

Introduction of New SDB

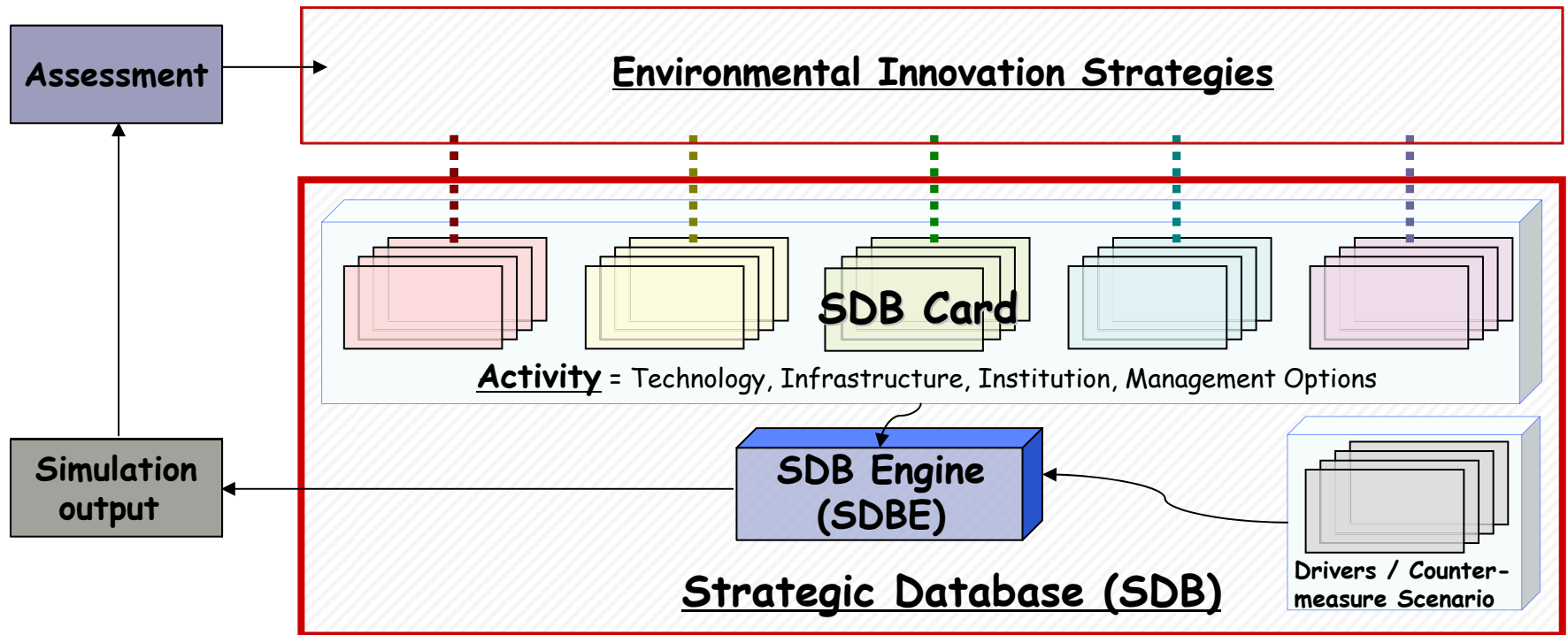
Go Hibino of MHIR

2006.2.20

The 11th AIM International Workshop

1. What is SDB ?

SDB = Strategic DataBase



Structure of SBD and application of SDB

2. Update of SDB

SDB = Strategic DataBase

1) Modify form design.

- Users browse data in a longitudinal direction without scroll bar



- SDB provides warehouse of material for data developers.



2) Develop a module estimating future environmental burden. (=SDBE)



Start form of SDB

Microsoft Access - [Frm_FrontPage : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H)

APEIS Strategic Database

Activity	<ul style="list-style-type: none">List (simple tabular)Detail columnar
Simulation Condition	<ul style="list-style-type: none">Service DemandConstraintPrice of InputEnvironmental Burden from InputPrice of Environmental Burden
Simulation	<ul style="list-style-type: none">Penetration of activity (Read only)RunResult Simple Detail
Code etc.	<ul style="list-style-type: none">Scenario CodeInput/Output CodeEnvironmental Burden CodeSector CodeEnvironmental Issues CodeParameter
Maintenance	<ul style="list-style-type: none">Clean

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<http://www-iam.nies.go.jp/aim/apeis/>

Activity : Passenger vehicle with electric motor


Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6106 TR_PV_EL1	Sector	[TR]:Transportation sector
	PS. Vehicle / Electric	ENV. Issue	[CC]:Climate Change
Activity type	<input checked="" type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input type="radio"/> To influence other activity	Activity Unit	Name Unit Value GH of MHIR 1
Description	In electric cars, an electric motor and control unit form the power unit, and the electric motor runs on electricity stored in a battery. Recently, third generation electric cars equipped with nickel metal hydride batteries or lithium-ion batteries have appeared, and their performance has improved nearly to the level of conventional cars.		

Figure Memo



(NIES) 1

☐ Lifetime
 ☐ Fixed Cost
 ☐ O+M Cost
 ☐ Input
 ☐ Output
 ☐ Affected Activity
 ☐ Affected Flow
 ☐ Burden
 ☐ Penetration
 ☐ Reference

	2000	2010	2020	2030	2040	2050	Note
	9.96						*4

Note: Only one record is valid. Do not enter multiple records for an activity

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Activity : Passenger vehicle with internal combustion

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6101 TR_PV_G01	Sector	[TR]:Transportation sector
	PS. Vehicle / IC / Oil	ENV. Issue	[CC]:Climate Change
Activity type	<input checked="" type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input type="radio"/> To influence other activity	Activity Unit	Name Unit Value 1
Description	Passenger oil vehicle with internal combustion. Figure Memo a) Stock number of passenger vehicle (1000 units, 2000) = 10,084(Light)+28,202(Small)+14,163(Ordinary) (*1) = 52,499 b) Fuel consumption of passenger vehicle (1000kl, 2000) (*2) - Gasoline = 50,149(Private)+97(Commercial)=50,246 - Diesel = 6,434(Private)+52(Commercial)=6,486 - LPG = 2,750 c) Calorific value (kgoe/l) (*3) - Gasoline = 0.8226 - Diesel = 0.9126 - LPG = 28.1MJ/kl = 0.6722 d) Fuel consumption of passenger vehicle (ktOE)		

☐ Lifetime
 ☐ Fixed Cost
 ☐ O+M Cost
 ☐ Input
 ☐ Output
 ☐ Affected Activity
 ☐ Affected Flow
 ☐ Burden
 ☐ Penetration
 ☐ Reference

	2000	2010	2020	2030	2040	2050	Note
[OLG]: Gasoline (kgoe)	935.2	748.2	710.8	673.4	636	598.6	e), h), i)

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Reference of estimation

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Adobe Acrobat Standard - [交通経済統計要覧2003.pdf - リンクされたファイル]

ファイル(F) 編集(E) 表示(V) 文書(D) ツール(T) アドバンスト(A) ウィンドウ(W) ヘルプ(H)

テキスト選択ツール 57% 使い方...?

