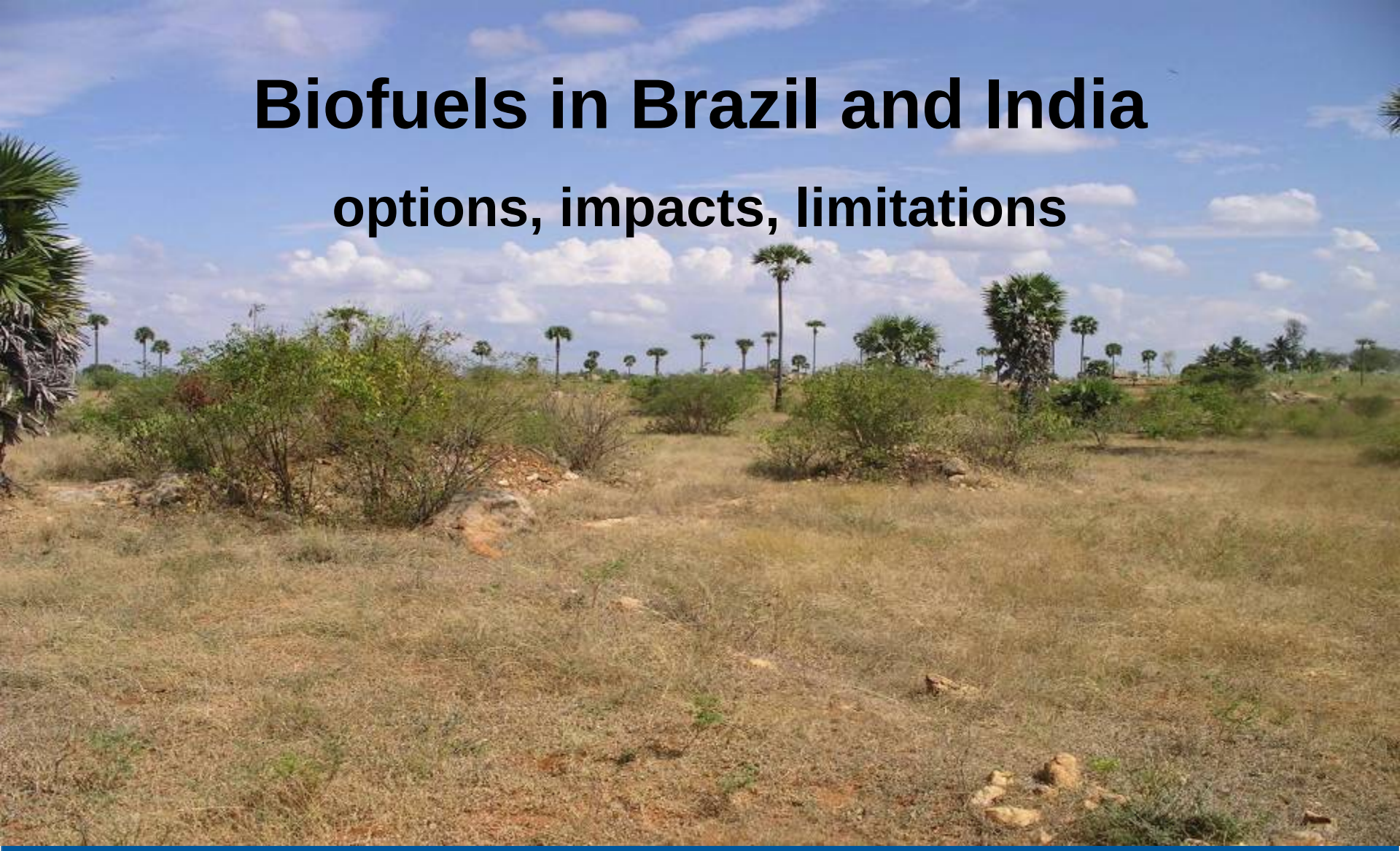
Biofuels in Brazil and India

options, impacts, limitations



Joerg A. Priess, Subhashree Das,
Christian Schweitzer, David Lapola

HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ

Land requirements and potential productivity of sugarcane and jatropha in Brazil and India

