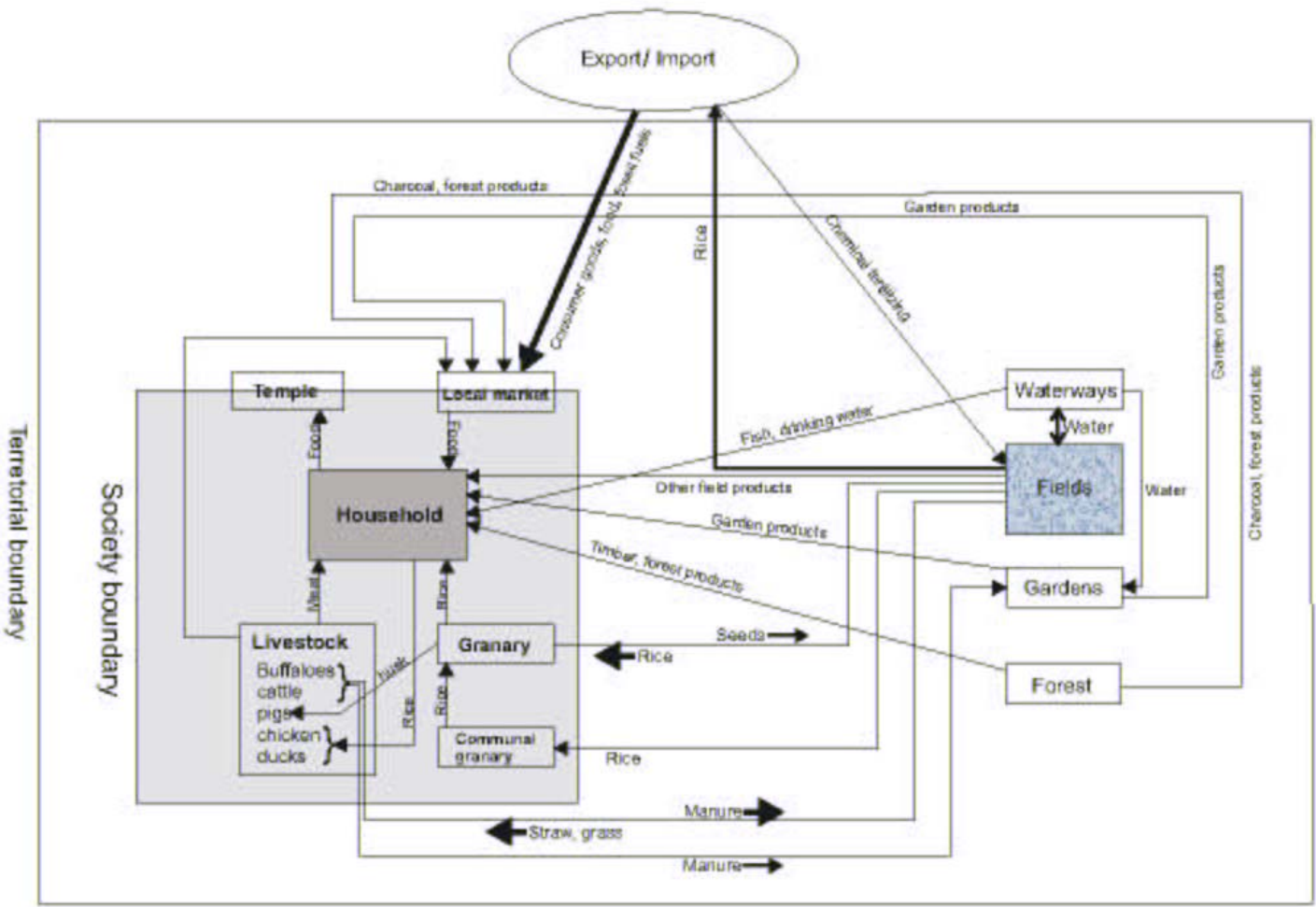


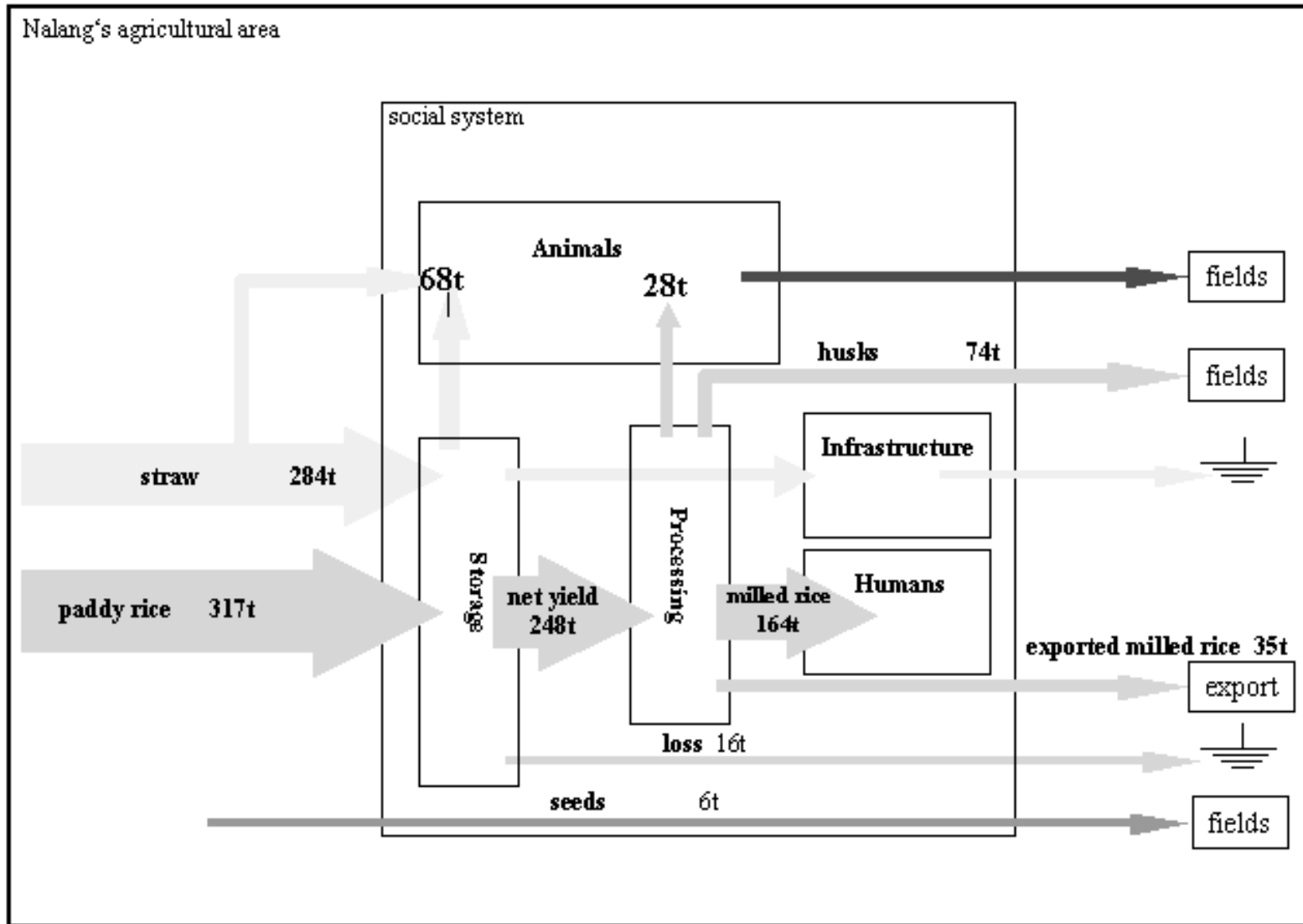
Ressourcennutzungsindikatoren