地球政策研究機構 (財) 運輸政策研究機構発行
Issued by Institution for Transport Policy Studies

114 施設
自動車保有
Number of Motor Vehicles Owned

区分	Section	43(1970)	50(1973)	53(1980)	60(1985)
合計	Total	18,919,020	29,143,445	38,992,025	48,240,335
普通車	Ordinary	12,779,069	23,018,660	31,249,930	35,226,180
小車	Small	813,845	1,175,453	1,502,408	1,673,148
自家用	Private use	585,216	822,443	1,051,453	1,112,089
営業用	Business use	228,629	353,010	450,955	561,059
三輪	Tricycle	4,511,700	6,124,638	7,109,706	6,563,119
自家用	Private use	4,428,943	6,041,186	7,023,713	6,469,512
営業用	Business use	82,857	83,452	85,993	93,607
トラック	Truck	111,080	40,816	13,551	3,883
自家用	Private use	101,655	38,241	12,922	3,667
営業用	Business use	9,425	2,575	629	216
バス	Bus	23,748	45,097	57,313	65,848
自家用	Private use	9,141	9,707	8,564	6,156
営業用	Business use	14,607	35,390	48,749	59,692
普通車	Ordinary	103,762	106,104	104,655	109,080
自家用	Private use	29,524	21,300	21,736	24,420
営業用	Business use	83,238	84,804	82,919	84,660
小車	Small	86,304	113,841	122,774	121,703
自家用	Private use	84,614	111,858	119,225	116,263
営業用	Business use	1,690	1,983	3,549	5,440
普通車	Ordinary	74,739	215,170	429,843	714,714
自家用	Private use	73,077	212,844	428,204	712,294
営業用	Business use	2,862	2,326	1,639	2,422
小車	Small	6,780,190	14,686,923	21,063,657	25,122,882
自家用	Private use	4,485,296	14,365,861	20,814,702	24,882,543
営業用	Business use	2,144,892	2,414,062	2,488,955	2,569,339
普通車	Ordinary	157,496	287,824	385,192	468,836
自家用	Private use	121,643	231,489	309,933	373,113
営業用	Business use	35,853	56,335	75,259	95,723
小車	Small	72,325	96,805	119,428	120,771
自家用	Private use	64,908	92,992	115,411	120,227
営業用	Business use	5,617	3,813	4,017	4,544
大型特殊車	Large-special	121,638	211,039	269,395	341,194
合計	Total	6,139,951	6,124,505	7,742,091	12,912,375
小車	Small	171,533	227,208	444,975	850,615
合計	Total	5,968,418	5,947,297	7,297,116	12,061,760
自家用	Private use	5,298,271	5,385,126	6,791,513	10,689,060
営業用	Business use	7,227,644	7,555,456	7,102,619	1,915,616
合計	Total	2,919,437	2,879,448	4,618,084	8,944,444
自家用	Private use	508,807	483,239	574,271	1,173,467

291 x 209.9 ミリ

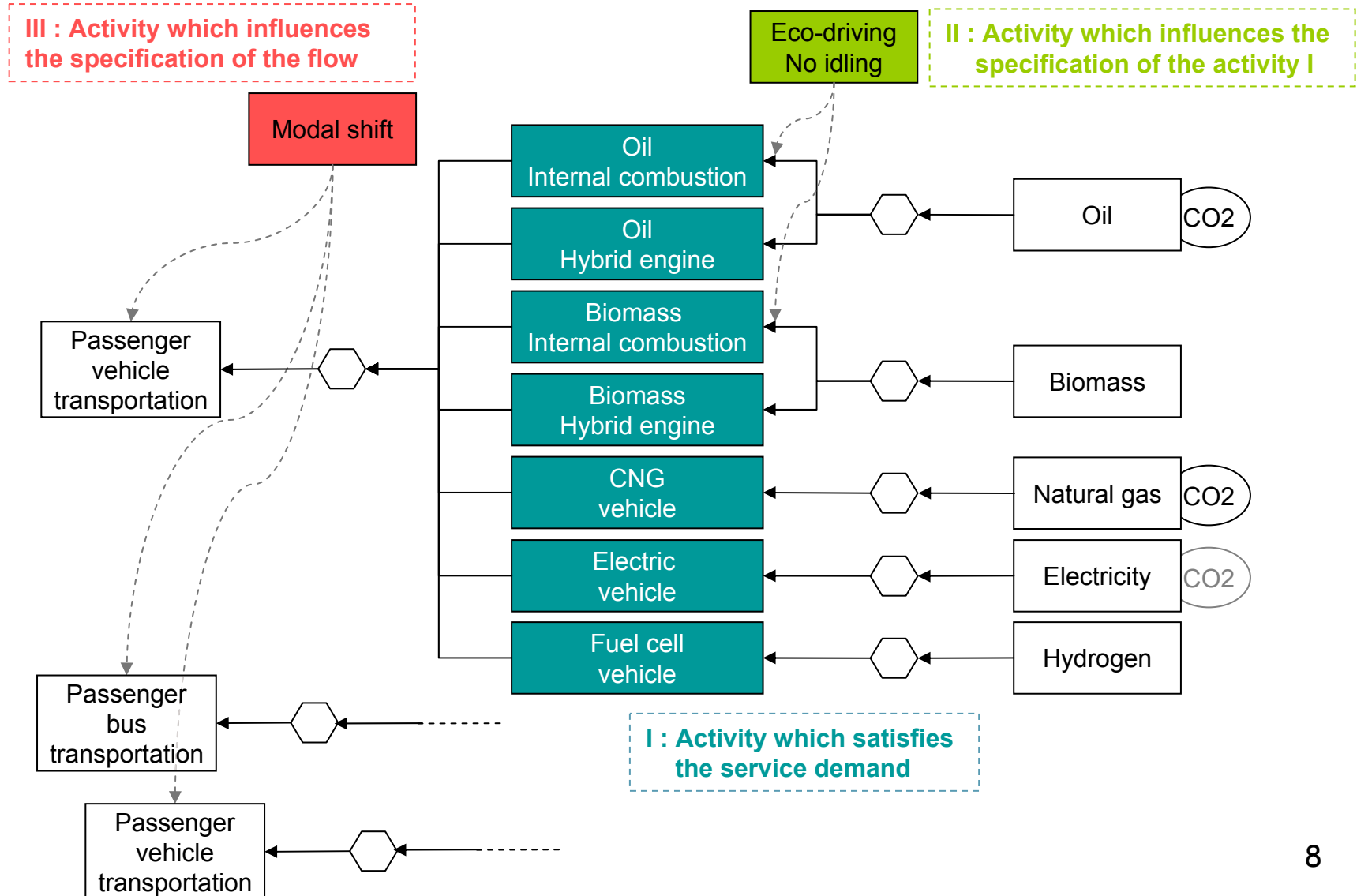
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レコード: 1 / 42



3. Application to transportation sector




Activity : Passenger vehicle with internal combustion

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6101 TR_PV_G01	Sector	[TR]:Transportation sector
	PS. Vehicle / IC / Oil	ENV. Issue	[CC]:Climate Change
Activity type	<input checked="" type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input type="radio"/> To influence other activity		
Description	Passenger oil vehicle with internal combustion.		
	Activity Unit	Name	Unit
	Contact Prs.	GH of MHIR	
	Figure	Memo	
			
	Allion by Toyota		
	1		

☐ Lifetime ☐ Fixed Cost ☐ O+M Cost ☐ Input ☐ Output ☐ Affected Activity ☐ Affected Flow ☐ Burden ☐ Penetration ☐ Reference

