Kangaré – Water

An Introduction to Environmental –Economic Accounts for Water (SEEA-Water)

## WORKBOOK

7 September 2012

Based on the introduction to national accounts exercise prepared by NGO Thi Cuc and Jean-Louis WEBER. 1

#### Kangaré example (million kagarés)

#### SUPPLY

	Agriculture	General Canning Company	IOC 1	IOC 2	Administratio n	National production	Final consumption households	Final consumption Government	Rest of the World (RoW)	ΤΟΤΑ
Seed and fodder										
Agricultural products										
Canned food										
Crude oil										
Refined petroleum										
Chemical products										
Administrative services										
Other industrial products										
Raw materials and furniture										
Final consumption goods										
										1

OOL										
	Agriculture	General Canning Company	IOC 1	IOC 2	Administratio n	Intermediate consumption	Final consumption households	Final consumption Government	Rest of the World (RoW)	TOTAL
Seed and fodder										
Agricultural products										
Canned food										
Crude oil										<u> </u>
Refined petroleum										
Chemical products										
Administrative services										
Other industrial products										
Raw materials and furniture										<u> </u>
Final consumption goods										
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				[			
Value added							

# Kangaré example (SUPER SYNTHESIS) (million kagarés)

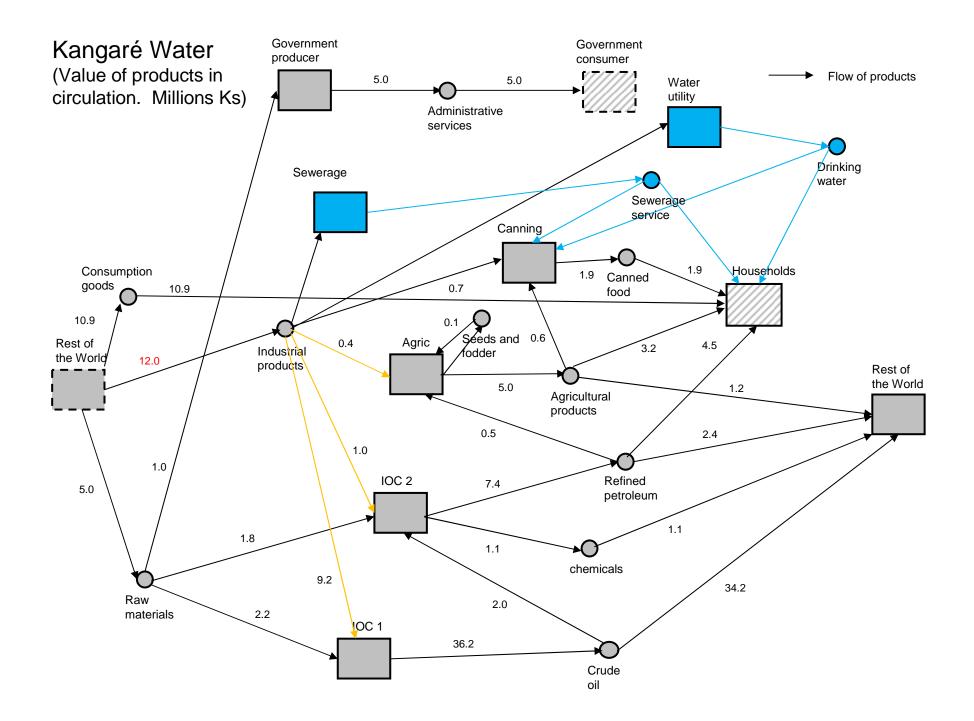
#### SUPPLY AND USE TABLES

#### SUPPLY

	National industries	National production	Final consumption households	Final consumption Government	Rest of the World (RoW)	TOTAL
National products						
Imported products						

	National industries	Intermediate consumption	Final consumption households	Final consumption Government	Rest of the World (RoW)	TOTAL
National products						
Imported products						

