Water Accounts
PSUT Example

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Outline

3 cities;

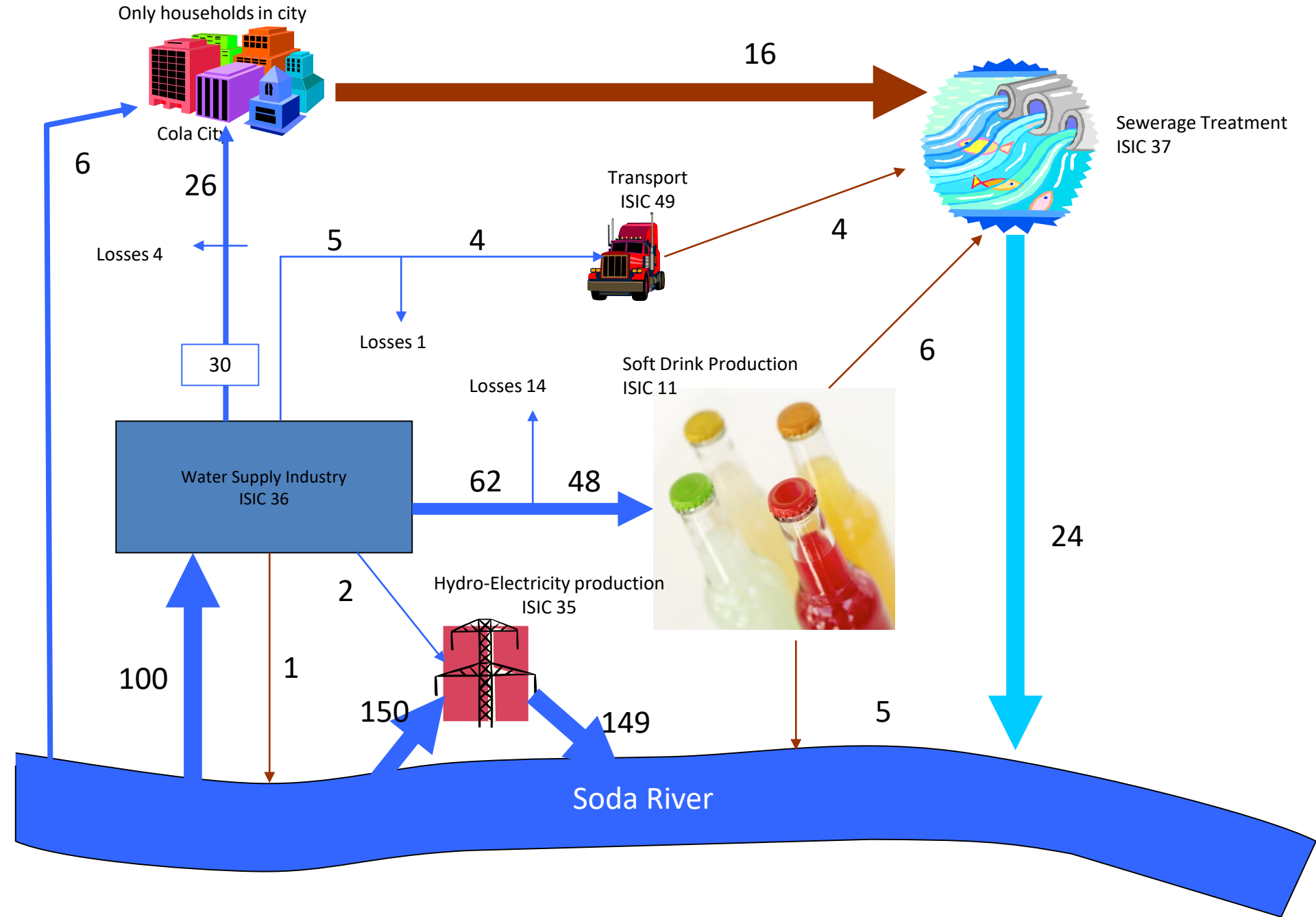
- Cola City
- Cow Town
- Capital Harbor

For Cola, we have a diagram of flows as well as completed supply and use tables

For Cow Town and Capital Harbor, we have a diagram and need to populate the supply and use tables

