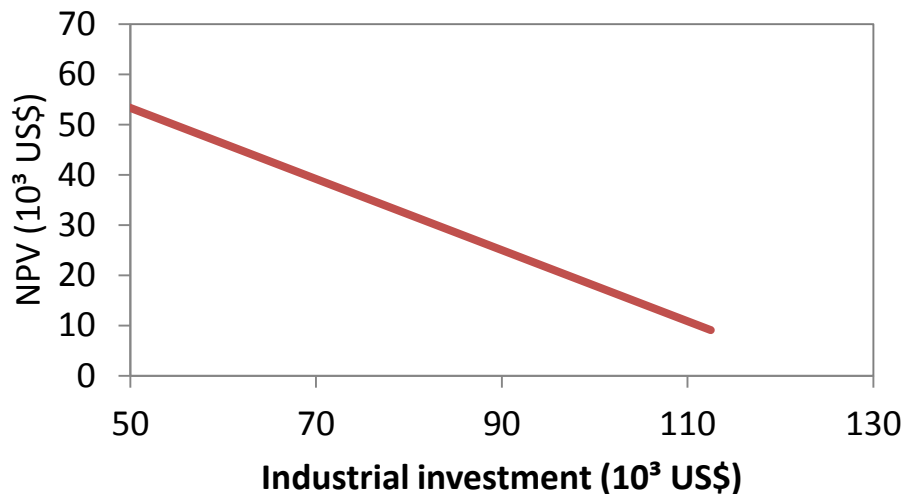
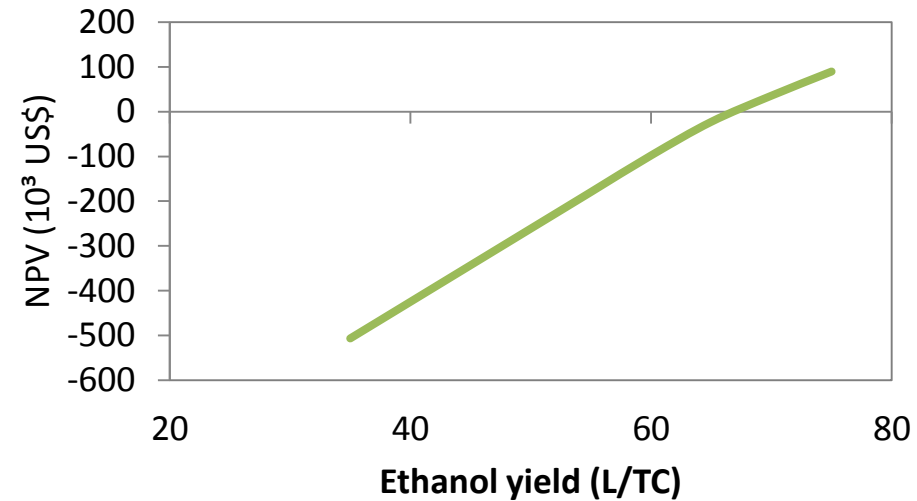
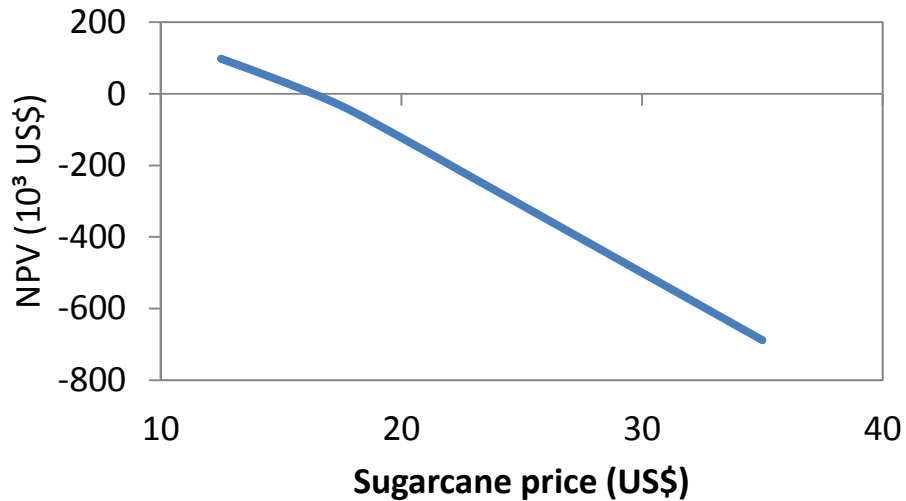
Scale of the distillery	TC/year	3,000
Industrial investment	10 <sup>3</sup> US\$	75.0
Jobs in industry	-	5
Mean salary	US\$/month	750.00
Sugarcane price	US\$/TC	15.00
Hydrous ethanol yield	L/TC	70.00
Ethanol selling price ( <b>CEPEA</b> )	US\$/L	0.55
TMA	% per year	8.0