Value added				



#### Kangaré-Water example

#### (million kagarés)

SUPPLY

	Agriculture	General Canning Company	IOC 1	IOC 2	Administratio n	Water utility	Sewerage utility	National production	Final consumptio household	
Seed and fodder										
Agricultural products										
Canned food										
Crude oil										
Refined petroleum										
Chemical products										
Administrative services										
Drinking water service										
Sewerage service										
Other industrial products										
Raw materials and furniture										
Final consumption goods										

Rest of the World (RoW)	TOTAL

Seed and fodderIII		Agriculture	General Canning Company	IOC 1	IOC 2	Administratio n	Water utility	Sewerage utility	Intermediate consumption	Final consumption households	Final consumption Government	Gross Fixed Capital Formation (GFCF)	Rest of the World (RoW)	ΤΟΤΑΙ
Canned foodIII	Seed and fodder													
Crude oil   Image: Service service service service   Image: Service s	Agricultural products													
Refined petroleum   Image: Service service service service   Image: Service s	Canned food													
Chemical products   Image: Chemimal produc	Crude oil													
Administrative services   Image: Constraint of the constra	Refined petroleum													
Drinking water service   Image: Constraint of the service   Image: Conservice   Image: Constraint of the	Chemical products													
Sewerage service   Image: Sewerage service	Administrative services													
Other industrial products   Image: Constraint of the second sec	Drinking water service													
Raw materials and furniture   Image: Consumption goods   Image: Consu	Sewerage service													
Final consumption goods	Other industrial products													
	Raw materials and furniture													
	Final consumption goods													
	Mahara 114 1													

Value added				

# Kangaré example (SUPER SYNTHESIS) (million kagarés)

SUPPLY AND USE TABLES

#### SUPPLY

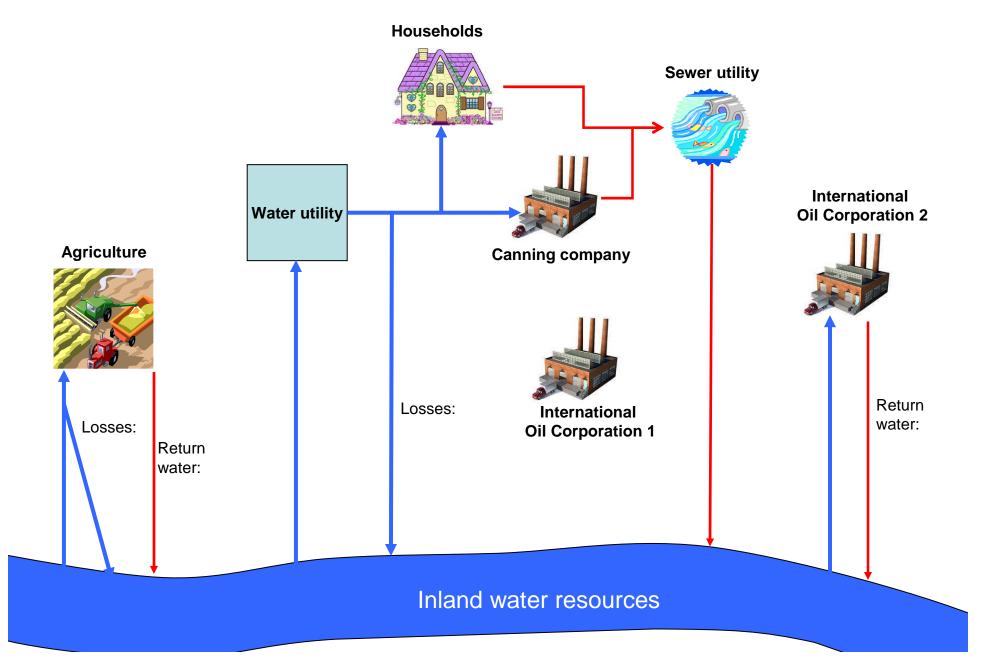
	National industries	Water utility	Sewerage utility	National production	Final onsumption nouseholds	Final consumption Government
National products						
Drinking water service						
Sewerage service						
Imported products						