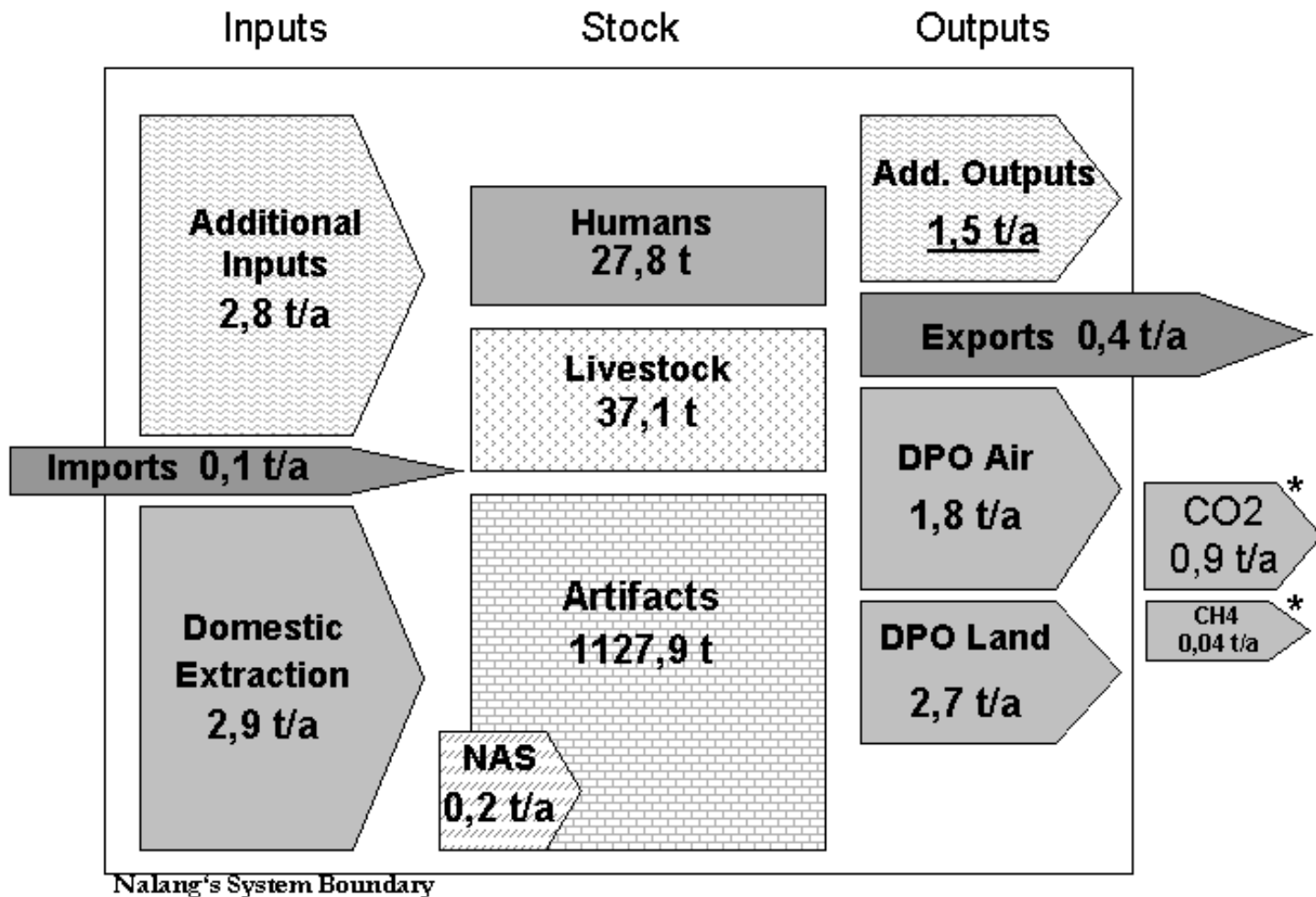
VO Methoden der Humanökologie
Clemens M. Grünbühel

