

Presentation for BioGrace

Project of Bioethanol Production from Sugarcane in Indonesia

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Project



Sugarcane



Bioethanol



Indonesia

A pie chart illustrating the distribution of land use. The chart is divided into four segments: a large green segment for 'Forest area 50 %', a dark red segment for 'Agricultural area 28 %', a grey segment for 'Other land 17 %', and a small blue segment for 'Inland water 5.0 %'. The segments are outlined in orange. The labels are placed directly on or near their respective segments.

Land Use Category	Percentage
Forest area	50 %
Agricultural area	28 %
Other land	17 %
Inland water	5.0 %

3

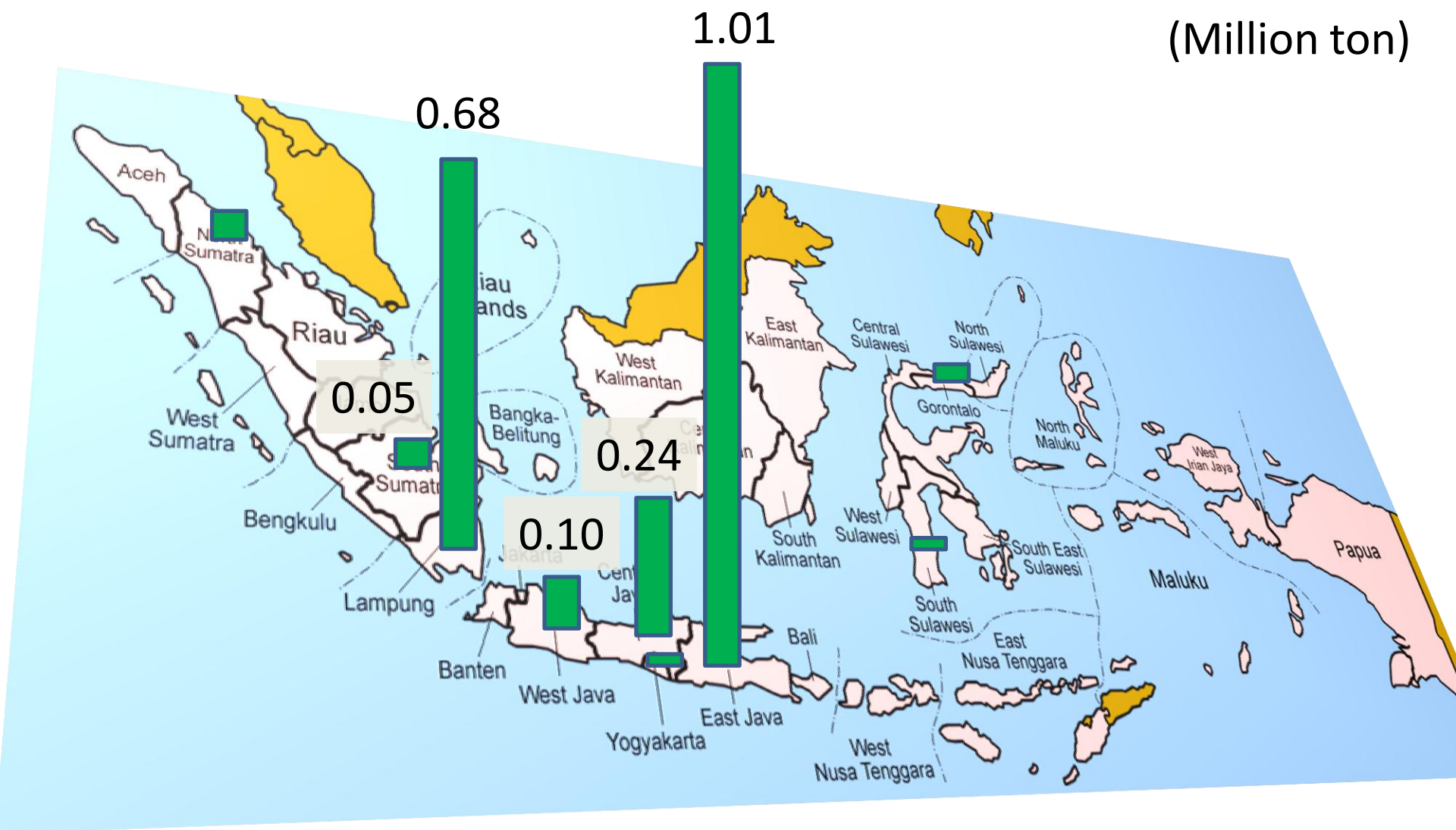
Provinces and regions in Indonesia



Capital : Jakarta



