添付資料2 森林資源DB作成・利用・管理のためのマニュアル 及び作業フロー Forest Resource Database Creation, Use & Maintenance Manual

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1. Creation of the Forest Resource Database

1.1. Operation procedure for updateing Concession areas on the new FIMS

Method A: Import from Mapinfo TAB file

Method B: Digitize concession area by the new FIMS

Method A: Import from Mapinfo TAB file

Steps

- 1. Convert the data from TAB to SHP by MapInfo
- 2. Confirm and Edit attribute fields
- 3. Convert geometry type of shape-file from "Polygon ZM" to "Polygon".
- 4. Edit attribute values
- 5. Import the shape-file into new FIMS.
- 6. Run re-calculation.

1. Convert the data from TAB to SHP by MapInfo

- 1-1.Start MapInfo.
- 1-2. Choose [Tools]>[Universal Translator].

1-3.In Universal Translator window, select the Format and set the File to be converted and destination directory.

Source Format>Mapinfo TAB

Destination Format>ESRI Shape

1-4. Click OK to run converting.

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2.Confirm and Edit attribute fields by ArcGIS

To import the data into new FIMS, you need to confirm attribute fields by ArcGIS. If there is any differences, you need to edit the attribute fields by ArcGIS. New FIMS can import a following shapefile having attribute fields.

Name	Туре	Remarks	mandatory
PROVINCE	Double	Province to which the Concession Area	0
		belongs	
PLAN_ID	Double	Plan_id	\bigcirc
STATUS	Test	Input the status of either of the following	\bigcirc
		"Concession" or "Proposed"	
AREA	Double	Extent of Concession Area (units: ha)	
purchase	Date		
Exp	Date		
CONSTYPE	Text		
SCALE	Text		
NAME	Text	Concession Area name	

If the shape file does not have "PROVINCE" attribute field, you need to add the field.

2-1. Start ArcMap or ArcCatalog.

2-2. Choose [ArcToolbox]>[Data Management Tools]>[Fields]>[Add Field]

2-3.Select the target shape-file in Input Table.

2-4.Add "PROVINCE" in Field Name.

2-5.Select "DOUBLE" in Field Type.

2-5.Click OK.

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3.Convert geometry type of shape-file from "Polygon ZM" to "Polygon"

After converting from Tab-file, the geometry type of shape-file become "Polygon ZM".

You have to change the geometry type because new FIMS can import only the geometry type "Polygon".

3-1. Start ArcMap or ArcCatalog.

3-2. Choose [ArcToolbox]>[Conversion Tools]>[To Shapefile]>[Feature Class to Shapefile(multiple)]

3-3. In Feature Class To Shapefile(multiple) window, set the File to be converted and destination directory.

3-4. Click on the Environments, then set output area of M Values and Z Values to Disabled.

3-5. Click OK to run converting. The new shape-file is generated.

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- 4. Editing attribute values by ArcMap
- 4-1.Open the shape-file converted to polygon type.
- 4-2.Open attribute table.
- 4-3. Choose [Editor]>[Strat Editing]
- 4-4. Editing the values.
 - "PROVINCE", "PLAN_ID" and "AREA" field can have only a numeric value. Delete character string if the value is having that.
 - "purchase" and "Exp" field can have mm/yyyy value. Change the value as necessary.
 - If attribute value is null, you do not need to edit the field.

5. Import the shape-file into new FIMS

5-1.Strat new FIMS.

5-2.Select the Province.

5-3.Click on the Large Map button to open Map Window . Move to the location of new concession area on the map.

5-4.Click on the Import button.

5-5. Select the ConcessionArea and set the Shape-file to be imported, and check the Add Box.

5-6.Click OK to import. SQLServer database of FIMS will be updated.

	B ATE I		LayerName			Add	Replac
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			LoggedNotLandUse_Current			1	10
			LoggedLandUse_Current		(10
ovinces	FMU Calculation	Import	LandUseNotLogged_Current				
	(ProtectedArea		(and)	E.	0
de Provinces	• • m + m		PlanArea				1
Western	Fullan Trees	- Conservation Barry					

5-7. Edit attribute of the concession

Editor > Start editing

If Start Editing window open, select "dbo.DEFAULT – PNGFA-HQ-SRV3"

Which folder or database do you want to edit data fr	rom?
Source	Туре
dbo.DEFAULT - PNGFA-HQ-SPV3	Spatial Database Connection
C:\Users\jicasupport.PNGFA.000\Desktop\ne	Shapefiles
These layers and tables will be available for editing:	
Logging_HanArea ConcessionArea Logged_NotLandUse_Current LandUse_NotLogged_Current Logged_LandUse_Current Protected_Area	

Then Select target layer you want to edit.