Materialflüsse

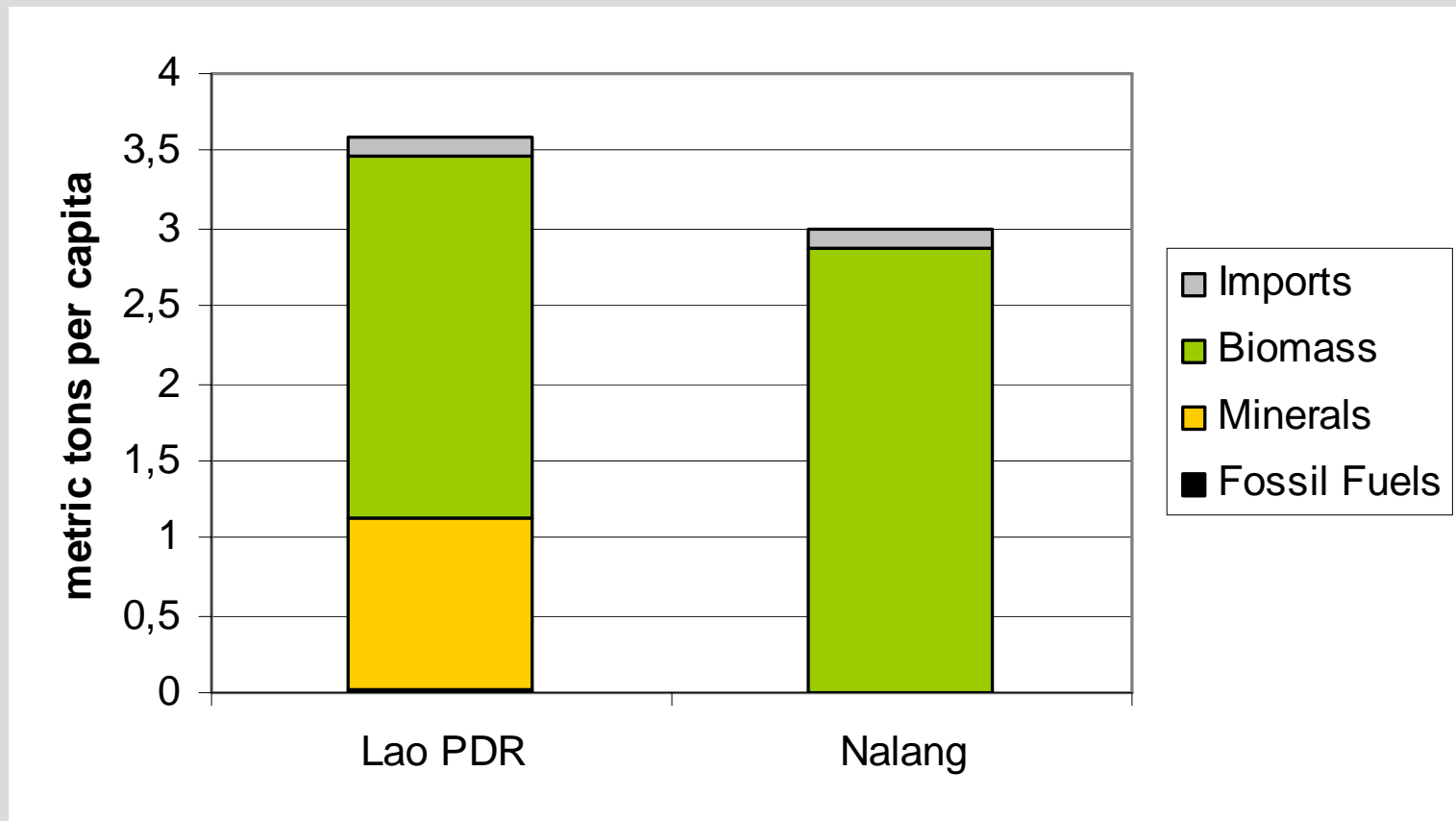


Grünbühel et al. 2003

