

## Tables

Table 1: Total production of agricultural products in Denmark, 1996, and in the organic scenarios (Alrøe et al. 1998a; Danish EPA 1999a)

	Danish agriculture 1996	Organic scenarios					
		Present yield level			Improved yield level		
		No import	Restricted	Unlimited	No import	Restricted	Unlimited
Grain (mill. FU) <sup>a</sup>	9,850	3,678	4,549	4,785	4,581	5,448	5,506
Grass etc. (mill. FU)	3,269	5,311	5,165	5,060	5,721	5,525	5,495
Fodder beets (mill. FU)	440	537	537	537	440	537	537
Rape (mill. kg)	251	271	0	0	247	0	0
Grass seed (mill. kg)	64	13	13	13	13	13	13
Potatoes (mill. kg) <sup>b</sup>	1,617	327	327	327	327	327	327
Sugar (mill. kg) <sup>c</sup>	493	225	225	225	225	225	225
Vegetables (mill. kg)	291	291	291	291	291	291	291
Fruit and berries (mill. kg)	61	61	61	61	61	61	61
Milk (mill. kg)	4,690	4,650	4,650	4,650	4,650	4,650	4,650
Beef (mill. kg)	198	202	195	190	207	199	197
Pork and poultry (mill. kg)	1,773	531	1,255	1,773	793	1,645	1,773
Eggs (mill. kg)	88	88	88	88	88	88	88

FU: International feed units

<sup>a</sup> Grain for feed, seed and human consumption, including pulses.

<sup>b</sup> Potatoes including laying potatoes (and, for Danish agriculture 1996, potatoes for industry)

<sup>c</sup> Refined sugar

Table 2: Danish feed import and export of agricultural products in 1996 and in the organic scenarios (Alrøe et al. 1998a; Danish EPA 1999a)

	Danish agriculture 1996 <sup>a</sup>	Organic scenarios					
		Present yield level			Improved yield level		
		No import	Restricted	Unlimited	No import	Restricted	Unlimited
Feed import (mill. FU) <sup>b</sup>	3,513	0	2,300	4,158	0	2,715	3,176
Grain (mill. kg)	2,022	0	0	0	0	0	0
Rape (mill. kg)	58	0	0	0	0	0	0
Grass seed (mill. kg)	61	0	0	0	0	0	0
Potatoes (mill. kg)	421 <sup>c</sup>	0	0	0	0	0	0
Sugar (mill. kg)	160	0	0	0	0	0	0
Milk (mill. kg)	2,352	2,312	2,312	2,312	2,312	2,312	2,312
Beef (mill. kg) <sup>d</sup>	96	100	93	88	105	97	95
Pork and poultry (mill. kg) <sup>e</sup>	1,342	100	824	1,342	362	1,214	1,342
Eggs (mill. kg) <sup>f</sup>	6	6	6	6	6	6	6

<sup>a</sup> The figures for export of crop products in 1996 are only to be taken as indicative, since there are large yearly variations.

<sup>b</sup> Grain constitutes app. 10% of the feed import in 1996, but more than 50% of the feed import in the organic scenarios.

<sup>c</sup> Including the share exported as potato flour.

<sup>d</sup> Calculated as production i slaughtered weight minus national consumption (102 mill. kg); exclusive the export of 54,500 heads of cattle in 1996, corresponding to 3 mill. kg live weight.

<sup>e</sup> Calculated as production i slaughtered weight minus national consumption (431 mill. kg); exclusive the export of 692,000 heads of pigs in 1996, corresponding to 33 mill. kg live weight.

<sup>f</sup> Calculated as production minus laying eggs (10 mill. kg) and national consumption (72 mill. kg)

Table 3: Nitrogen balances in 1996, after the implementation of the plan for the aquatic environment (VMP 2), and in the organic scenarios (mill. kg per year) <Grant 1998; Danish EPA 1999b>