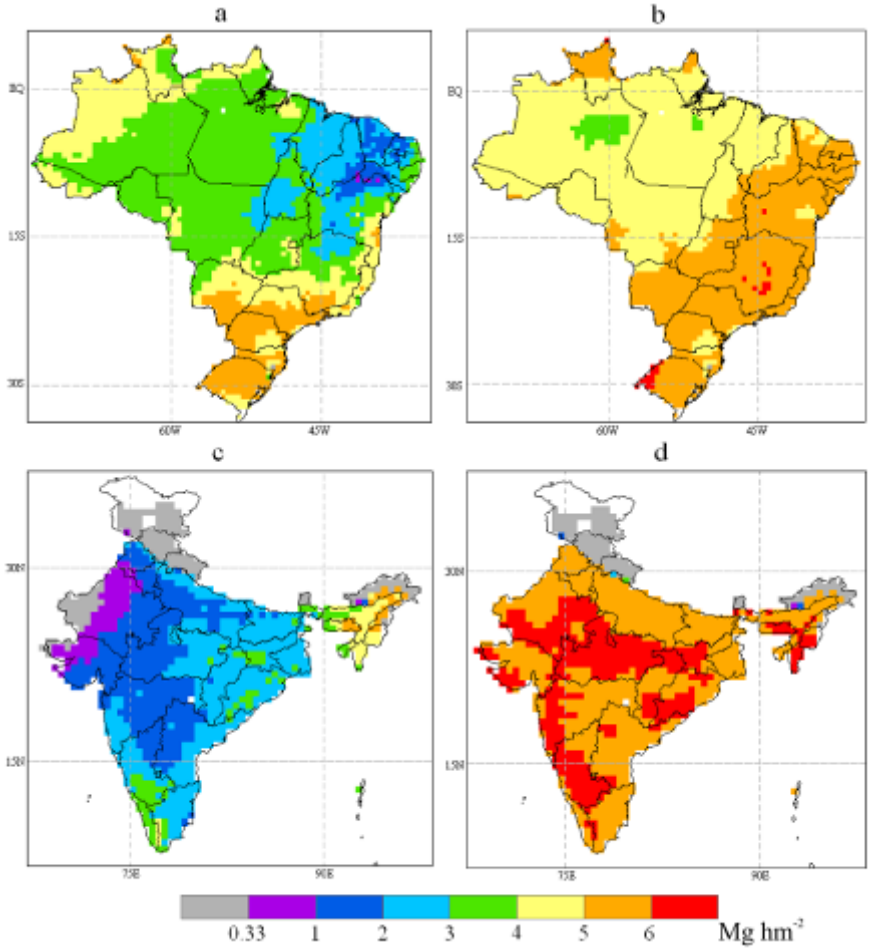


Fig. 1: **Jatropha** potential yields (Mg hm-2) in Brazil (**a, b**) and India (**c, d**), rainfed (**a, c**) and irrigated (**b, d**) averaged for 1971-2000 climate.