Production of Sugarcane in Each Province



(MARI, 2012)

Yield of Sugarcane in Indonesia

Sugarcane in 2010

Production	24.5 million ton (ranks 12th)
Harvested Area	336 thousand ha
Yield	72,768 kg ha ⁻¹ year ⁻¹

Rank of Sugarcane Yield in 2010

Rank	1	2	3	...	23	...	31
Country	Ethiopia	Peru	Egypt		Brazil		Indonesia

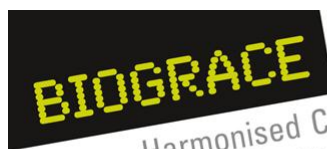
(FAO, 2012)

Agro Chemicals

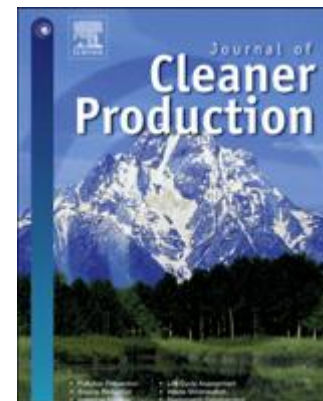
N-fertiliser (kg N)	172.8 kg N ha ⁻¹ year ⁻¹
Manure	0.0 kg N ha ⁻¹ year ⁻¹
CaO-fertiliser (kg CaO)	704.0 kg CaO ha ⁻¹ year ⁻¹
Filter mud cake	1154.1 kg ha ⁻¹ year ⁻¹
K ₂ O-fertiliser (kg K ₂ O)	72.0 kg K ₂ O ha ⁻¹ year ⁻¹
P ₂ O ₅ -fertiliser (kg P ₂ O ₅)	72.0 kg P ₂ O ₅ ha ⁻¹ year ⁻¹
Pesticides	3.85 kg ha ⁻¹ year ⁻¹
Vinasse	50780 kg ha ⁻¹ year ⁻²



