APPENDIX 4 – Mexico

Table A4.1. Carbon debt calculation of Yucatan, Mexico case

Carbon debt due to conversion of secondary forest

				estimates		references
Aboveground carbon stock loss	**30**	**Mg C ha^{-1}**				(Skutsch et al. 2011)
Belowground carbon stock loss						
biomass	6	Mg C ha^{-1}		20%		(Achard et al. 2004)
soil	23.3	Mg C ha^{-1}				(IPCC 2006)
subtotal	**29.3**	**Mg C ha^{-1}**				
Carbon stocked in oil Jatropha plantation						
aboveground	7	Mg C ha^{-1}				(Skutsch et al. 2011)
belowground	2.1	Mg C ha^{-1}		30%		(Achten 2010, Reubens et al. 2010)
subtotal	**9.1**	**Mg C ha^{-1}**				
Conservative (2500 kg/ha.yr)	**7.6**					
Estimation (3000 kg/ha.yr)	**9.1**					
Optimistic (3500 kg/ha.yr)	**10.6**					
			C	**E**	**O**	
Total carbon debt		**Mg C ha^{-1}**	**51.7**	**50.2**	**48.7**	
		Mg CO_2 ha^{-1}	**190.1**	**184.5**	**178.9**	

Table A4.2. Carbon debt calculation of Michoacan, Mexico case

Carbon debt due to conversion of secondary forest						
				estimates		**references**
Aboveground carbon stock loss	**115.7**	**Mg C ha^{-1}**				(Ordóñez et al. 2008)
Belowground carbon stock loss						
biomass	29.5	Mg C ha^{-1}		25%	26%	(Ordóñez et al. 2008)
soil	25.1	Mg C ha^{-1}		101.3	pine-oak forest	(Ordóñez et al. 2008)
				76.2	plantation	(Ordóñez et al. 2008)
subtotal	**54.6**	**Mg C ha^{-1}**				
Carbon stocked in oil Jatropha plantation						
aboveground	8.4	Mg C ha^{-1}				(Achten 2010)
belowground	2.5	Mg C ha^{-1}		30%		(Achten 2010, Reubens et al. 2010)
subtotal	**10.9**	**Mg C ha^{-1}**				
Conservative (1500 kg/ha.yr)	**5.5**					
Estimation (2000 kg/ha.yr)	**7.3**					
Optimistic (2500 kg/ha.yr)	**9.1**					
			C	**E**	**O**	
Total carbon debt		**Mg C ha^{-1}**	**164.8**	**163.0**	**161.2**	
		Mg CO_2 ha^{-1}	**605.8**	**599.1**	**592.4**	
Carbon debt due to conversion of shifting cultivation						
assumption: shifting cultivation takes rotations of 10 years						
Total carbon debt			**C**	**E**	**O**	
biomass	0.6	Mg C ha^{-1}	**0.3**	**0.4**	**0.5**	ENCOFOR tool
soil C (20 yr)	7.9	Mg C ha^{-1}				
Total carbon debt		**Mg C ha^{-1}**	**8.2**	**8.3**	**8.4**	
		Mg CO_2 ha^{-1}	**30.0**	**30.4**	**30.8**	

Table A4.2. continued Carbon debt calculation of Michoacan, Mexico case

Carbon debt due to conversion of agricultural land						
				estimates		**references**
Total carbon debt						ENCOFOR tool
			C	**E**	**O**	
biomass	-8.7	Mg C ha^{-1}	**-4.4**	**-5.8**	**-7.3**	
soil C (20 yr)	-3.7	Mg C ha^{-1}				
Total carbon debt		**Mg C ha^{-1}**	**-8.0**	**-9.5**	**-10.9**	
		Mg CO_2 ha^{-1}	**-29.5**	**-34.8**	**-40.1**	

Table A4.3. Carbon debt calculation of Chiapas, Mexico case

Carbon debt due to conversion of forest						
				estimates		**references**
Loss of biomass carbon stock						
Aboveground	170.0	Mg C ha^{-1}		200	140	(Houghton and Hackler 2001, Mendoza-Vega et al. 2003)
Belowground	30.2	Mg C ha^{-1}				(Mendoza-Vega et al. 2003)
subtotal	**200.2**	**Mg C ha^{-1}**				
Loss of soil carbon stock						
carbon stock	71	Mg C ha^{-1}				(Mendoza-Vega et al. 2003)
carbon loss				38.8%		(IPCC 2006)
subtotal	**27.5**	**Mg C ha^{-1}**				
Carbon stocked in oil Jatropha plantation						
aboveground	8.4	Mg C ha^{-1}				(Skutsch et al. 2011)
belowground	2.5	Mg C ha^{-1}		30%		(Achten 2010, Reubens et al. 2010)
subtotal	**10.9**	**Mg C ha^{-1}**				
Conservative (1500 kg/ha.yr)	**5.5**					
Estimation (2000 kg/ha.yr)	**7.3**					
Optimistic (2500 kg/ha.yr)	**9.1**					
			C	**E**	**O**	
Total carbon debt	**216.8**	**Mg C ha^{-1}**	**222.3**	**220.5**	**218.6**	
	796.8	**Mg CO_2 ha^{-1}**	**816.8**	**810.2**	**803.5**	

Table A4.3. Continued Carbon debt calculation of Chiapas, Mexico case

Carbon debt due to conversion of pasture						
						references
Pasture holds 10t C/ha (Houghton & Hackler 2001)						
Total carbon debt			**C**	**E**	**O**	
biomass	-7.5	Mg C ha^{-1}	**-3.8**	**-5.0**	**-6.3**	ENCOFOR tool
soil C (20 yr)	9.1	Mg C ha^{-1}				(IPCC 2006)
Total carbon debt		**Mg C ha^{-1}**	**5.3**	**4.1**	**2.8**	
		Mg CO_2 ha^{-1}	**19.5**	**14.9**	**10.3**	
Carbon debt due to conversion of agricultural land						
Total carbon debt			**C**	**E**	**O**	
biomass	-8.7	Mg C ha^{-1}	**-4.4**	**-5.8**	**-7.3**	ENCOFOR tool
soil C (20 yr)	-5.6	Mg C ha^{-1}				(IPCC 2006)
Total carbon debt		**Mg C ha^{-1}**	**-9.9**	**-11.4**	**-12.8**	
		Mg CO_2 ha^{-1}	**-36.6**	**-41.9**	**-47.2**	

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