Click on the "Attribute", then Concession Attribute windou will open and you can edit attribute values.

Code Provinces 1 Westem 2 Guif 3 Central 5 Mine Bay 6 Northem 7 Southern Highlands 8 Enga 9 Western Highlands 10 Simbu 11 Eastern Highlands 12 Morobe 13 Madang 14 East Sepik PURCHASE EXP CONSTYPE STATUS SCALE	Provi	nces	FMU Calculation Import
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5-8. You Can also overlay the shape-file to be imported. Click Add layer button and select the shape-file. This function can see shape-files temporary, the SQL Server database is not updated.



6. Run re-calculation

6-1. Click on the FMU Caluculation button.

6-2. Choose FMU Tab and select Provinces to be re-calculated. The FMU layer is updated.

6-3. Choose Concession Tab and select Provinces to be re-calculated. The Concession table is updated.

6-4. You can see the result in the main window or by printing reports.

Method B: Digitize concession area by the new FIMS

Steps

- 1. Scan the map
- 2. Georeference the scanned Image
- 3. Overlay the georectified map on the new FIMS
- 4. Digitize a shape and enter attribute values on the new FIMS
- 5. Run re-calculation

Exercise : Digitize Annual logging map to enter "Logged_NotLandUse" polygon.

<u>NOTE</u>

Method A and Method B are applicable to other layers(Logged Over area, Protected area, Logging Plan area).

When you import from shape-file, confirm attribute fields of each layer.

Name	Туре	Remarks	mandatory
PROVINCE	Double	Province that the Logged Over Area belongs to	0
AREA	Double	Extent of Logged Over Area (manual input,	
		units: ha)	
AREA2	Double	Extent of Logged Over Area (automatic input,	
		units: ha)	
TYPE	Text	Logged Over Area type	
ACHARVOL	Double	Actual harvest Volume	
PLAN_ID	Double	Plan id of the Concession to which the Logged	
		Over Area belongs	
YEAR	Text	The date of the Logged Over Area is input in	
		the following format	
		Format: mm/yyyy	
NAME	Text	Logged Over Area name	

Logged Over area

Protected area

Name	Туре	Remarks	mandatory
PROVINCE	Double	Province to which the Protected Area belongs	\bigcirc
PROTECT_ID	Double	Protected Area ID	
NAME	text	Protected Area name	
ТҮРЕ	text	Protected Area type	
GAZ_DATE	Text	Designated date by protected area	
LOCATION	Text	protected area's location (Character string)	
TENURE	Text	protected area's holder	
AREA	Double	Extent of Protected Area (units: ha)	
ALTITUDE	Text	altitude description	

Name	Туре	Remarks	mandatory
LOGITUDE	Text	protected area's location (longitude)	
LATITUDE	Text	protected area's location (latitude)	

Logging Plan area

Name	Туре	Remarks	mandatory
PROVINCE	Double	Province to which the Plan Area belongs	\bigcirc
AREA	Double	Extent of Plan Area (units: ha)	
AREA2	Double	Extent of Plan Area (automatic input, units: ha)	
ТҮРЕ	Text	Plan Area type	
PRJHARVOL	Double	Project harvest Volume	
PLAN_ID	Double	Plan id of the Concession to which the Plan Area belongs	
YEAR	Text	The date of the Plan Area is input in the following format Format: mm/yyyy	
NAME	Text	Plan Area name	

1.2. Operation procedure for importing logged and land use areas into new FIMS

Steps

- 1. Converting the data from TAB to SHP by MapInfo
- 2. Editing attribute fields
- 3. Convert geometry type of shape-file from "Polygon ZM" to "Polygon".
- 4. Editing attribute values
- 5. Importing the shape-file into new FIMS.
- 6. Running re-calculation.

1. Converting the data from TAB to SHP by MapInfo

- 1-1.Start MapInfo.
- 1-2. Choose [Tools]>[Universal Translator].

1-3.In Universal Translator window, select the Format and set the File to be converted and destination directory.

Source Format>Mapinfo TAB

Destination Format>ESRI Shape

1-4.Click OK to run converting.



2. Editing attribute fields by ArcMap

To import the data into new FIMS, you need to edit attribute fields by ArcGIS, because there are differences in attribute fields.