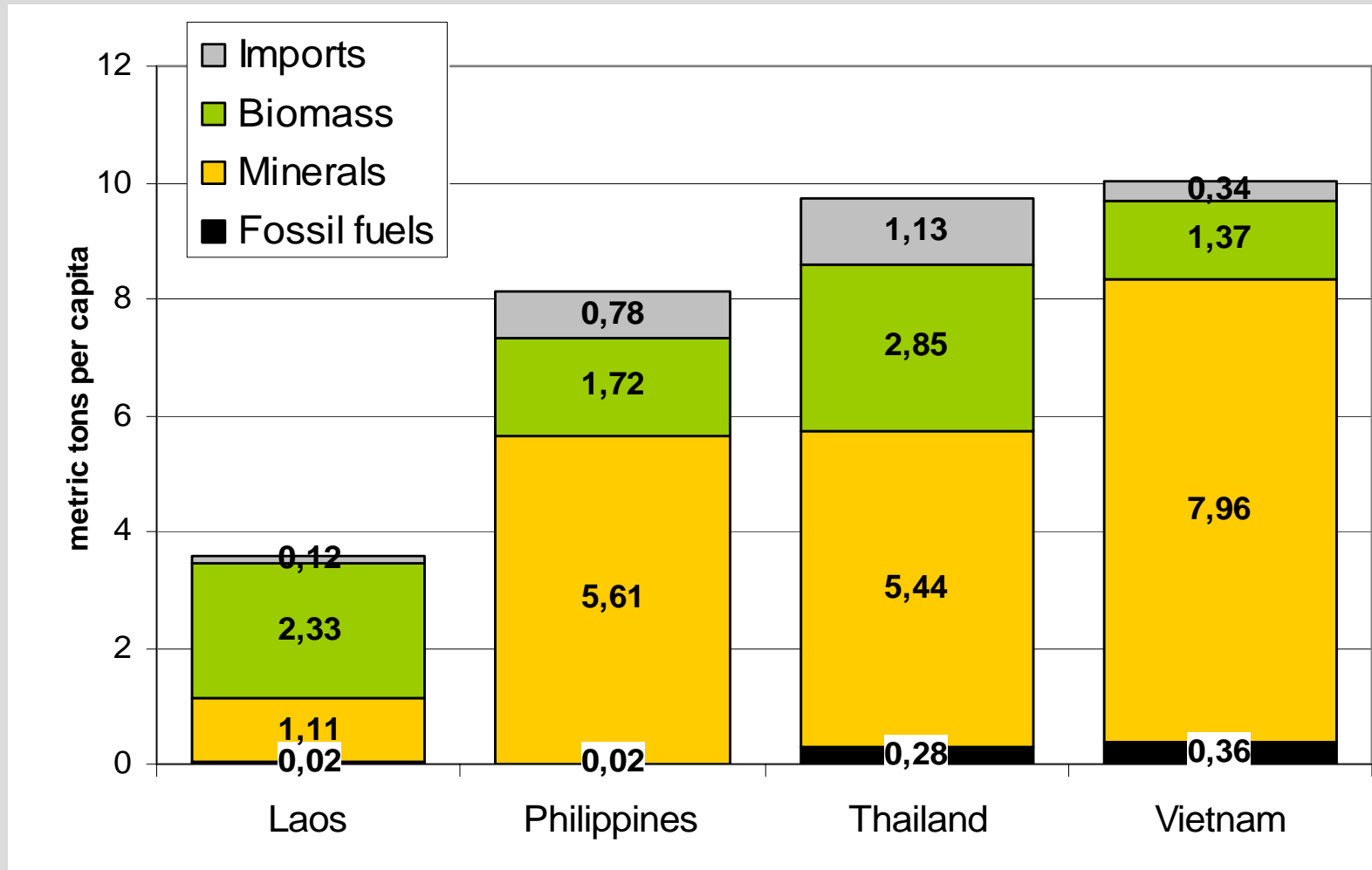




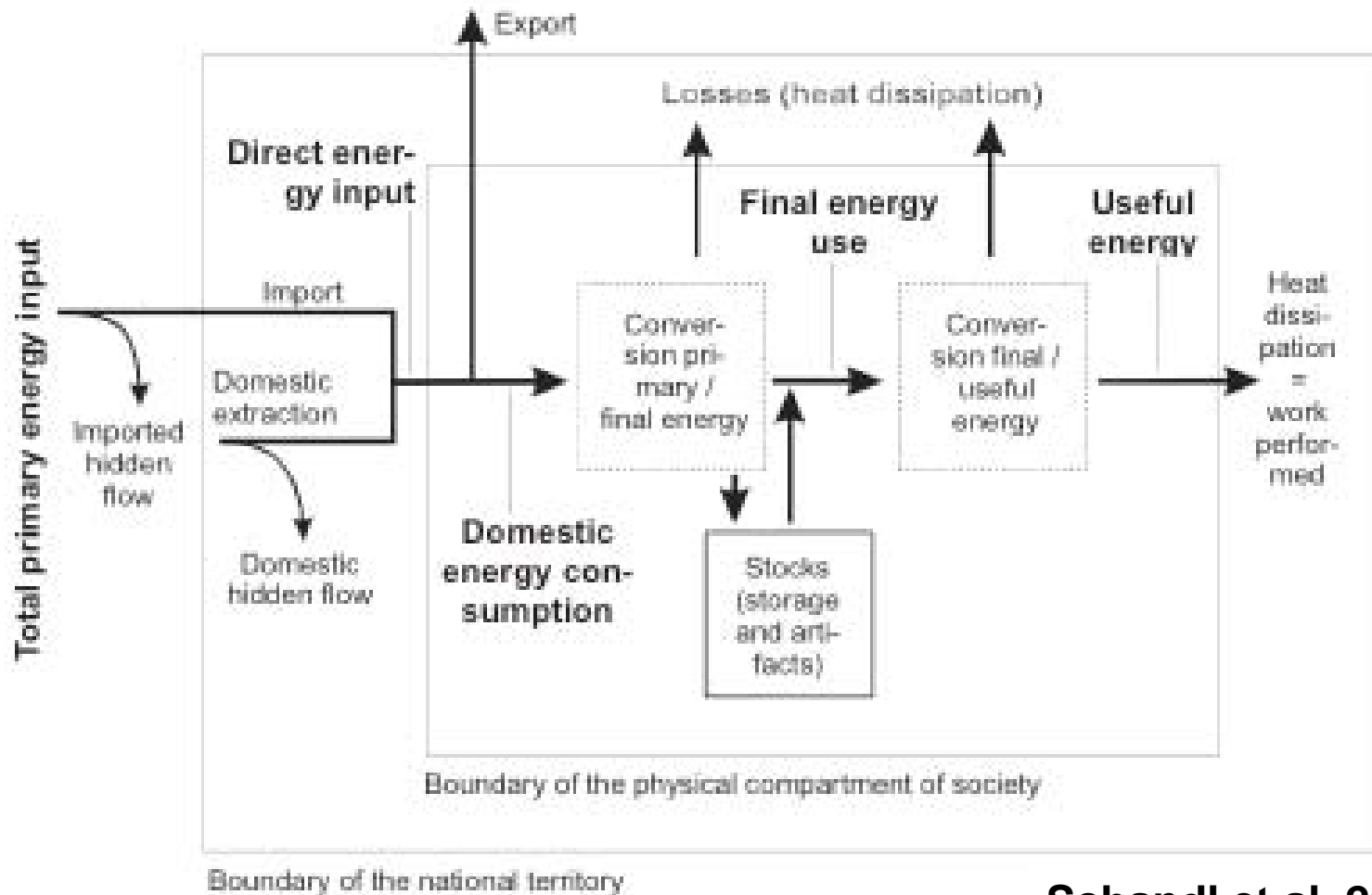
* Additionally 0,9 t CO₂ per year due to combustion of biomass in swiddening activities and 0,04t CH₄ due to flooding of rice fields.