	Danish agriculture 1995/96	VMP 2	Organic scenarios					
			Present yield level			Improved yield level		
			No import	Restricted	Unlimited	No import	Restricted	Unlimited
Feed , etc.	205	179	6	94	148	18	109	122
Art. fertilizer	285	177	0	0	0	0	0	0
Sludge, waste	9	9	0	0	0	0	0	0
Atm. deposition <sup>a</sup>	57	57	57	57	57	57	57	57
Fixation	30	31	159 <sup>b</sup>	159 <sup>b</sup>	159 <sup>b</sup>	177 <sup>b</sup>	177 <sup>b</sup>	177 <sup>b</sup>
<i>N input</i>	<i>586</i>	<i>452</i>	<i>222</i>	<i>310</i>	<i>364</i>	<i>253</i>	<i>343</i>	<i>357</i>
Crop products	63	42	19	19	19	19	19	19
Animal products	105	105	58	82	100	66	96	100
<i>N output</i>	<i>168</i>	<i>147</i>	<i>76</i>	<i>100</i>	<i>118</i>	<i>85</i>	<i>114</i>	<i>119</i>
<i>N balance</i>	<i>418</i>	<i>305</i>	<i>146</i>	<i>209</i>	<i>245</i>	<i>167</i>	<i>229</i>	<i>238</i>
Ammonia loss <sup>c</sup>	76	69	45	57	67	50	65	67
<i>N to the soil, net</i>	<i>342</i>	<i>236</i>	<i>101</i>	<i>152</i>	<i>178</i>	<i>117</i>	<i>164</i>	<i>171</i>

<sup>a</sup> The same atmospheric deposition is used in all scenarios, not incorporating the consequences of the changes in ammonia loss following from the changes in livestock.

<sup>b</sup> An estimate for the uncertainty on the size of the fixation in the organic scenarios has been calculated to 56 mill. kg.

<sup>c</sup> The calculation is based on estimates for N ab anima, estimates for ammonia loss and denitrification in housings and stocks, in the delivery of manure, and in grazing. These losses are dependent on the production system. Furthermore there is a loss of ammonia from crops (11 mill. kg). In 1995/96 and the VMP 2 scenario there is furthermore a loss from artificial fertilizer (7 mill. kg) and from the ammonia treatment of straw (4 mill. kg).

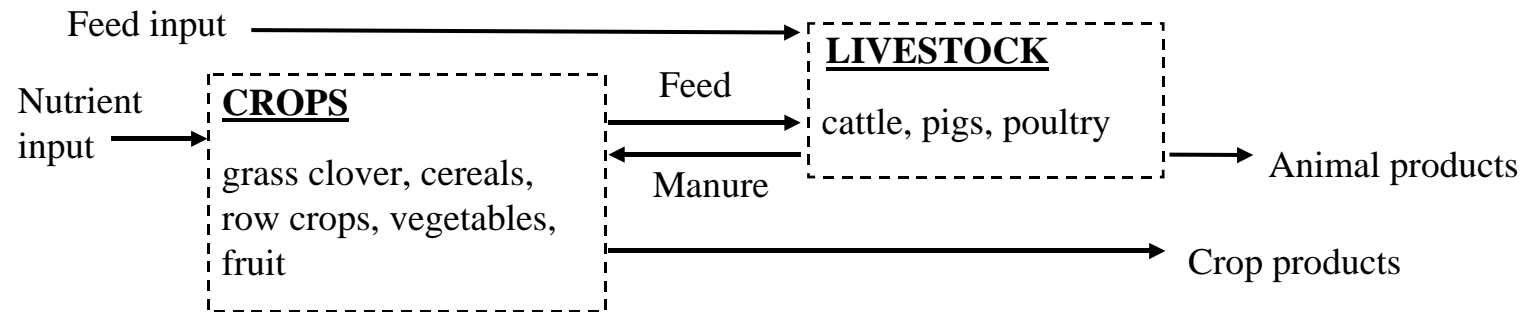
Table 4: Consumption of fossil energy in Danish agriculture and the organic scenarios, compared with crop and animal production <Dalgaard et al. 1998, Danish EPA 1999b>.

	Danish agriculture 1996	Organic scenarios					
		Present yield level			Improved yield level		
		No import	Restricted	Unlimited	No import	Restricted	Unlimited
Crop product. (mill. FU)	15,900	11,000	11,400	11,600	12,300	12,800	12,900
Crop product. (PJ ME) <sup>a</sup>	199	138	143	145	154	160	161
Number of animals (mill. Livestock Units)	2.3	1.7	2.1	2.4	1.9	2.3	2.4
Energy for crop production (PJ)	37	17	17	17	17	17	17
Energy for animal production (PJ)	41	13	29	41	14	31	37
Total energy consumption (PJ)	78	30	46	58	31	49	54
Energy production (PJ)	14 <sup>b</sup>	0	0	0	0	0	0
Net consumption (PJ)	64	30	46	58	31	49	54