- New FIMS need the attribute "province" in logged and land use layer.
- But the shape-file converted from Tab-file does not have this field.

2-1. Start ArcMap or ArcCatalog.

- 2-2. Choose [ArcToolbox]>[Data Management Tools]>[Fields]>[Add Field]
- 2-3.Select the target shape-file in Input Table.
- 2-4.Add "province" in Field Name.
- 2-5.Select "DOUBLE" in Field Type.
- 2-5.Click OK.

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Gartography Tools	Input Table	Field Type
🚱 Conversion Tools	Field Name	The field type used in the
Data Interoperability Tools	province	creation of the new field.
Data Management Tools	Field Type	Contraction of a second
Data Companison	DOUBLE	 TEXT—Names or
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Distributed Geodalabase	Field Scale (aptional)	qualities.
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Features	Field Length (optional)	values within a
Fields		specific range.
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	Field IsNullable (optional)	values within a
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3. Convert geometry type of shape-file from "Polygon ZM" to "Polygon"

After converting from Tab-file, the geometry type of shape-file become "Polygon ZM".

You have to change the geometry type because new FIMS can accept only the geometry type "Polygon".

3-1. Start ArcMap or ArcCatalog.

3-2. Choose [ArcToolbox]>[Conversion Tools]>[To Shapefile]>[Feature Class to Shapefile(multiple)]

3-3. In Feature Class To Shapefile(multiple) window, set the File to be converted and destination directory.

3-4. Click on the Environments, then set output area of M Values and Z Values to Disabled.

3-5. Click OK to run converting. The new shape-file is generated.



- 4. Editing attribute values by ArcMap
- 4-1.Open the shape-file converted to polygon type.
- 4-2.Open attribute table.
- 4-3.Choose [Editor]>[Strat Editing]

4-4. Editing the values.

- AREA field of new FIMS can have only a numeric value. Delete character string.
- YEAR field of new FIMS can have mm/yyyy value. Change the value.
- Enter province code.(you can also enter province code on new FIMS)

4-5.Choose [Editor]>[Save Edits] to save and [Editor]>[Stop Editing] when you finish editing.



5. Importing the shape-file into new FIMS

5-1.Strat new FIMS.

5-2. Select the Province and click on the Concession button to select the concession area.

5-3. Click on the Large Map button to open Map Window .

5-4.Click on the Import button.

5-5. Select the destination layer of (among LoggedNotLandUse_Current, LoggedLandUse_Current, LandUseNotLogged_Current) and set the Shape-file to be imported, and check the Add Box.

5-6.Click OK to import. SQLServer database of FIMS will be updated.

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5-7. You Can also overlay the shape-file to be imported. Click Add layer button and select the shape-file. This function can see shape-files temporary, the SQL Server

database is not updated.



6. Running re-calculation

6-1. Click on the FMU Caluculation button.

6-2. Choose FMU Tab and select Provinces to be re-calculated. The FMU layer is updated.

6-3. Choose Concession Tab and select Provinces to be re-calculated. The Concession table is updated.

6-4. You can see the result in the main window or by printing reports.

1.3. Operation procedure for importing survey results into new FIPS

New FIPS provides two options to enter the survey results (field book data).

Method 1) Enter data to FIPS directly (existing function)

Method 2) Import from Excel spreadsheet (new function)

 \rightarrow This manual is showing Method 2.

Steps

- 1. Enter information for a new survey
- 2. Input the field book data into an excel spreadsheet
- 3. Import the field book data from the excel spreadsheet into new FIPS
- 4. Run calculation, print reports and output to excel file

1. Enter information for a new survey

1-1.Start FIPS.

Click FIPS-Startup on the desktop, input ID and PASSWORD, then main window will open.

In case Security warning appears, Click on "Options" and select "Enable this content".



- 1-2. Click on the "ENTER INFORMATION FOR A NEW SURVEY" button.

1-3. Enter the details of the survey.