Cola City

- A city with only one water source – the Soda River
- A simple economy
  - Soft drink manufacture (ISIC 11)
  - Electricity (ISIC 35)
  - Water supply (ISIC 36)
  - Sewerage (ISIC 37)
  - Transport (ISIC 49)
  - Households


Only households in city
Cola City
16
Sewerage Treatment
ISIC 37
6
26
Losses 4
5
4
Transport
ISIC 49
4
Losses 1
30
Losses 14
Soft Drink Production
ISIC 11
6
Water Supply Industry
ISIC 36
62
48
24
2
Hydro-Electricity production
ISIC 35
100
1
150
149
5
Soda River

Cola City – Physical use table

Physical use table

Physical units

		Industries (by ISIC categories)						Households	Total
		11	35	36	37	49	Total		
From the environment	U1 - Total abstraction (=a.1+a.2=		150	100				6	256
	a.1- Abstraction for own use		150	1				6	157
	a.2- Abstraction for distribution			99					99
	b.1- From water resources:								
	Surface water		150	100				6	256
	Groundwater								
	Soil water								
	b.2- From other sources								
	Collection of precipitation								
	Abstraction from the sea								
Within the economy	U2 - Use of water received from other economic units	48	2	0	26	4	80	26	106
	of which : Wastewater to sewerage				26		26		26
U=U1+U2 - **Total use of water**		48	152	100	26	4	330	32	362

Cola City – Physical supply table

Physical supply table

Physical units

		Industries (by ISIC categories)						Households	Total
		11	35	36	37	49	Total		
Within the economy	S1 - Supply of water to other economic	6	0	80	0	4	90	16	106
	of which : Reused water								
	Wastewater to sewerage	6	0	0	0	4	10	16	26
To the environment	S2 - Total returns (= d.1+d.2)	5	149	20	24	0	198	0	198
	d.1- To water resources								
	Surface water	5	149	20	24	0	198	0	198
	Groundwater								
	Soil water								
	d.2- To other sources (e.g. Sea water)								
S - **Total supply of water** (= S1+S2)		11	149	100	24	4	288	16	304
Consumption (U - S)		37	3	0	2	0	42	16	58

Assumes all losses are returned to surface water resources. Includes losses of 19 (1+4+14) + 1 direct return

Cola City – Physical supply-use table

Physical use table

Physical units

		Industries (by ISIC categories)						Households	Total
		11	35	36	37	49	Total		
From the environment	U1 - Total abstraction (=a.1+a.2=		150	100				6	256
	a.1- Abstraction for own use		150	1				6	157
	a.2- Abstraction for distribution			99					99
	b.1- From water resources:								
	Surface water		150	100				6	256
	Groundwater								
	Soil water								
	b.2- From other sources								
	Collection of precipitation								
	Abstraction from the sea								
Within the economy	U2 - Use of water received from other economic units	48	2	0	26	4	80	26	106
	of which : Wastewater to sewerage				26		26		26
U=U1+U2 - **Total use of water**		48	152	100	26	4	330	32	362