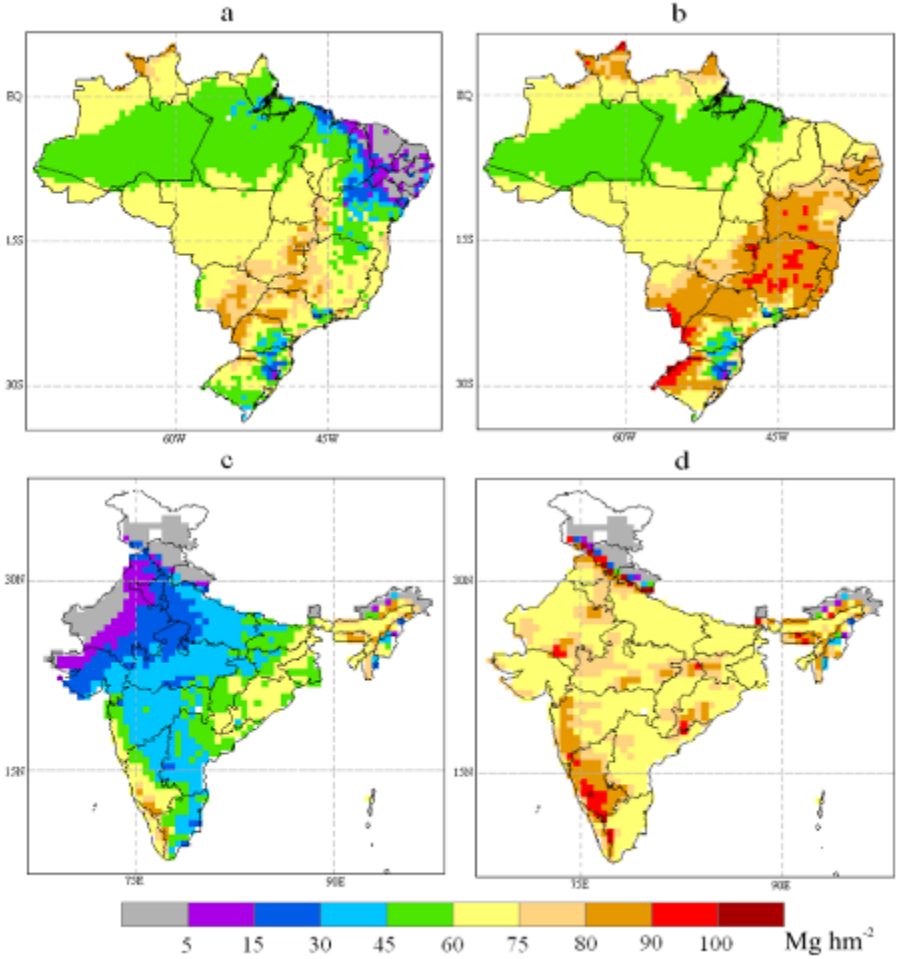


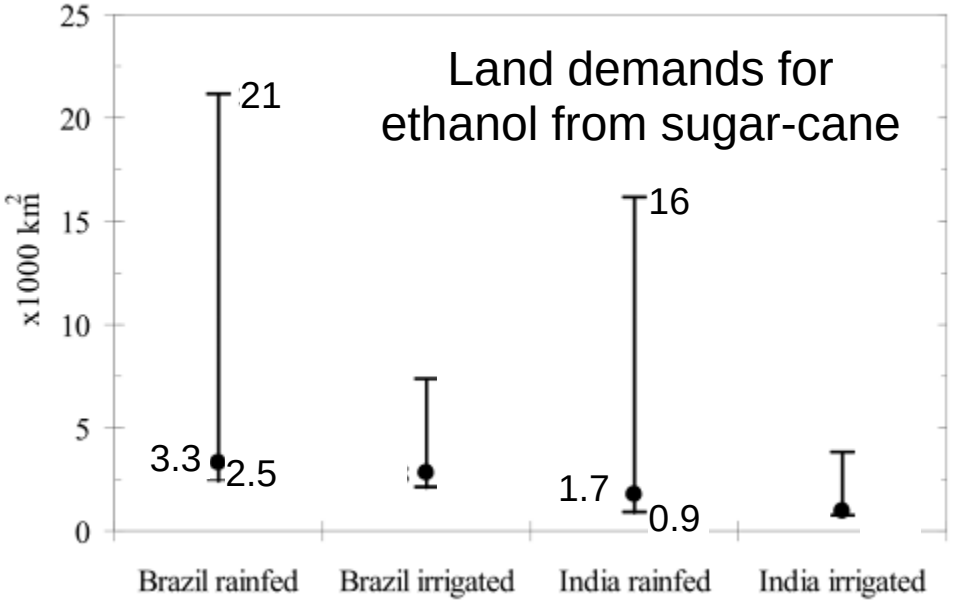
Fig 2: Sugar-cane potential yields in Brazil (**a, b**) and India (**c, d**), rainfed (**a, c**) and irrigated (**b, d**) averaged for 1971-2000 climate.

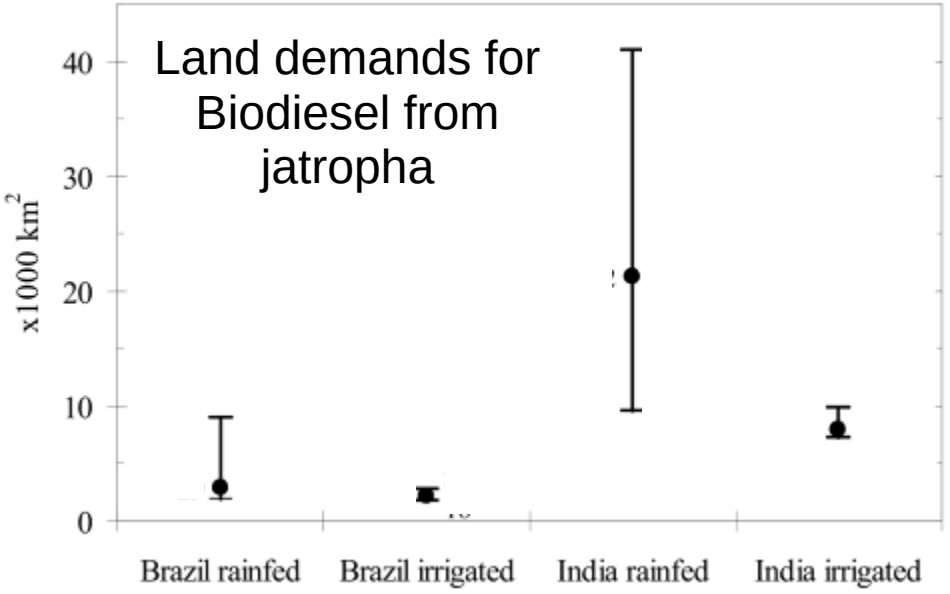
Source: D. M. Lapola, J. A. Priess, A. Bondeau (2009; Biomass & Bioenergy, accepted)