No	Scenario	2000	2010	2020	2030	2040	2050	Note
▶ 601	RF	100%	100%	100%	100%	100%	100%	
1601	CM-1	100%	80%	60%	40%	20%	0%	
2601	CM-2	100%	80%	60%	40%	20%	0%	
*								

Unit:Share of the output to the total demand

2006 APEIS-IEA project


レコード: 1 / 42

Activity : Passenger vehicle with fuel cell

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6107 TR_PV_FC1	Sector	[TR]:Transportation sector
	PS. Vehicle / Fuel cell	ENV. Issue	[CC]:Climate Change
Activity type	<input checked="" type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input type="radio"/> To influence other activity		
Description	Passenger fuel cell vehicle.		
	Activity Unit	Name	Unit Value 1
	Contact Prs.	GH of MHIR	
	Figure	Memo	
			
	Fuel cell vehicle (kantei)	1	

☐ Lifetime ☐ Fixed Cost ☐ O+M Cost ☐ Input ☐ Output ☐ Affected Activity ☐ Affected Flow ☐ Burden ☐ Penetration ☐ Reference

	2000	2010	2020	2030	2040	2050	Note
	10,000,000	10,000,000	5,000,000	3,000,000	2,000,000	1,500,000	

Note: Only one record is valid. Do not enter multiple records for an activity

2006 APEIS-IEA project


レコード: 7 / 42

Activity : Passenger bio-fuel vehicle with hybrid engine

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6104 TR_PV_BH1	Sector	[TR]:Transportation sector
	PS. Vehicle / Hybrid / Biomass	ENV. Issue	[CC]:Climate Change
Activity type	<input checked="" type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input type="radio"/> To influence other activity		
Description	Passenger bio-alcohol vehicle with hybrid engine.		
	Activity Unit	Name	Unit
	Contact Prs.	GH of MHIR	
	Figure	Memo	
			
	1		

☐ Lifetime ☐ Fixed Cost ☐ O+M Cost ☐ Input ☐ Output ☐ Affected Activity ☐ Affected Flow ☐ Burden ☐ Penetration ☐ Reference

No	Scenario	2000	2010	2020	2030	2040	2050	Note
604	RF	0%	0%	0%	0%	0%	0%	
1604	CM-1	0%	0%	0%	0%	0%	0%	
▶ 2604	CM-2	0%	0%	10%	40%	80%	100%	
*								

Unit:Share of the output to the total demand

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レコード: 4 / 42

Activity : Modal shift to public transportation system

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6401 MDL_SHT	Sector	[TR]:Transportation sector
	Modal shift	ENV. Issue	[CC]:Climate Change
Activity type	<input type="radio"/> To satisfy service demand <input checked="" type="radio"/> To influence flow <input type="radio"/> To influence other activity	Activity Unit	Name Value
Description		Contact Prs	GH of MHIR

Figure Memo

1

Lifetime Fixed Cost O+M Cost Input Output Affected Activity Affected Flow Burden Penetration Reference

Unit: Stock number in the above base unit

No	Scenario	2000	2010	2020	2030	2040	2050	Note
▶ 1	RF	0	0	0	0	0	0	
2	CM-1	0	0	0	0	0	0	
3	CM-2	0	2,000	4,000	6,000	8,000	10,000	
*								

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レコード: 42 / 42

Activity : No Idling

Microsoft Access - [Activity : フォーム]

ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Activity

Activity	6301 TR_ED_NIDL	Sector	[TR]:Transportation sector
	Eco-driving: No idling	ENV. Issue	[CC]:Climate Change
Activity type	<input type="radio"/> To satisfy service demand <input type="radio"/> To influence flow <input checked="" type="radio"/> To influence other activity	Activity Unit	Name Unit Value 1
		Contact Pers.	GH of MHIR
Description	Turning off the engine to prevent wasted energy when stopping to wait for passengers, or to unload luggage. Ten minutes of idling in a passenger car uses 130 cc of gasoline, while 1 hour of idling in a large diesel vehicle uses a maximum of 1,800 cc of fuel. In general, stopping idling when stopped for 5 seconds or more is thought to be effective.		
	Figure Memo  Image of "No idling" 1		

☐ Lifetime ☐ Fixed Cost ☐ O+M Cost ☐ Input ☐ Output ☐ Affected Activity ☐ Affected Flow ☐ Burden ☐ Penetration ☐ Reference

Unit:Introduction ratio to the corresponding activity								
No	Scenario	2000	2010	2020	2030	2040	2050	Note
1	RF	0%	0%	0%	0%	0%	0%	
2	CM-1	0%	0%	0%	0%	0%	0%	
3	CM-2	0%	10%	30%	50%	70%	100%	
*								

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レコード: 41 / 42

Service demand

Microsoft Access - [Service]

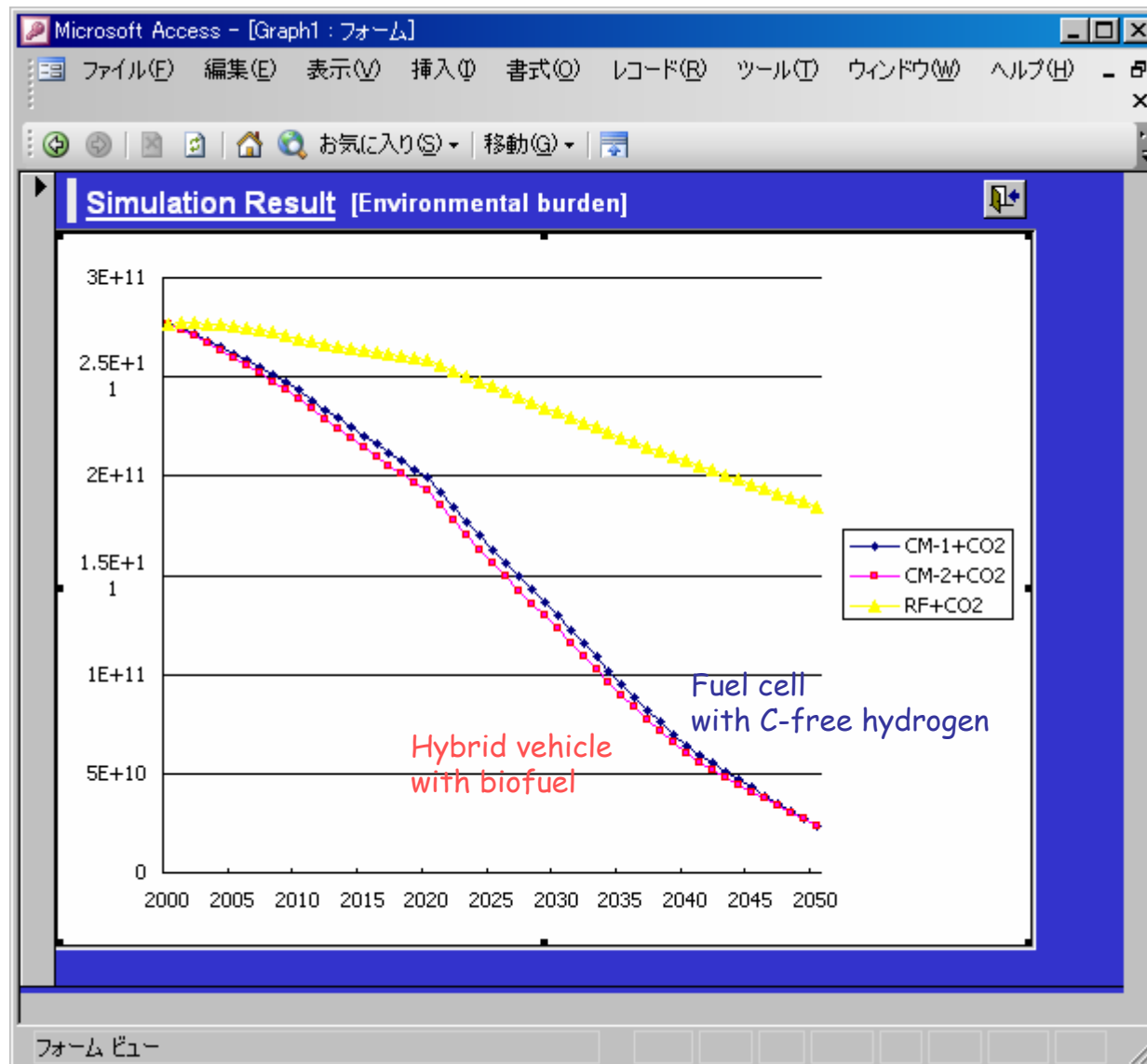
ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) レコード(R) ツール(T) ウィンドウ(W) ヘルプ(H) 質問を入力してください