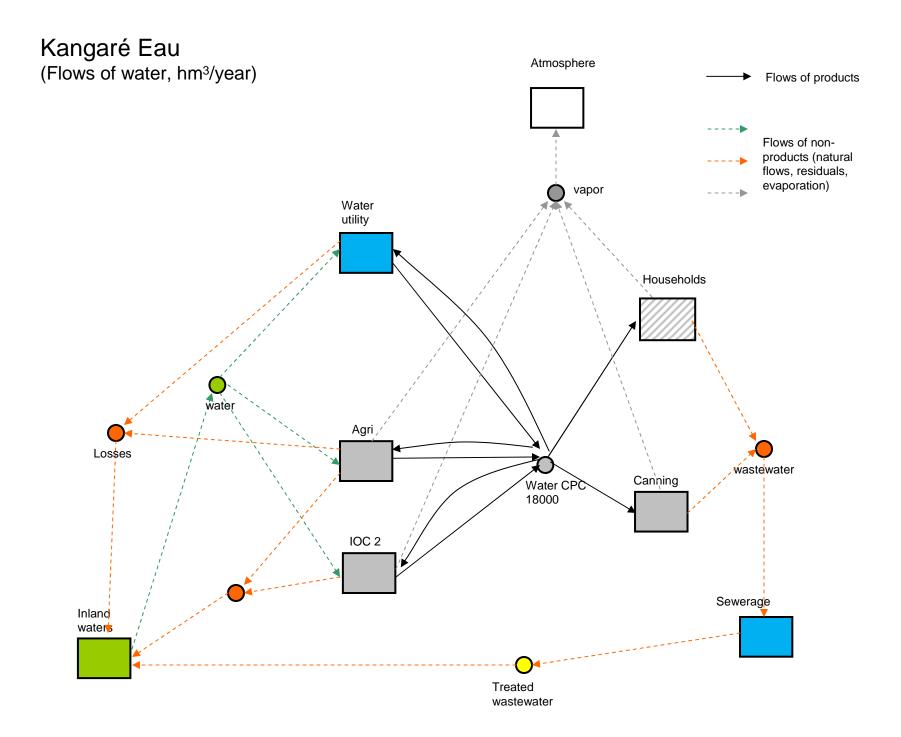
Rest of the World (RoW)	TOTAL

	National industries	Water utility	Sewerage utility	National production	Final consumption households	Final consumption Government	Rest of the World (RoW)	TOTAL
National products								
Drinking water service								
Sewerage service								
Imported products								

Value added		

### Kangaré Water (Flows of water in hm³/year)





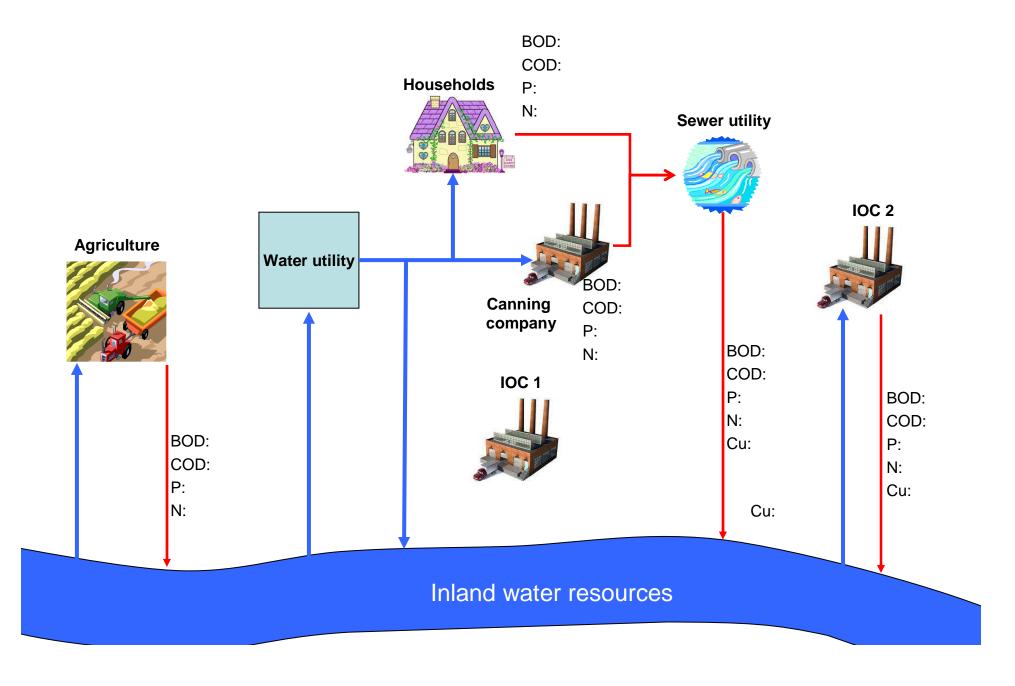
#### KANGARE WATERSHED EXAMPLE (SUPPLY AND USE TABLES)

