

Supplementary material (SM)

Comparative Global Warming Potential as Environment Protection Criteria of Production Systems: A Case Study of Philippine Chicken Meat Sector

Ma. Theresa M. Espino^{1,2,*}, Luzvisminda M. Bellotindos^{1,3}

¹ Engineering Graduate Program, School of Engineering, University of San Carlos,
Talamban Campus, Cebu City, Philippines

² Department of Industrial Engineering, School of Engineering and Architecture,
Ateneo de Davao University, Davao City, Philippines

³ Center for Research in Energy Systems and Technologies (CREST), School of Engineering,
University of San Carlos, Talamban Campus, Cebu City, Philippines

* Corresponding author: Email: mtmespino@addu.edu.ph

SM 1 Summary of GHG Emissions of the 4 systems versus other countries' averages

System	Feeds					Manure		Direct Energy Usage	Indirect Energy Usage	CO ₂	CH ₄	N ₂ O	Total	References
	N ₂ O fertilizer and crop residues	N ₂ O manure applied and deposited	CO ₂ feed production	CO ₂ LUC soy	CH ₄ rice	CH ₄	N ₂ O	CO ₂	CO ₂					
A: Intensive broiler	0.39	0.12	1.73	2.11	-	0.06	0.26	0.32 ^a	0.01 ^b	4.17	0.06	0.77	5.00	Authors Computation using GLEAM-i and other data sources
B: Small-scale broiler	0.25	0.12	2.23	-	-	0.12	0.34	1.90 ^a	0.18 ^b	4.31	0.12	0.71	5.15	
C: Backyard with organic feeds	1.02	0.89	2.50	-	-	0.58	4.08	3.90 ^a	0.54 ^b	6.94	0.58	5.99	13.51	
D: Backyard with commercial feeds	0.74	0.59	3.39	-	-	0.28	3.33	1.17 ^a	0.28 ^b	4.85	0.28	4.66	9.79	

SM 1 Summary of GHG Emissions of the 4 systems versus other countries' averages (*continued*)

System	Feeds					Manure		Direct Energy Usage	Indirect Energy Usage	CO ₂	CH ₄	N ₂ O	Total	References	
	N ₂ O fertilizer and crop residues	N ₂ O manure applied and deposited	CO ₂ feed production	CO ₂ LUC soy	CH ₄ rice	CH ₄	N ₂ O	CO ₂	CO ₂						
Broiler															GLEAM-i
Philippines	0.42	0.10	1.25	2.02	-	0.04	0.14	0.55	0.06	3.87	0.04	0.66	4.57		
Malaysia	0.67	0.07	1.94	2.46		0.05	0.14	0.57	0.07	5.04	0.05	0.88	5.97		
Indonesia	0.67	0.09	1.67	1.69	-	0.05	0.16	0.57	0.01	3.95	0.05	0.92	4.92		
Thailand	0.56	0.04	1.58	2.17	-	0.04	0.14	0.48	0.06	4.29	0.04	0.74	5.08		
Backyard															GLEAM-i
Philippines	0.56	0.45	0.89	-	1.36	1.81	6.34			0.89	3.17	7.34	11.40		
Malaysia	0.71	0.35	2.94	-	1.04	1.72	6.22			2.94	2.76	7.28	12.99		
Indonesia	0.81	0.27	1.27	-	1.10	1.50	6.15			1.27	2.61	7.23	11.11		
Thailand	0.77	0.17	2.06	-	0.46	1.29	6.11			2.06	1.75	7.05	10.86		

a-heating, ventilation, illumination from LCA in this study

b-transportation of birds from LCA in this study