Service Demand

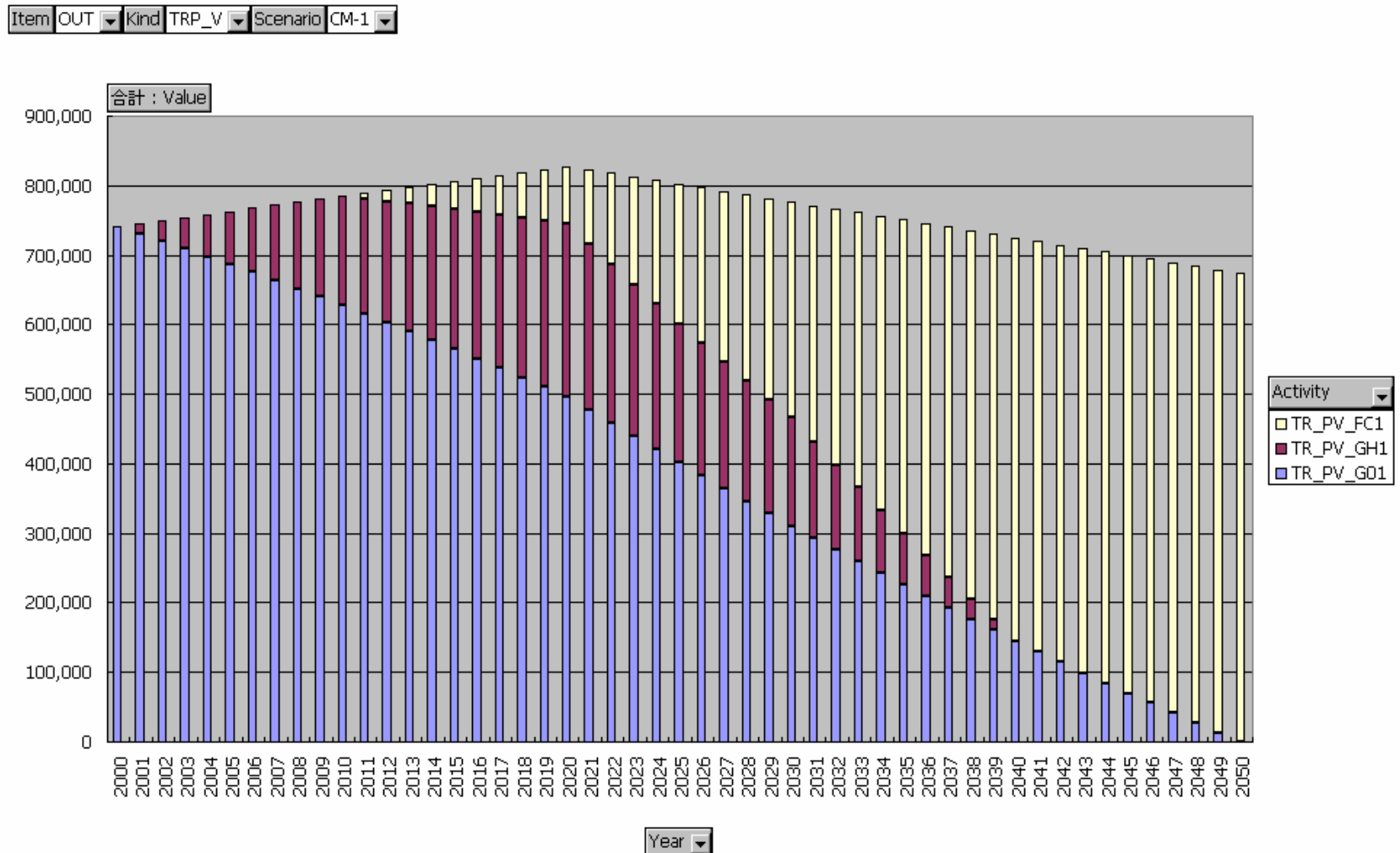
No.	Service type	Scenario	2000	2010	2020	2030	2040
601	[TRP_V]:PS. Vehicle (M Prs-km)	RF	741,146	784,421	827,695	776,328	724,960
605	[TRP_VB]:PS. Bus (M Prs-km)	RF	87,307	96,246	105,186	98,658	92,130
606	[TRP_RL]:PS. Rail (M Prs-km)	RF	384,441	428,635	472,829	443,485	414,141
607	[TRP_SH]:PS. Ship (M Prs-km)	RF	4,304	4,702	5,099	4,783	4,466
608	[TRP_AR]:PS. Air (M Prs-km)	RF	79,700	107,821	135,941	127,504	119,068
609	[TRF_VM]:FR. Vehicle M-size (M ton-km)	RF	10,275	7,883	5,491	5,150	4,809
610	[TRF_VL]:FR. Vehicle L-size (M ton-km)	RF	302,843	312,691	322,539	302,522	282,505
611	[TRF_RL]:FR. Rail (M ton-km)	RF	22,136	24,082	26,027	24,412	22,797
612	[TRF_SH]:FR. Ship (M ton-km)	RF	241,671	244,217	246,764	231,449	216,135
613	[TRF_AR]:FR. Air (M ton-km)	RF	1,075	1,361	1,647	1,545	1,443
1601	[TRP_V]:PS. Vehicle (M Prs-km)	CM-1	741,146	784,421	827,695	776,328	724,960
1605	[TRP_VB]:PS. Bus (M Prs-km)	CM-1	87,307	96,246	105,186	98,658	92,130
1606	[TRP_RL]:PS. Rail (M Prs-km)	CM-1	384,441	428,635	472,829	443,485	414,141
1607	[TRP_SH]:PS. Ship (M Prs-km)	CM-1	4,304	4,702	5,099	4,783	4,466
1608	[TRP_AR]:PS. Air (M Prs-km)	CM-1	79,700	107,821	135,941	127,504	119,068
1609	[TRF_VM]:FR. Vehicle M-size (M ton-km)	CM-1	10,275	7,883	5,491	5,150	4,809
1610	[TRF_VL]:FR. Vehicle L-size (M ton-km)	CM-1	302,843	312,691	322,539	302,522	282,505
1611	[TRF_RL]:FR. Rail (M ton-km)	CM-1	22,136	24,082	26,027	24,412	22,797
1612	[TRF_SH]:FR. Ship (M ton-km)	CM-1	241,671	244,217	246,764	231,449	216,135
1613	[TRF_AR]:FR. Air (M ton-km)	CM-1	1,075	1,361	1,647	1,545	1,443
2601	[TRP_V]:PS. Vehicle (M Prs-km)	CM-2	741,146	784,421	827,695	776,328	724,960
2605	[TRP_VB]:PS. Bus (M Prs-km)	CM-2	87,307	96,246	105,186	98,658	92,130
2606	[TRP_RL]:PS. Rail (M Prs-km)	CM-2	384,441	428,635	472,829	443,485	414,141
2607	[TRP_SH]:PS. Ship (M Prs-km)	CM-2	4,304	4,702	5,099	4,783	4,466
2608	[TRP_AR]:PS. Air (M Prs-km)	CM-2	79,700	107,821	135,941	127,504	119,068
2609	[TRF_VM]:FR. Vehicle M-size (M ton-km)	CM-2	10,275	7,883	5,491	5,150	4,809
2610	[TRF_VL]:FR. Vehicle L-size (M ton-km)	CM-2	302,843	312,691	322,539	302,522	282,505
2611	[TRF_RL]:FR. Rail (M ton-km)	CM-2	22,136	24,082	26,027	24,412	22,797
2612	[TRF_SH]:FR. Ship (M ton-km)	CM-2	241,671	244,217	246,764	231,449	216,135
2613	[TRF_AR]:FR. Air (M ton-km)	CM-2	1,075	1,361	1,647	1,545	1,443