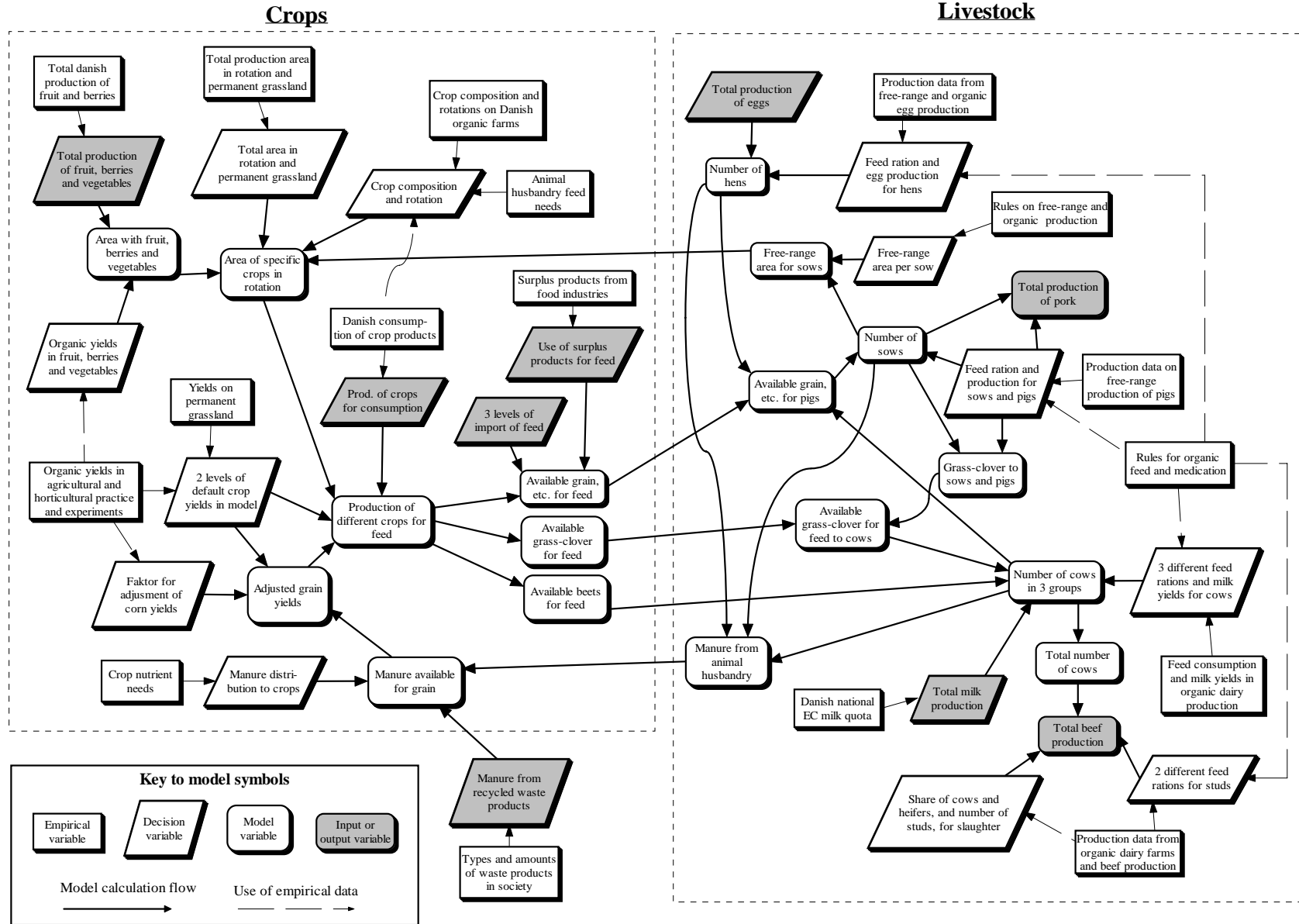
<sup>a</sup> Converted from feed units to metabolic energy (1 FU = 12,5 MJ ME).

<sup>b</sup> There is a potential for further energy production in the present agriculture, corresponding to the grain that was exported in 1996 (2000 mill. kg \* 15 MJ/kg = 30 PJ). The use of this potential will have other socioeconomic consequences.