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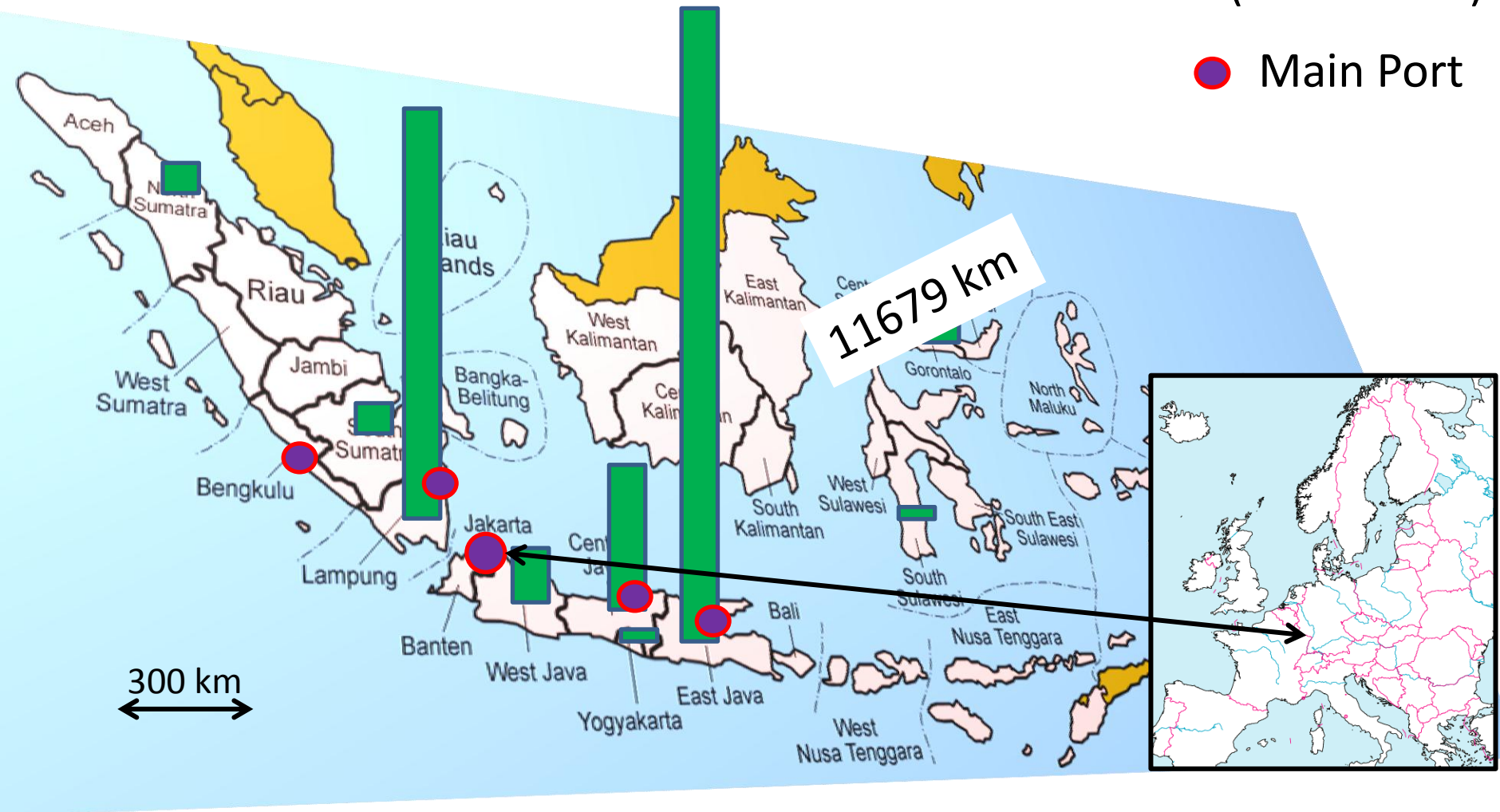
Harmonised Calculations of
Biofuel Greenhouse Gas Emissions in Europe