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Simulation Results : CO₂ emission

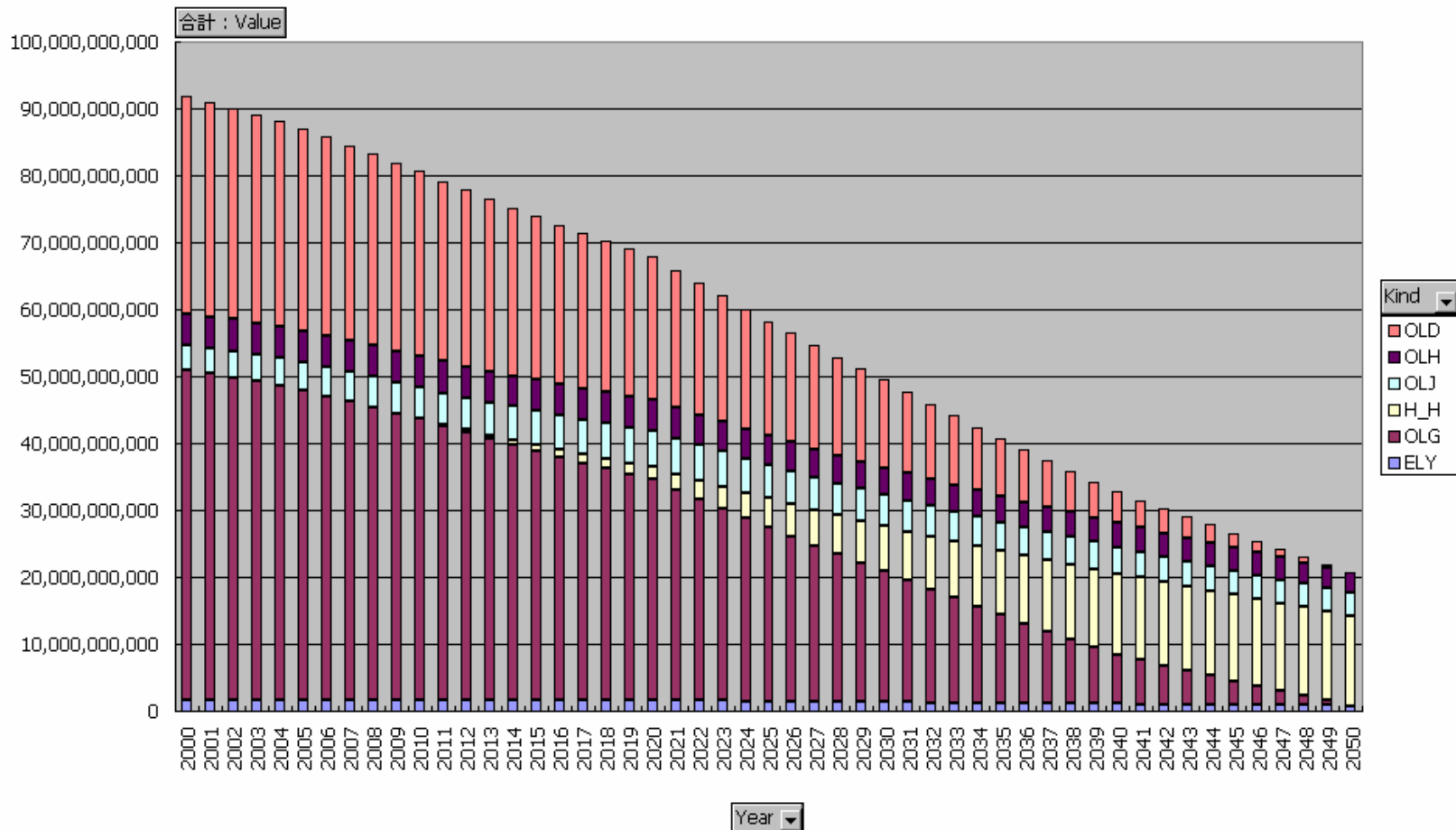


Simulation Results : Output from activity

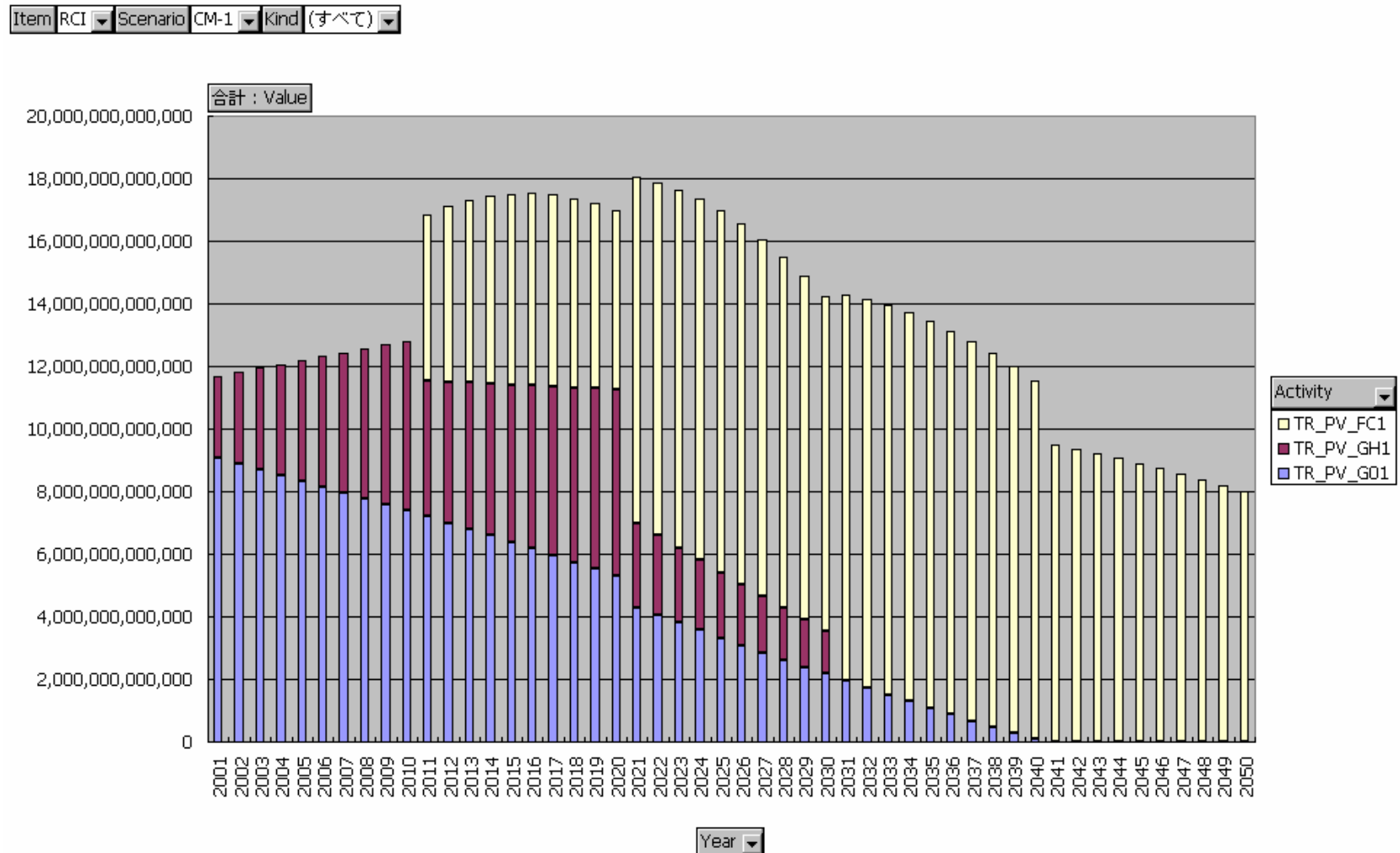


Simulation Results : Energy consumption