Land requirements and potential productivity of sugarcane and jatropha in Brazil and India

Meet government targets for biofuel production in 2015 with low or high productivity sites (increment compared to 2006/7)**.**

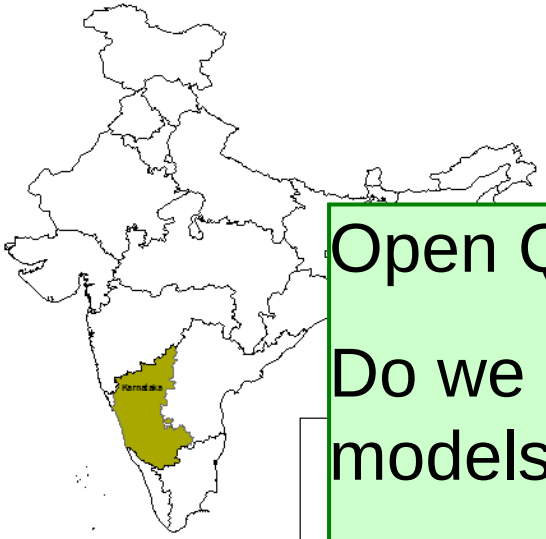
	Brazil			India		
	Volume	Energy	Production	Volume	Energy	Production
Ethanol	+18.55 Gl	+395 PJ	+215 Mt (+103%)	+1.37 Gl	+32 PJ	+82 Mt (+249%)
Biodiesel	+3.1 Gl	+112 PJ	+11 Mt (+310%)	+13.16 Gl	+476 PJ	+47 Mt (+502%)

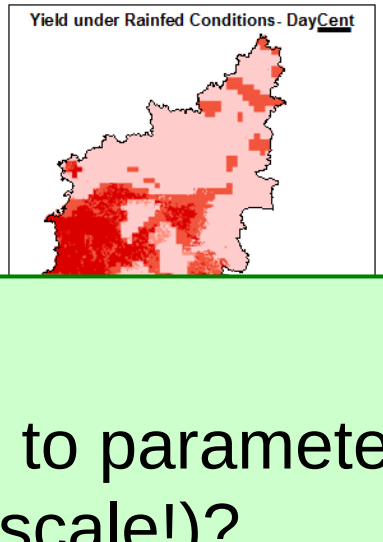


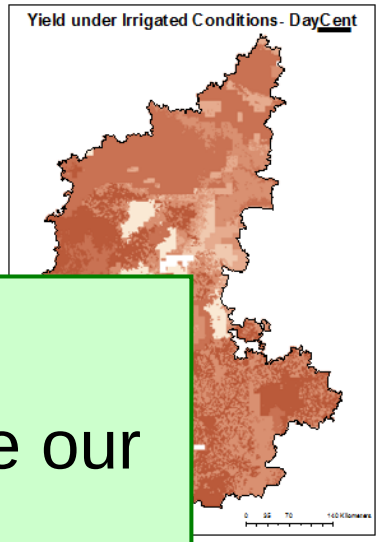


Source: D. M. Lapola, J. A. Priess, A. Bondeau (2009; Biomass & Bioenergy, accepted)

Potential of Southindian wastelands (Karnataka) for biodiesel production





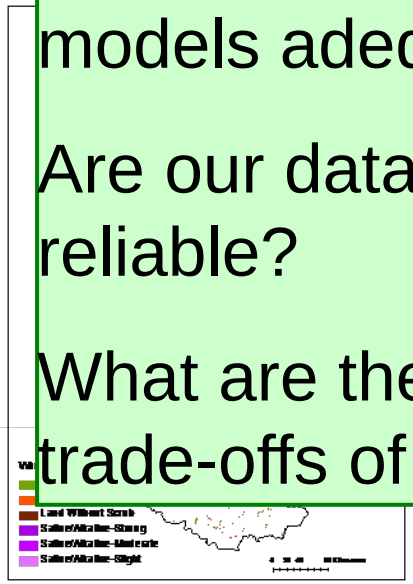


Open Questions:

Do we know enough to parameterize our models adequately (scale!)?

Are our data sources (land availability) reliable?

What are the social & environmental trade-offs of bio-energy production?



				ential Oil Yield (ton) (35% oil content)	
				yCent	LPJmL
				26,550	220,796
				21,714	227,817
3. Land Without Scrub	750	13,974	36,691	19,563	42,968
4. Saline/Alkaline Lands	166	2,587	7,420	3,622	10,388
TOTAL	10,235	193,893	358,550	271,451	501,970

Source: Das & Priess 2008; . M. Lapola, Das, Schweitzer, Lapola & Priess 2009