## Financial results (optimistic)

Net present value (NPV)	10 <sup>3</sup> US\$	35.6
Internal rate of return (IRR)	% per year	14.1

# Microdistilleries

## Sensitivity analysis (optimistic baseline)



# Microdistilleries

## Key assumptions (realistic)

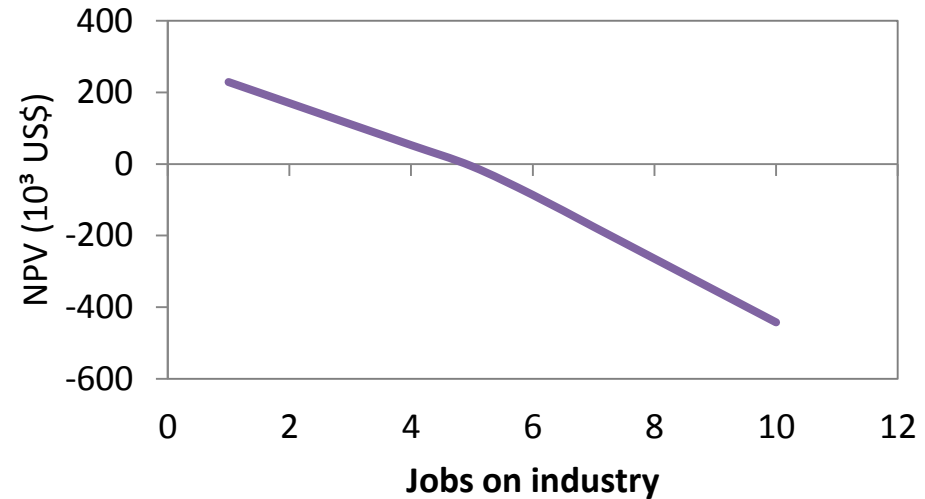
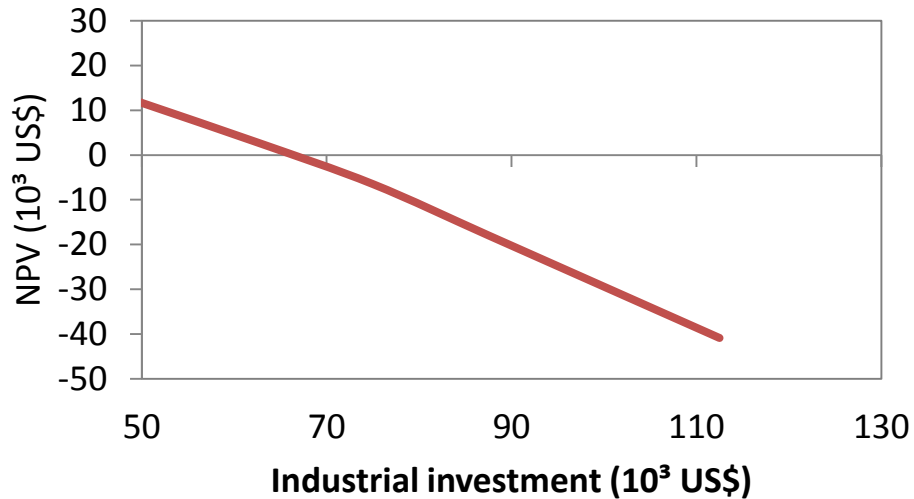
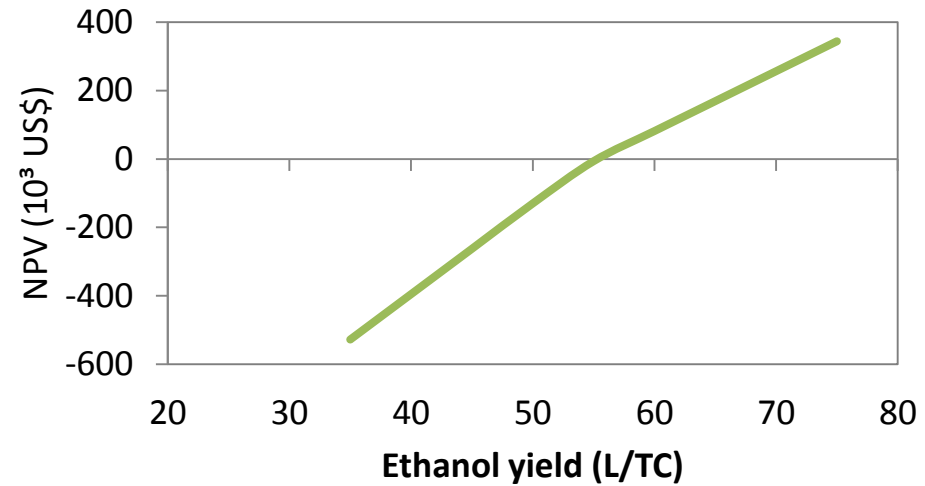
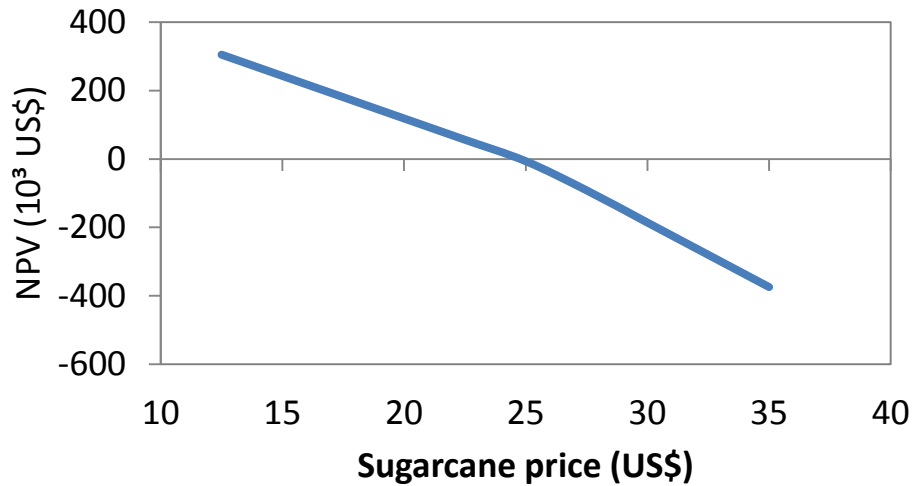
Scale of the distillery	TC/year	3,000
Industrial investment	10 <sup>3</sup> US\$	75.0
Jobs on industry	-	5
Mean salary	US\$/month	750.00
Sugarcane price	US\$/TC	<b>25.00</b>
Hydrous ethanol yield	L/TC	<b>55.00</b>
Ethanol selling price ( <b>fuel station</b> )	US\$/L	<b>0.90</b>
TMA	% per year	8.0

## Financial results (optimistic)

Net present value (NPV)	10 <sup>3</sup> US\$	- 6.5
Internal rate of return (IRR)	% per year	6.7

# Microdistilleries

## Sensitivity analysis (realistic baseline)



# Thank you!!!

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