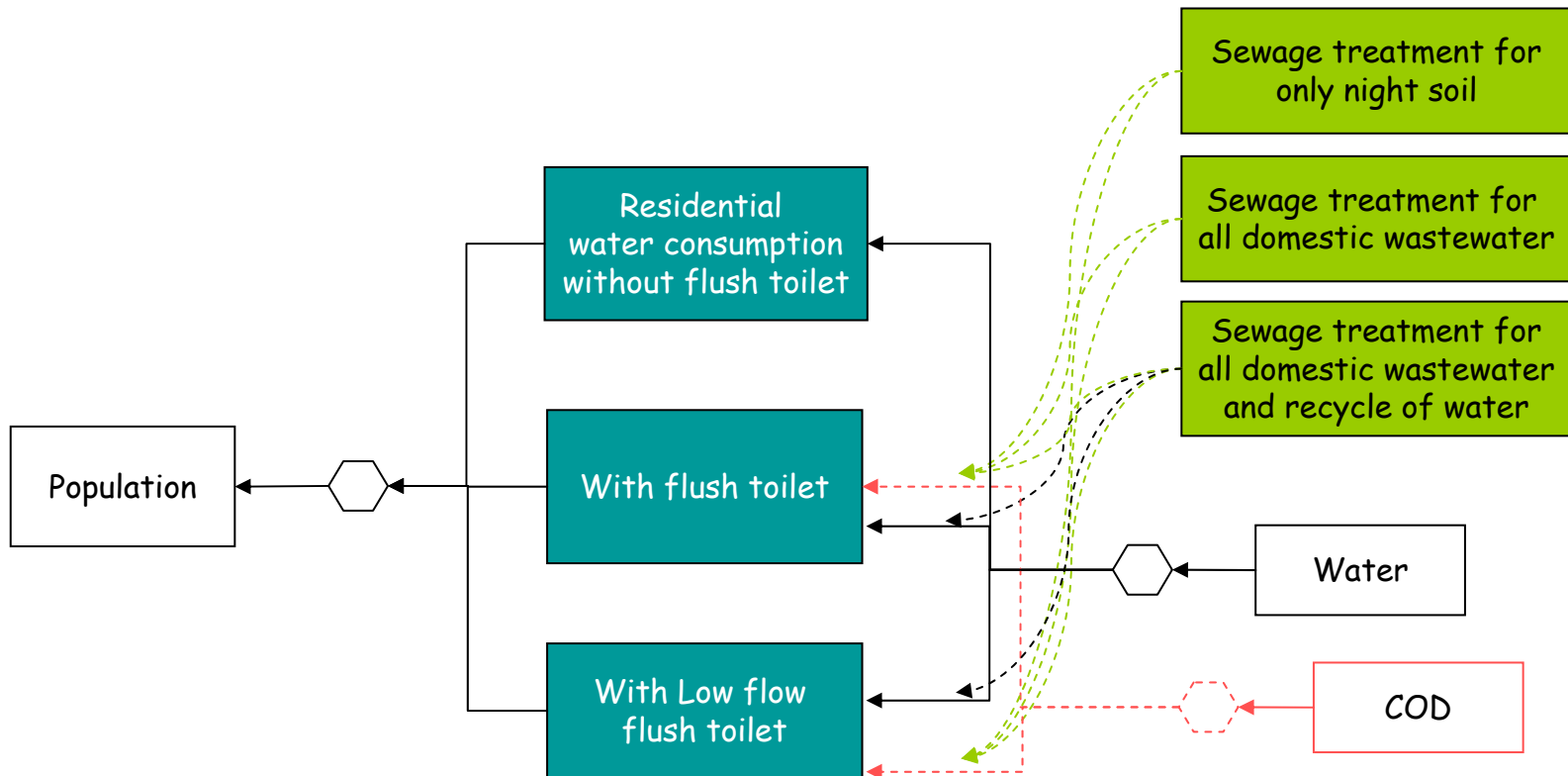
Item IN Activity (すべて) Scenario CM-1

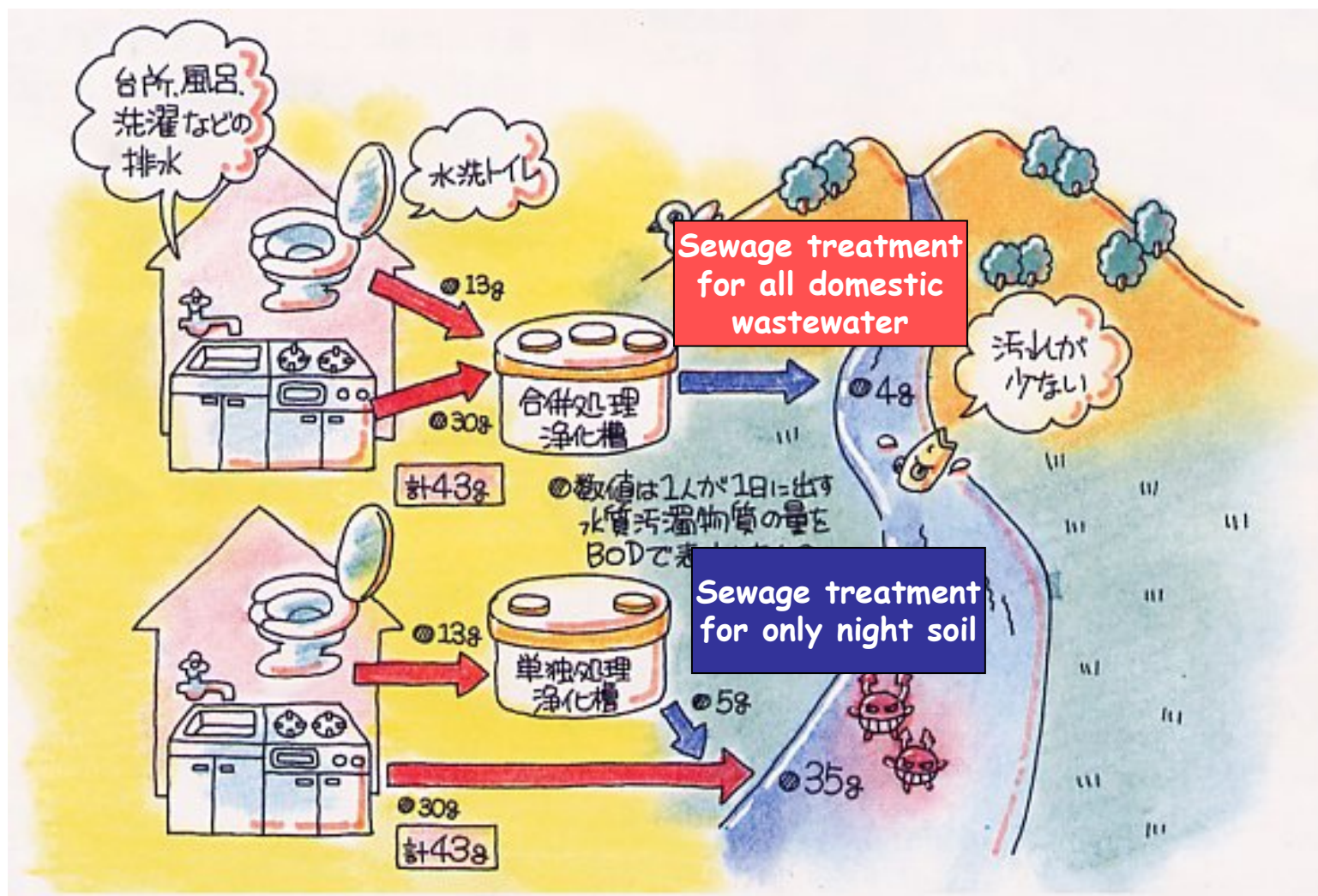


Simulation Results : Cost for recruitment



4. Application to water sector





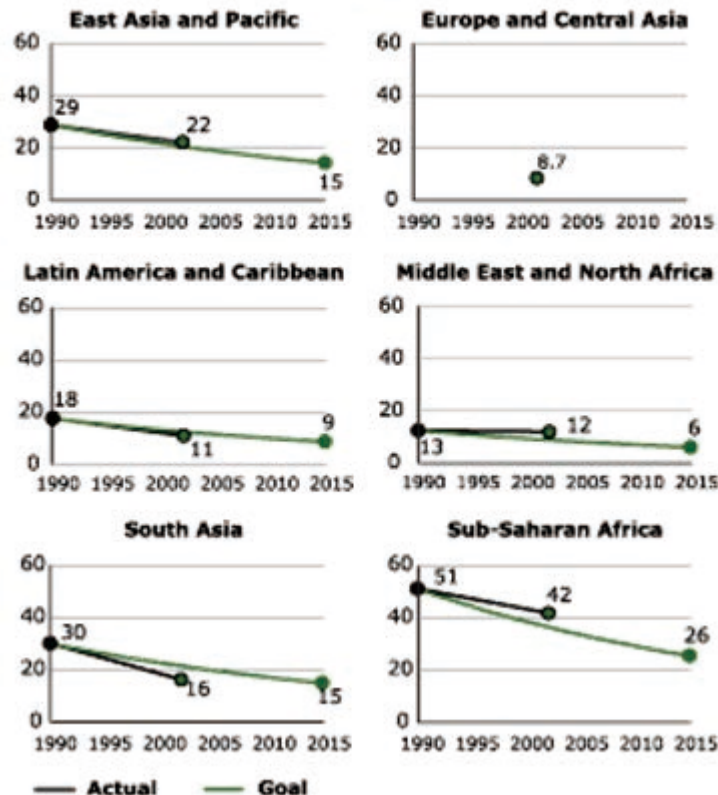