EU-15: 16,6t



Energieflüsse



Schandl et al. 2002

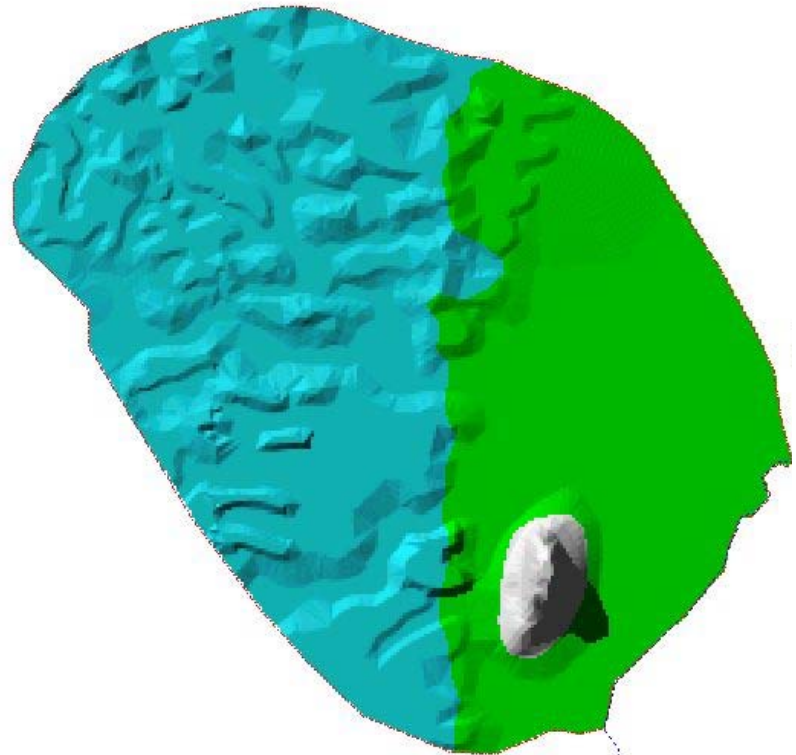
	[GJ/a]
Primary Energy Input	31.091
Biomass	30.694
Fossil	398
Final Energy	11.155
Nutrition humans	2.875
Nutrition animals	2.208
Fuel engines (fossil)	257
Fuel cooking	5.172
Light (fossil)	118
Other	525
Useful Energy	1.212
Human work	356
Animal work	9
Tractive force	39
Heat	807
Light	1

M.-Grünbüchel 2004

	<i>SangSaeng</i> [MJ/Kopf]	Merkar [MJ/Kopf]	...stereich [MJ/Kopf]
Holz	1.585	3.999	
Holzkohle	2.564	218	
Kuhfladen		237	
Gas	248		
Benzin	3.017		
Petroleum	389		
Strom	362	0,04	
Summe	8.165	4.455	110.434

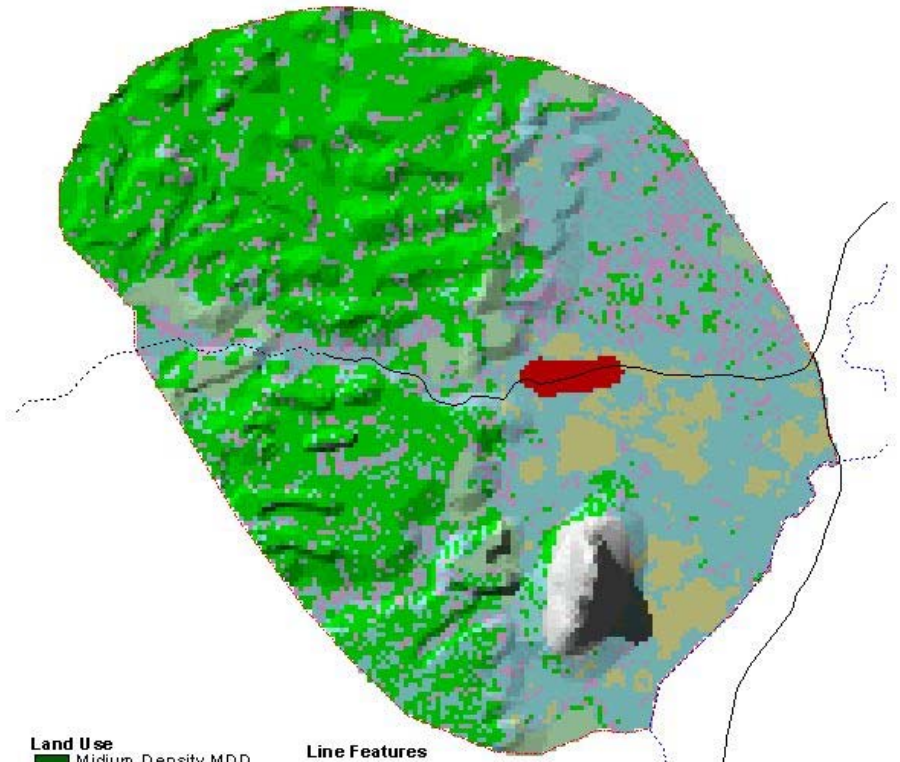
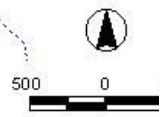
Grünbühel et al. 1999

HANPP



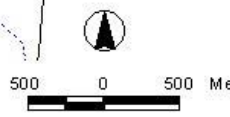
- Land Cover**
- Evergreen
 - High Densed MDD
 - Limestone Rock