Physical supply table

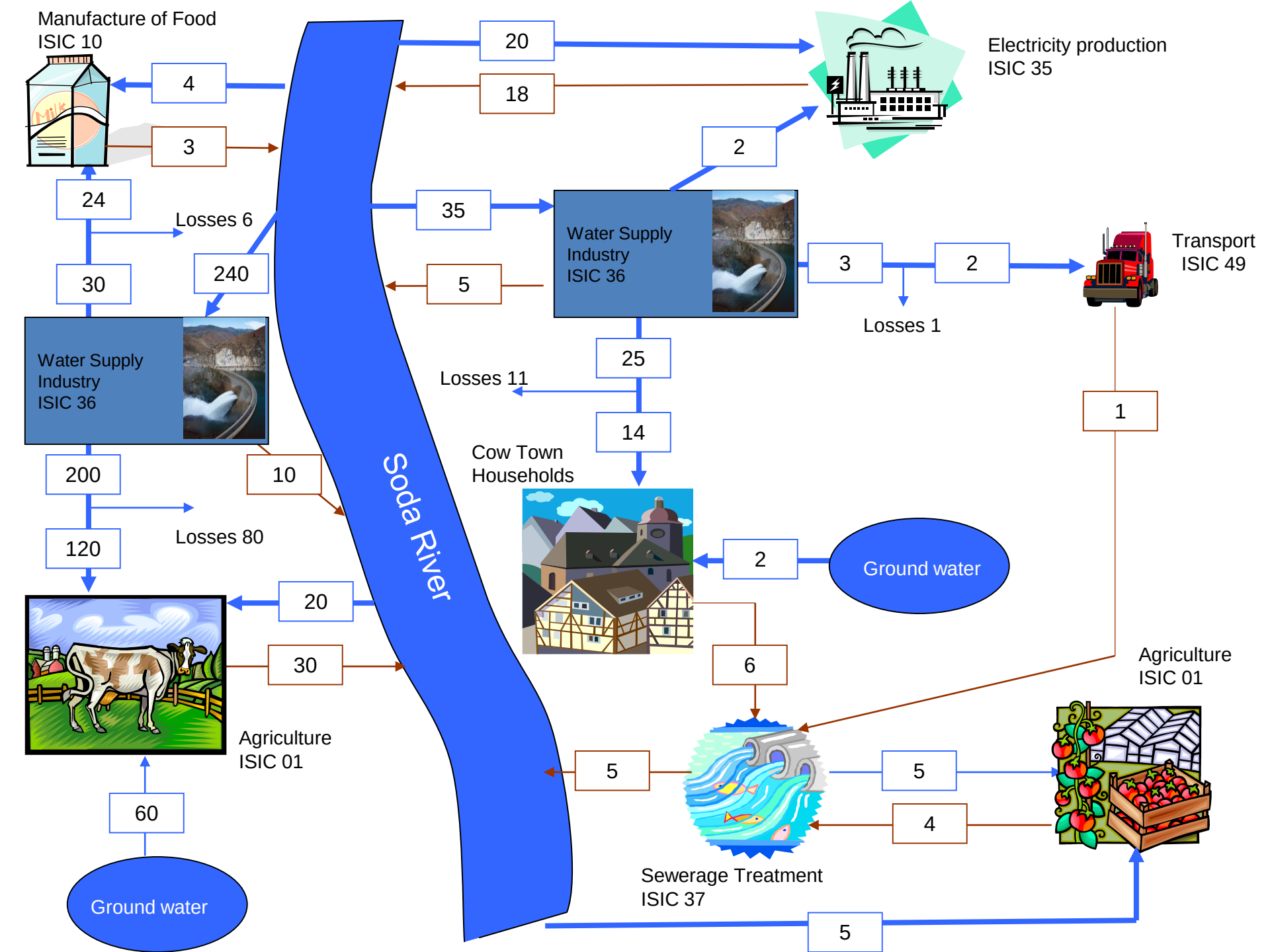
Physical units

		Industries (by ISIC categories)						Households	Total
		11	35	36	37	49	Total		
Within the economy	S1 - Supply of water to other economic	6	0	80	0	4	90	16	106
	of which : Reused water								
	Wastewater to sewerage	6	0	0	0	4	10	16	26
To the environment	S2 - Total returns (= d.1+d.2)	5	149	20	24	0	198	0	198
	d.1- To water resources								
	Surface water	5	149	20	24	0	198	0	198
	Groundwater								
	Soil water								
	d.2- To other sources (e.g. Sea water)								
S - **Total supply of water** (= S1+S2)		11	149	100	24	4	288	16	304
Consumption (U - S)		37	3	0	2	0	42	16	58

Cow Town

(Upstream of Cola City)

- A city with two water sources
  - The Soda River (Surface water)
  - Ground water
- The economy
  - Agriculture (ISIC 01)
  - Food manufacturing (ISIC 10)
  - Electricity (ISIC 35)
  - Water supply (ISIC 36)
  - Sewerage (ISIC 37)
  - Transport (ISIC 49)
  - Households


Manufacture of Food
ISIC 10
4
3
24
Losses 6
30
240
Water Supply
Industry
ISIC 36
200
10
120
Losses 80
20
30
Agriculture
ISIC 01
60
Ground water
Soda River
20
18
Electricity production
ISIC 35
2
35
Water Supply
Industry
ISIC 36
5
3
2
Losses 1
Transport
ISIC 49
25
Losses 11
14
1
Cow Town
Households
2
Ground water
6
Agriculture
ISIC 01
5
5
4
Sewerage Treatment
ISIC 37
5