Millennium Development Goal

Target 10

Halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.

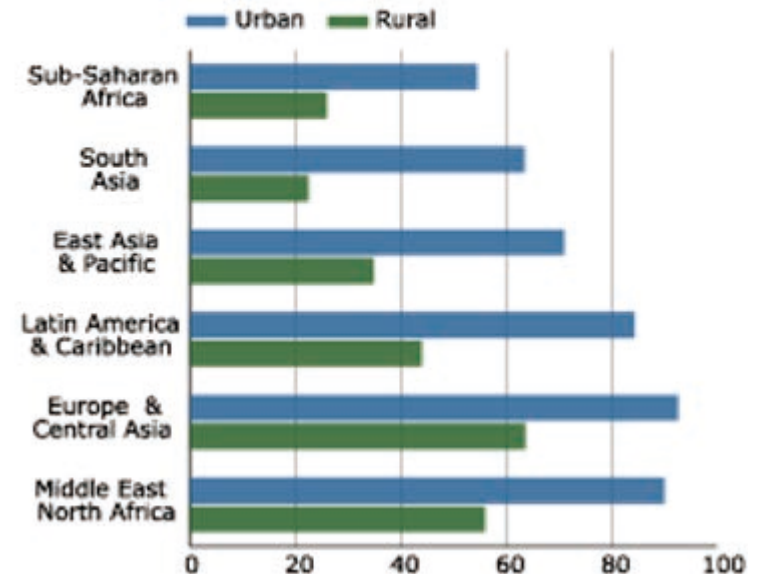
Population without access to an improved water source

(%)



Share of population with access to improved sanitation, 2002

(%)