() Sources of abstracted waterimage and image and i	SUPPLY (LEAVING)	Agriculture	Water utility	Sewer utility	Canning Company	IOC 1	IOC 2	Administrati on	House- holds	Flows from the environmen t	SUM
Other water sources     Image: Sources     Im	(I) Sources of abstracted water										
(i) Abstracted water   Image: set of constraints of	Inland water										
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Other water sources										
Produced water for own use   Image: Severage	(II) Abstracted water										
(III) Wastewater and reused water   Image	Produced water for distribution										
Sewage   Image   Image <t< td=""><td>Produced water for own use</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Produced water for own use										
Treated watewater   Image: Second S	(III) Wastewater and reused water										
(iv) Return flows of water   Image: Section of abstracted water, respiration of abstracted water, respiration of abstracted water for distribution   Image: Section of abstracted water, respiration of abstracted water, respiration of abstracted water for distribution   Image: Section of abstracted water, respiration of abstracted water, respiration of abstracted water for distribution   Image: Section of abstracted water, respiration of abstracted water for distribution   Image: Section of abstracted water   Image: Section of	Sewage										
Losses   Image: Several of abstracted water, transpiration and water incorporation of abstracted water, transpiration and water incorporates into normality incorporation of abstracted water   Image: Several of abstracted water incorporates into normality incorporation of abstracted water   Image: Several of abstracted water<	Treated wastewater										
Return water   Image: Construction of abstracted water, transpiration and water, incorporation of abstracted water   Image: Construction of abstracted water   Image: Construle to the tend water   Image:	(IV) Return flows of water										
(v) Exponention of abstracted water, transpiration and water incorporates into products.   Image: Severe utility of the severe utili	Losses										
and water incorporates into Excedurets   Image: second s											
USE (ENTERING)   Agriculture   Water utility   Sewer utility   Canning Company   IOC 1   IOC 2   Administrati on   House- holds   Flows to the environmen t     (I) Sources of abstracted water   Imand water <td></td>											
USE (ENTERING)AgricultureWater utilitySewer utilityCanning CompanyIOC 1IOC 2AdministrationHouse- holdsenvironment tSUM(I) Sources of abstracted waterII<	Evaporation of abstracted water										
USE (ENTERING)AgricultureWater utilitySewer utilityCanning CompanyIOC 1IOC 2AdministrationHouse- holdsenvironment tSUM(I) Sources of abstracted waterII<											
USE (ENTERING)AgricultureWater utilitySewer utilityCanning CompanyIOC 1IOC 2AdministrationHouse- holdsenvironmentSUM(I) Sources of abstracted waterImand waterIman											
Inland water   Image: sources   Image:											
Other water sources   Image: sources	USE (ENTERING)	Agriculture	Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
(II) Abstracted water   Image: Second Seco		Agriculture	Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
Produced water for distribution   Image: Constraint of the second seco	(I) Sources of abstracted water	Agriculture	Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
Produced water for own use   Image: Constraint of the set of the s	(I) Sources of abstracted water Inland water		Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
(III) Wastewater and reused water   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water incorporates into products   Image: Constraint of abstracted water, transpiction of abstracted water incorporates into products <td>(I) Sources of abstracted water Inland water Other water sources</td> <td></td> <td>Water utility</td> <td>Sewer utility</td> <td></td> <td>IOC 1</td> <td>IOC 2</td> <td></td> <td></td> <td>environmen</td> <td>SUM</td>	(I) Sources of abstracted water Inland water Other water sources		Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
Sewage   Image   Image <t< td=""><td>(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water</td><td></td><td>Water utility</td><td>Sewer utility</td><td></td><td>IOC 1</td><td>IOC 2</td><td></td><td></td><td>environmen</td><td>SUM</td></t<>	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water		Water utility	Sewer utility		IOC 1	IOC 2			environmen	SUM
Treated wastewater Image: Constraint of abstracted water, transpiration and water incorporates into products Image: Constraint of abstracted water, transpiration and water incorporates into products	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution		Water utility	Sewer utility			IOC 2			environmen	SUM
(IV) Return flows of water   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstracted water, transpiration and water incorporates into products   Image: Constraint of abstrated water, transpiration and water incorporates intoprod	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use		Water utility	Sewer utility						environmen	SUM
Losses Image: Constraint of abstracted water, transpiration and water incorporates into products Image: Constraint of abstracted water, transpiration and water incorporates into products	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water		Water utility	Sewer utility						environmen	SUM
Return water   Image: Constracted water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water incorporates into products   Image: Constract water, transpiration and water inconter, transpiration and water incorporates	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water Sewage		Water utility	Sewer utility						environmen	SUM
(V) Evaporation of abstracted water, transpiration and water incorporates into products	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water Sewage Treated wastewater		Water utility	Sewer utility						environmen	SUM
and water incorporates into products	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water Sewage Treated wastewater (IV) Return flows of water		Water utility	Sewer utility						environmen	SUM
Evaporation of abstracted water Image: Constract of abstracted water	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water (III) Wastewater and reused water (IV) Return flows of water Losses Return water		Water utility	Sewer utility						environmen	SUM
	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water (III) Wastewater and reused water (IV) Return flows of water Losses Return water (V) Evaporation of abstracted water, transpiration		Water utility	Sewer utility						environmen	SUM
	(I) Sources of abstracted water Inland water Other water sources (II) Abstracted water Produced water for distribution Produced water for own use (III) Wastewater and reused water (III) Wastewater and reused water Sewage Treated wastewater (IV) Return flows of water Losses Return water (V) Evaporation of abstracted water, transpiration and water incornorates into products		Water utility	Sewer utility						environmen	SUM