Cow Town – Physical use table

Physical units

		Industries (by ISIC categories)							Households	Total
		1	10	35	36	37	49	Total		
From the environment	U1 - Total abstraction (=a.1+a.2=	85	4	20	275	0	0	384	2	386
	a.1- Abstraction for own use	85	4	20	15	0	0	124	2	126
	a.2- Abstraction for distribution	0	0	0	260	0	0	260	0	260
	b.1- From water resources:							0		0
	Surface water	25	4	20	275	0	0	324	0	324
	Groundwater	60	0	0	0	0	0	60	2	62
	Soil water	0	0	0	0	0	0	0	0	0
	b.2- From other sources									
	Collection of precipitation									
	Abstraction from the sea									
Within the economy	economic units	125	24	2	0	11	2	164	14	178
	of which : Reuse	5						5		
	of which : Wastewater to sewerage		0	0	0	11	0	11		11
U - **Total use of water (=U1+U2)**		210	28	22	275	11	2	548	16	564

Cow Town – Physical supply table

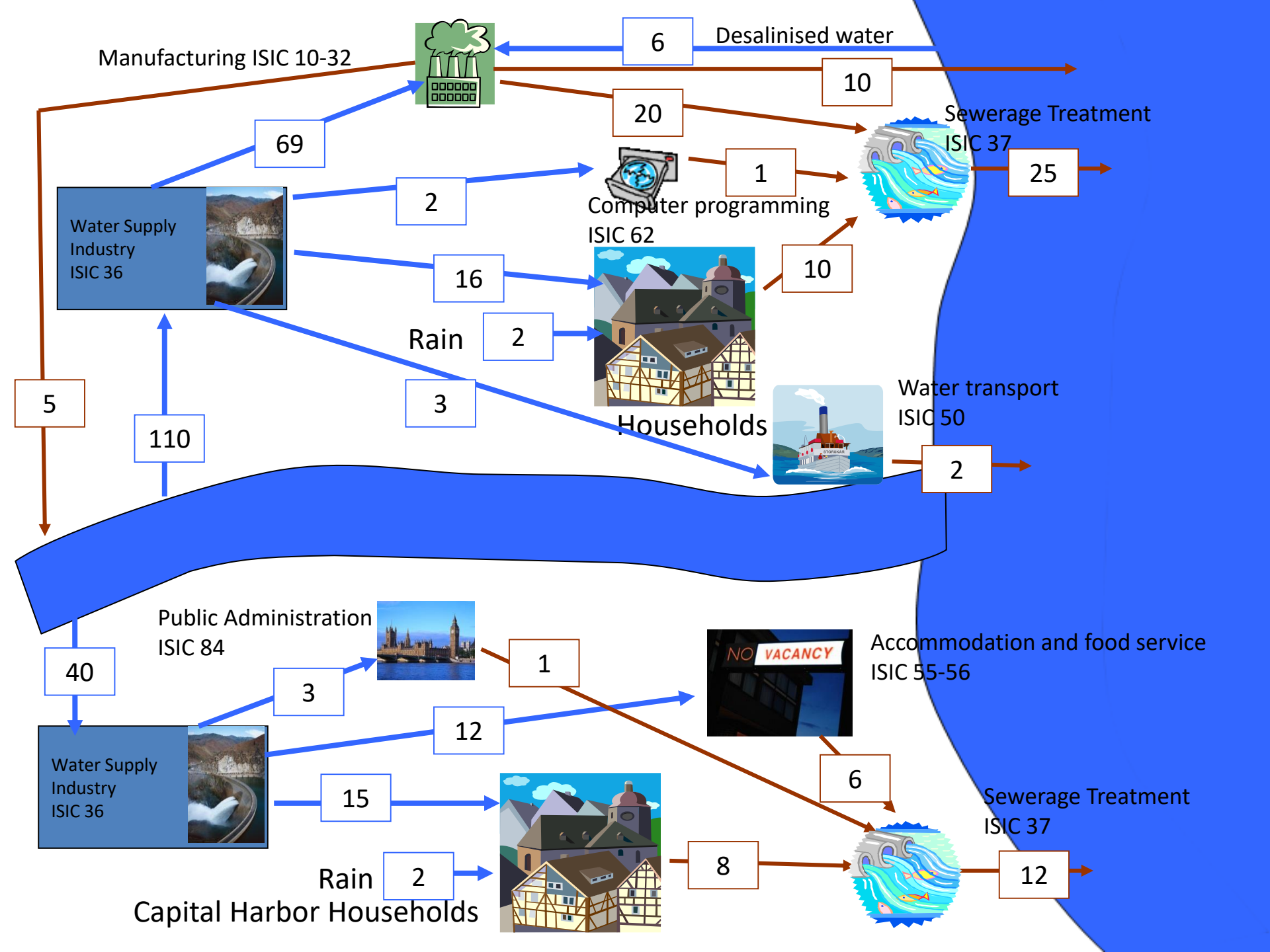
Physical units

		Industries (by ISIC categories)							Households	Total
		1	10	35	36	37	49	Total		
Within the economy	S1 - Supply of water to other economic	4	0	0	162	5	1	172	6	178
	of which: Reuse	0	0	0	0	5	0	5	0	5
	of which: Wastewater to sewerage	4	0	0	0	0	1	5	6	11
To the environment	S2 - Total returns (= d.1+d.2)	30	3	18	113	5	0	169		169
	d.1- To water resources									
	Surface water	30	3	18	113	5		169	0	169
	Groundwater									
	Soil water									
	d.2- To other sources (e.g. Sea water)									
S - **Total supply of water** (= S1+S2)		34	3	18	275	10	1	341	6	347
Consumption (U - S)		**176**	**25**	**4**	**0**	**1**	**1**	**207**	**10**	**217**

Assumes all losses are returned to surface water resources.
Includes losses of 98 (1+6+11+80) + 10 + 5 direct returns

Capital Harbor

- Downstream from Cow Town and Cola City
- A sophisticate scenic city with a “booming” economy:
  - Manufacture (ISIC 10-32)
  - Water supply (ISIC 36)
  - Sewerage (ISIC 37)
  - Water Transport (ISIC 50)
  - Accommodation and food service (55-56)
  - Computer programming (ISIC 62)
  - Public administration (ISIC 84)
  - Households


Manufacturing ISIC 10-32