Mitigation of Water pollution

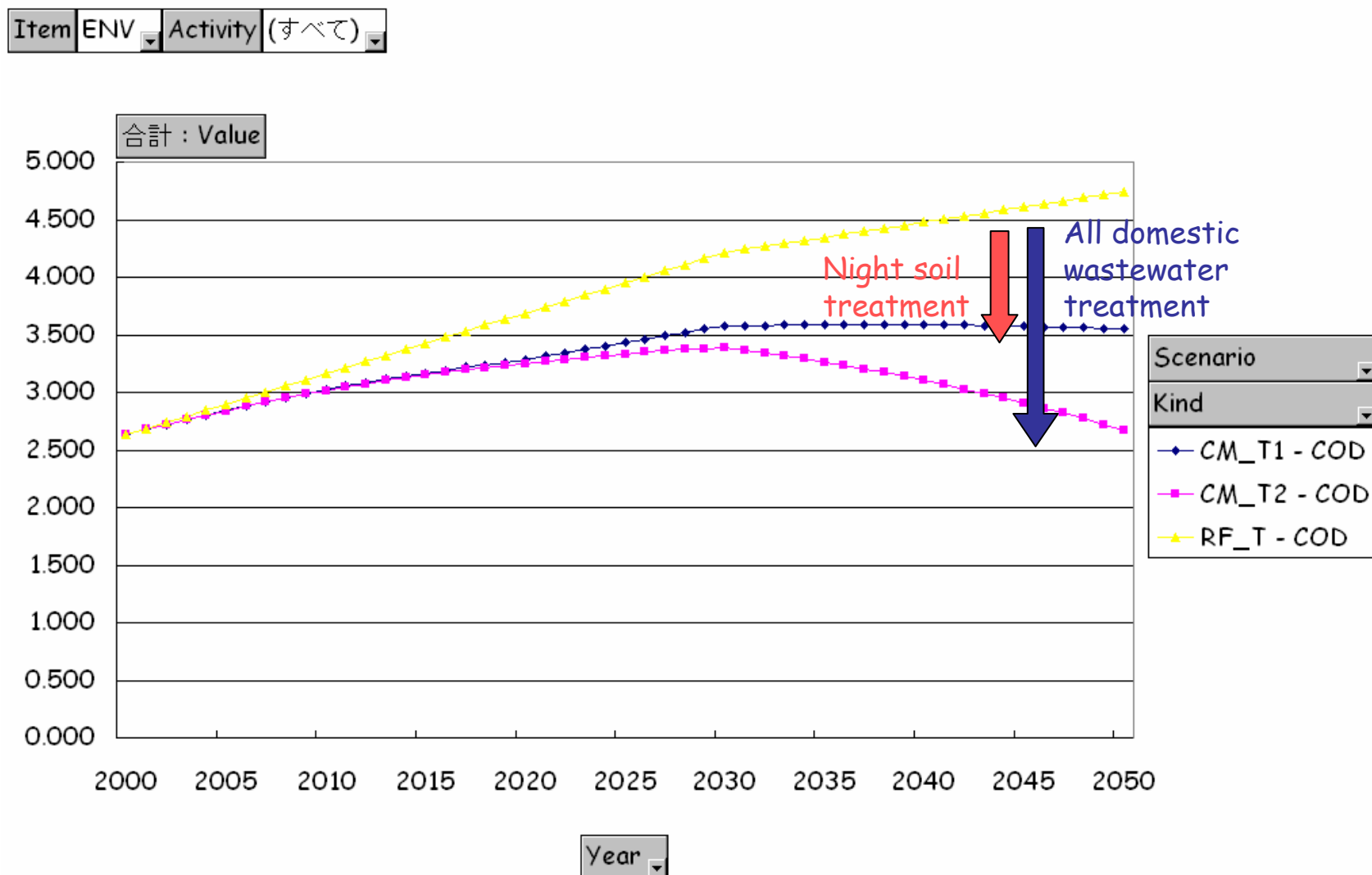
Countermeasure 1

Flush toilet	30% (2000)	100% (2050)
Sewage treatment <u>for only night soil</u> (COD -27%)	30% (2000)	100% (2050)

Countermeasure 2

Flush toilet	30% (2000)	100% (2050)
Sewage treatment for only night soil	30% (2000)	0% (2050)
Sewage treatment <u>for all domestic wastewater</u> (COD -90%)	0% (2000)	50% (2050)

Simulation result : COD emission



Mitigation of Water consumption

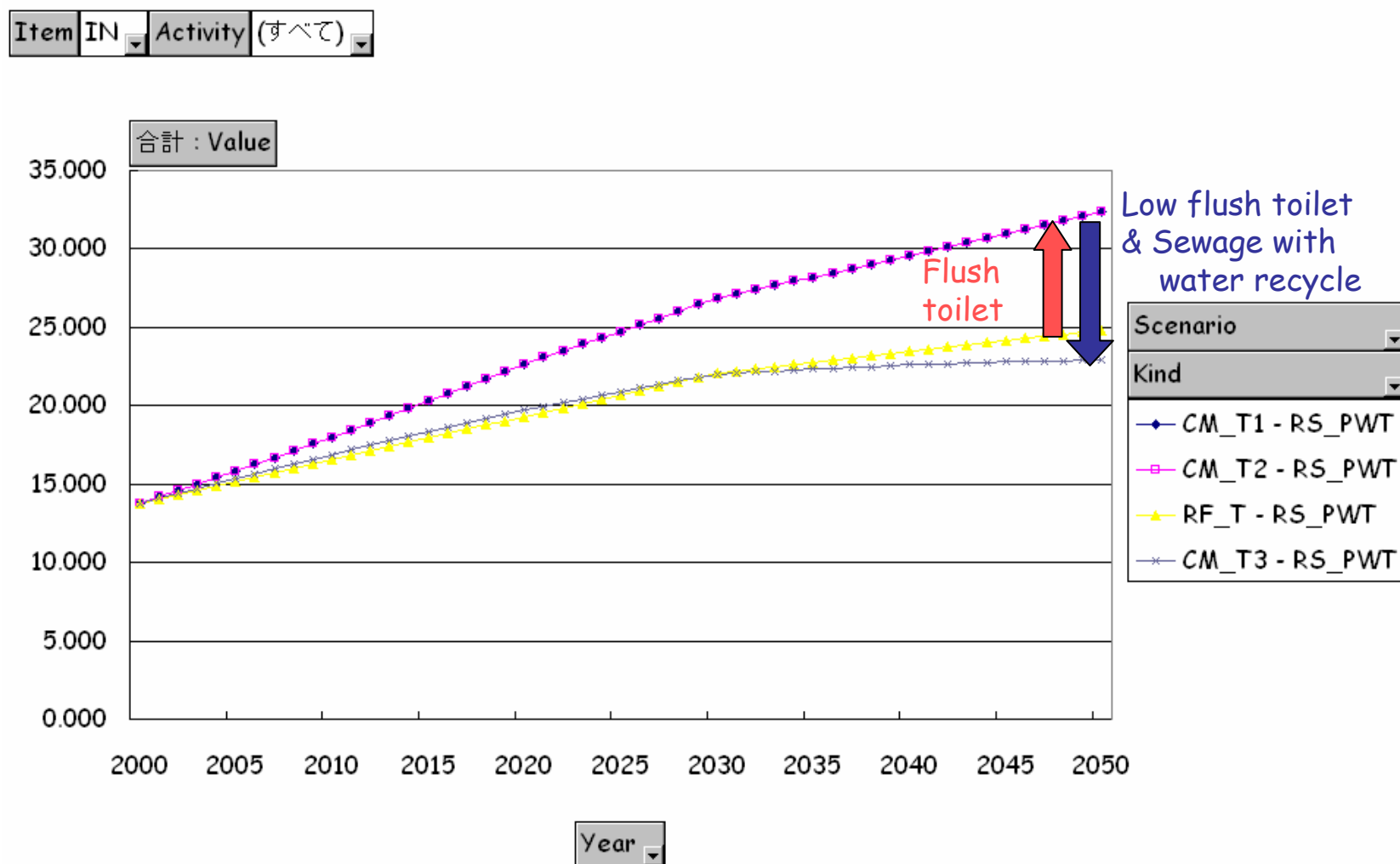
Countermeasure 2

Flush toilet	30% (2000)	100% (2050)
Sewage treatment <u>for all domestic wastewater</u>	0% (2000)	50% (2050)

Countermeasure 3

<u>Low flow</u> flush toilet	30% (2000)	100% (2050)
Sewage treatment for all domestic wastewater and <u>water recycle</u>	0% (2000)	50% (2050)

Simulation result : Water consumption



Finally,

we expect that you will apply the SDB to analyze the innovational strategies in your country and will introduce the effective strategies to achieve sustainable development.