- Line Features**
- River
 - Stream

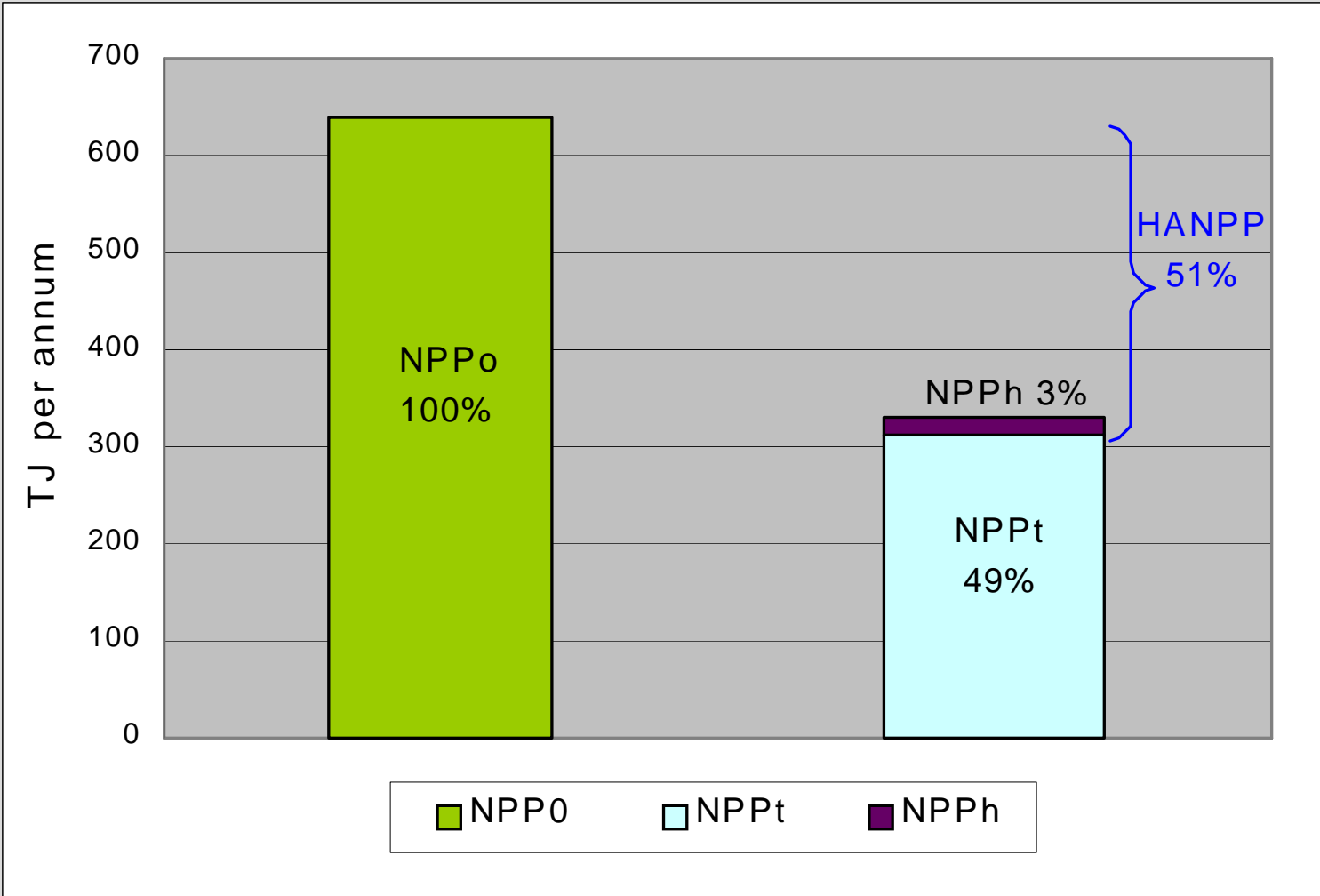


- Land Use**
- Midium Density MDD
 - Secondary Evergreen
 - Bamboo
 - Grassland
 - Lim estone rock
 - Paddy
 - Housing area

- Line Features**
- Road
 - Foot path
 - River
 - Stream
 - Village Boundary



M.-Grünbühel 2004



	Nalang 2001	SangSaeng 1998	Trinket 2000 ¹
Population [no.]	702	171	399
Land area [ha]	1.627	184	3626
Population density [cap/km ²]	43	93	11
NPP ₀ [TJ]	640	36	921
HANPP [TJ]	343	28	65
HANPP [%]	54	77	7
Harvest [TJ]	24	11	7
Harvest [%]	4	30	1
Efficiency [NPP _h /HANPP]	7%	39%	11%