6
Desalinised water
10
20
69
Sewerage Treatment
ISIC 37
25
1
Computer programming
ISIC 62
Water Supply
Industry
ISIC 36
2
16
10
Rain
2
Households
3
5
110
Water transport
ISIC 50
2
Public Administration
ISIC 84
1
40
3
12
NO VACANCY
Accommodation and food service
ISIC 55-56
Water Supply
Industry
ISIC 36
15
6
Sewerage Treatment
ISIC 37
8
12
Rain
2
Capital Harbor Households

Capital Harbor – Physical use table

Physical units

		Industries (by ISIC categories)										Households	Total
		1	10 to 32	35	36	37	50	55-56	62	84	Total		
From the environment	U1 - Total abstraction (=a.1+a.2=	0	6	0	150	0	0	0	0	0	156	4	160
	a.1- Abstraction for own use												
	a.2- Abstraction for distribution				150						150		150
	b.1- From water resources:												
	Surface water				150						150		150
	Groundwater												
	Soil water												
	b.2- From other sources												
	Collection of precipitation											4	4
	Abstraction from the sea		6								6		6
Within the economy	U2 - Use of water received from other economic units		69			46	3	12	2	3	135	31	166
	of which : Wastewater to sewerage					46							46
U=U1+U2 - **Total use of water**		0	75	0	150	46	3	12	2	3	291	35	326

Capital Harbor – Physical supply table

Physical units

		Industries (by ISIC categories)										Households	Total
		1	10 to 32	35	36	37	50	55-56	62	84	Total		
Within the economy	S1 - Supply of water to other economic	0	20	0	120	0	0	6	1	1	148	18	166
	of which : Reused water												
	Wastewater to sewerage		20					6	1	1	28	18	46
To the environment	S2 - Total returns (= d.1+d.2)		15		30	37	2				84	0	84
	d.1- To water resources												
	Surface water		5		30						35	0	35
	Groundwater												
	Soil water												
	d.2- To other sources (e.g. Sea water)		10			37	2				49	0	49
S - **Total supply of water** (= S1+S2)		0	35	0	150	37	2	6	1	1	232	18	250
Consumption (U - S)		**0**	**40**	**0**	**0**	**9**	**1**	**6**	**1**	**2**	**59**	**17**	**76**

Assumes all losses are returned to surface water resources.

Təşəkkür