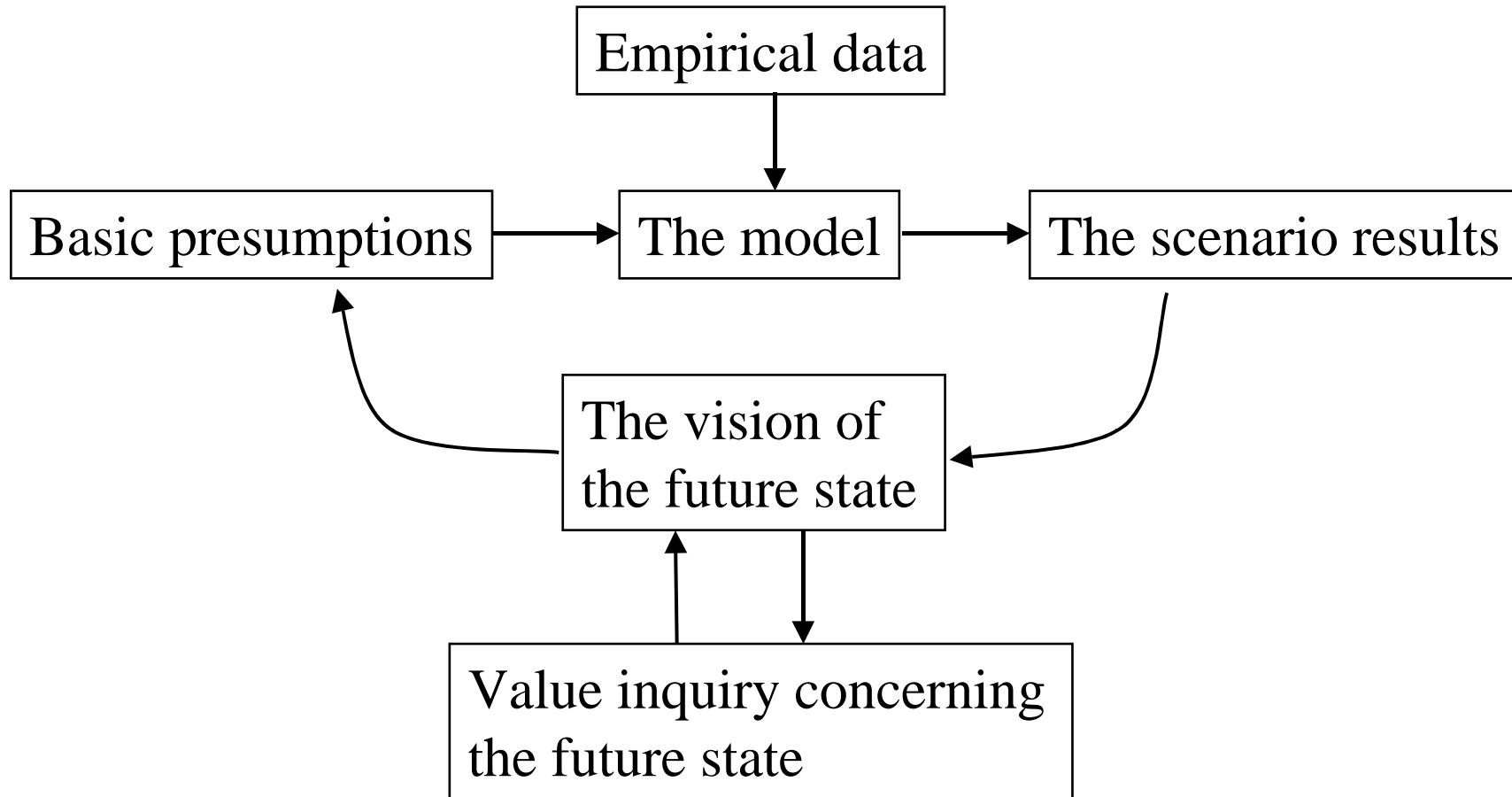
*Overall structure of the material flows in a model of an all-organic agriculture in Denmark*



The model for calculation of the organic scenarios.



*The relation between the modelling proces and the value inquiry  
in an assessment like the one performed by the Bichel Committee*



*Three elements in the development of organic agriculture: practice, preferences, and rules  
– all related to the basic organic principles and values as well as to conventional practice*