M.-Grünbühel 2004

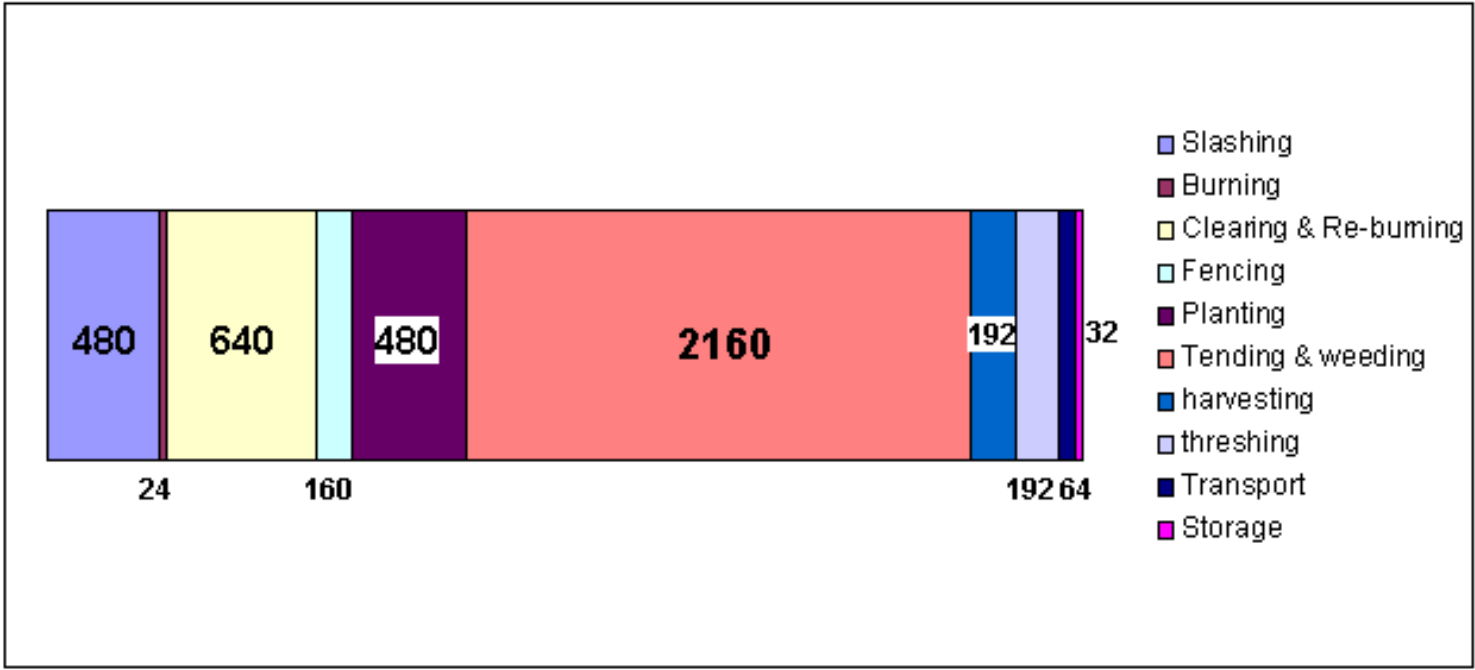
Zeitnutzung

	[hours/day, rounded]	Children (0-14)		Adults	
		male	female	male	female
1	Sleeping	9	9	8	8
2	Eating, Drinking, personal care	2	2	2	2
3	Education	7	5	1	1
4	Paid work	0	0	0	0
5	Own business work	0	1	1	1
6	Tending rice	1	1	2	2
7	Tending other crops	0	0	0	0
8	Tending animals	0	0	1	1
9	Fetching water	0	0	0	0
10	Collecting firewood	0	0	0	1
11	Hunting	0	0	0	0
12	Fishing	0	0	0	0
13	Buying/shopping	0	0	0	0
14	Construction	0	0	2	0
15	Weaving, sewing, textile care	0	0	0	0
16	Handicraft	0	0	0	0
17	Cooking, baking	0	1	0	1
18	Washing cleaning, dishes	0	0	0	0
19	Care for children, adults, elderly	0	0	0	1
20	Travel & transport	0	0	1	2
21	Leisure time	3	3	4	2
22	Others	2	2	2	1
23	Food Gathering	0	0	0	0
24	Religious activities (private & communal)	0	0	0	0
25	Social activities (i.e. communal gatherings, entertaining guests, etc.)	0	0	0	0

Grünbühel & Schandl 2005

Interview Thau Thong Vin, Ban Nalang, October 17, 2001 (CV)

March | April | May | June | July | August | September | October | November | December | January | February | March



Grünbühel & Schandl 2005

	<i>SangSaeng</i> (1998)	Bobst et al. (1980) ¹	Fukui (1993) ²	Hanks (1972) ³	KKU (1982) ⁴
Preparation	64.6		71.0		
Transplanting	209.9		208.3		
Harvesting	295.8		289.3		
Total hours	570.2	700.5	568.7	748	885 ⁵

Grünbühel et al. 1999

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