### KANGARÉ WATERSHED EXAMPLE (ASSET ACCOUNTS)

	Inland Water Resources
Opening stock of water resources	
Additions to stock	
Returns	
Precipitation	
Inflows from other inland water resources	
Reductions in stock	
Abstractions	
Evaporation/ Evapotranspiration	
Ouflows to other inland water resources	
Outflows to the sea	
Closing stock of water resources	

# Kangaré Water – EMISSION ACCOUNTS, TRAINING EXAMPLE (Flows of emissions in ton/year)



#### KANGARE-WATER. EMISSION ACCOUNTS

#### Physical supply table for gross releases of substances to water

SUPPLY (LEAVING)	Agriculture	Water utility	Sewer utility	Canning Company	IOC 2	Administration	Households	Flows from the environment	Total supply
Emissions to the environment									
BOD									
COD									
Phosphorous									
Nitrogen									
Copper									
Releases to other economic units									
BOD									
COD									
Phosphorous									
Nitrogen									
Copper									

#### Physical use table for gross releases of substances to water

USE (ENTERING	Agriculture	Water utility	Sewer utility	Canning Company	IOC 1	IOC 2	Administration	Households	Flows to the environment	Total use
Emissions received by the environment										
BOD										
COD										
Phosphorous										
Nitrogen										
Copper										
Collection by other economic units										
BOD										
COD										
Phosphorous										
Nitrogen										
Copper										