Distances for Transport of Sugarcane

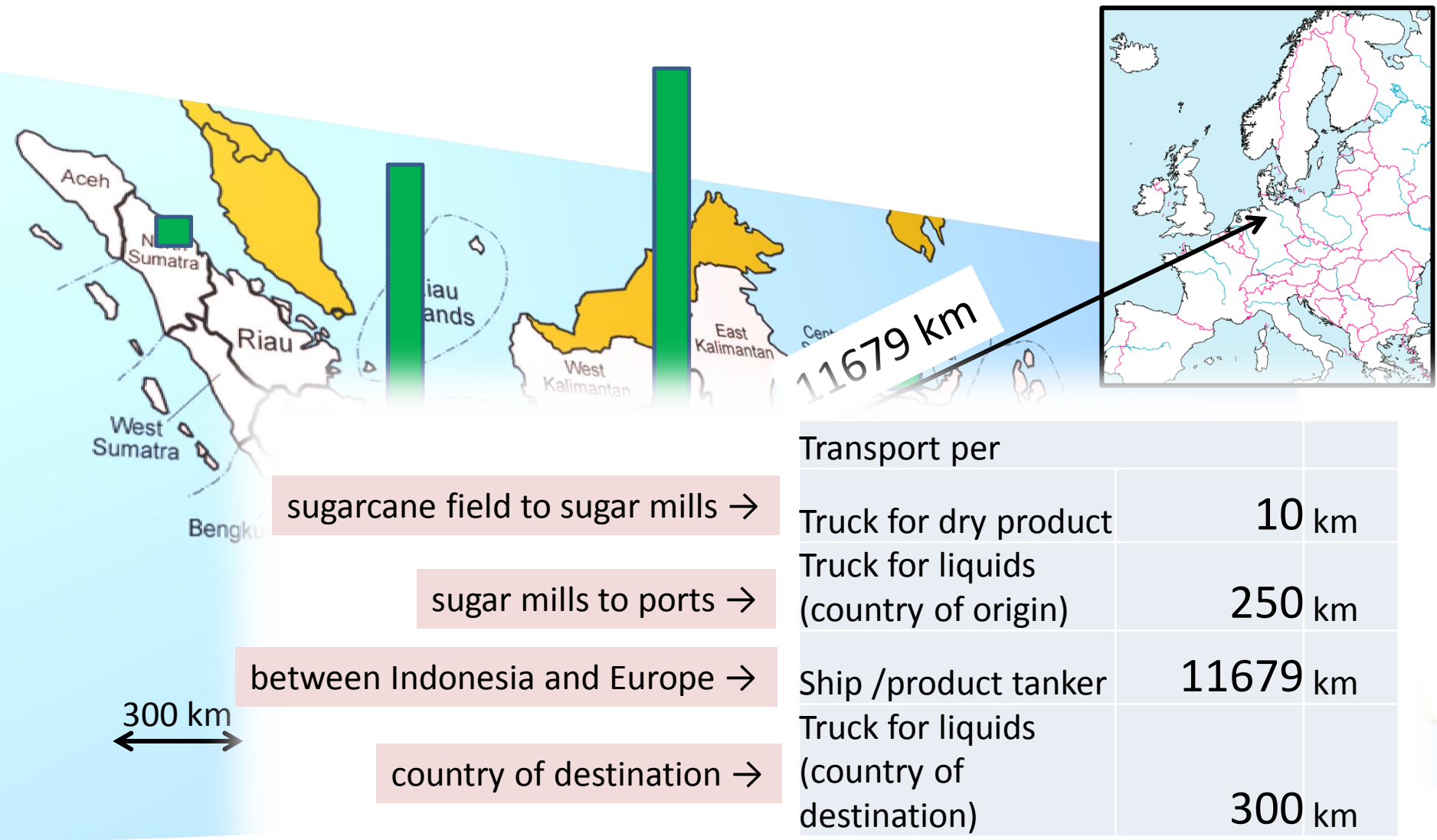
(Million ton)

● Main Port



(MARI, 2012)

Distances for Transport of Sugarcane



(MARI, 2012)

Result

<i>All results in g CO_{2,eq} / MJ^{Ethanol}</i>	Non- allocated results	Allocation factor	Allocated results	Total
Cultivation e_{ec}				26.2
Cultivation of sugarcane	26.15	100%	26.15	
Transport of vinasse and filter mud cake	0.00	100%	0.00	
Processing e_p				0.9
Ethanol plant	0.85	100%	0.85	
Transport e_{td}				7.7
Transport of sugarcane	0.39	100%	0.39	
Transport of ethanol	6.84	100%	6.84	
Filling station	0.44	100%	0.44	
Totals	34.7			34.7

Allocation factors
Ethanol plant
100.0%to ethanol

Emission reduction
Fossil fuel reference (petrol)
83.8 g CO_{2,eq}/MJ
GHG emission reduction
59%

Yield of Sugarcane in Indonesia

Sugarcane

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(FAO, 2012)

The Main Factor of GHG Emission

N-fertiliser (kg N)	172.8 kg N ha ⁻¹ year ⁻¹
Field N ₂ O emissions	4.77 kg ha ⁻¹ year ⁻¹
CH ₄ from trash burning	37.59 kg ha ⁻¹ year ⁻¹

GHG emission reduction	
	59%
	72%

50% Cut

Trash of Sugarcane



→ Tops

→ Leaves

Residues



Bagasse



Sugar Juice

Bioethanol



(or Heat & Electricity)

Thank you !