01 Western 02 Gulf 03 Central 04 Milne Bay	05 Northern 06 Soutern High 07 Eastern High 08 Simubu	lands lands	09 Western Highlands 10 West Sepik 11 East Sepik 12 Madang	13 14 15 16	Morobe West N East N New In	ew Britain ew Britain eland	17 n 18 n 19	North Solomons Manus Enga
Name of Sur	Vey	(2)		A	rea o	f Block	01	(7)
Date of Sur	Vey	(3)		Ā	rea o	f Block	02	
File/Ref. N	umber	(4)		A	rea o	f Block	03	
Gross area	In hectares	(5)		A	rea o	f Block	04	
Number of B	locks	(6)			rea o	f Block	05	
The Format of D	ATE OF SURVEY is			A	rea o	f Block	06	
dd/mm/yyyy 90 01/06/2012				A	rea o	f Block	07	
				A	rea o	f Block	08	
Plan ID		(0)		A	rea o	f Block	09	
Virgin or L	ài	Virgin	(0)	A	rea o	f Block	10	
Vegetation	<u></u>	(10)	(3)					
-	Slope	(10)	-					
lopography	Elevation	(11)		-			-	
Adjusted No	t Forest Area	(12)			OK	-		CANCEL

(1) Survey Number (Mandatory Item)

Check the last number which has been used already in the main window.

The survey number is a five digit numeric code with the first two digits the province number and the last three a number from 001 to 999.

(2) Name of survey (Mandatory Item)

Can be entered up to 20 characters.

(3) Date of survey

Completion date. The format of date is DD/MM/YYYY. (Eg. 01/06/2012)

(4) Gross area in hectares (Optional)

Enter the gross area of resource area in hectares. The area must be an integer

number (whole number). If you recorded the area as a decimal number, you need to round it off to the nearest whole number.

(5) File / Ref .Number

(You can skip over entering this information.)

(6) Number of blocks

Enter the number blocks.

(7) Area of Block

Enter the area of each block in hectares. The area must be an integer number. If you recorded an area as a decimal number, you need to round it off to the integer number.

The entry number of Area of Block is the same with the value of "Number of Blocks". If the value of "Number of Blocks" is "2", then "Area of Block 01" and "Area of Block 02" should be filled.

(8) Plan ID (Optional)

Plan ID is for Plan ID of the concession area in FIMS.

You need to confirm the PlanID by FIMS.

If you enter the PlanID, you can link the survey result to the related FIMS concession area, and see in FIMS the estimated forest volume which is calculated by FIPS.

(9) Virgin, LOI or Unlogged Forest Survey

Choose virgin or LOI.

(10) Vegetaion (Optional)

Select the representative vegetation type in the survey area

(11) Topography (Slope and Elevation) (Optional)

Enter minimum and maximum value for slope and elevation.

- (12) Adjusted Net Forest Area (in hectares) (Optional)Enter the adjusted net forest area as an integer number.
- 1-4. Click OK, then Survey information will be saved.

2. Input the field book data into an excel spreadsheet

To import the field book data into new FIPS, you need to use the excel spreadsheet "FIPS Import Data Creator" which new FIPS provides.

The Excel spreadsheet is "FIPS_ImportDataCreator.xls" in C:\fips\mathbf{Fips\mathbf{Fips}macro.

If Security warning appears, Click on "Options" and select "Enable this content".

- J Con A (R (R (A)) State C C C C C C C C C C C C C C C C C C C	Microsoft Office Security Options
Security Warning Some active content has been disabled. Options.	Security Alert - Macros & ActiveX
A B C D E F G H 1 PPS import Data Creater	Morea and one or new Activet controls have been dualed. The active content regist costant values or other socially haards. Do not enable this content unless you that the source of this Be. Warning: It is not possible to determine that this content came from a trustworthy source. You should leave this content danked unless the
Generate legent Bate Glaar	Concern previous circular lancessancy and you that its source. Non. Information Pile Path: Criftoninacro/PIPS_ImportDataCreator.xls C Holp grotect me from unknown content (ecommended)
9 9 10 11 PistType ForestType	Endoie the content
13 Step No. [Plot No. Tree No. Species Code. Form Oliameter (cm) [Height (m)]	

		FIP	S Import Data C	reator		
File Path	C:\FIPS\Ir	nportData.xis	(1)	-		Select
C	reate im	port Data ((4)	Clear	(5)	
Plot Type	1	Forest Type	12	(2)		
Strip No.	Plot No.	Tree No.	Species Code	Form	Diameter (cm)	Height (m)
1	1	1	408	2	28	10
	ontional	2	463	3	49	6
	optional	3	634	2	25	10
	2	4	(3) 451	2	30	6
			509	3	30	8
	ontional	6	451	3	35	6
	optional	7	451	2	20	10
	-	8	539	3	25	8
	3	9	451	3	37	õ

2-1. Specify output path of the result Excel file (1)

Click on the select button, and select a directory where you want to place the excel file "ImportData.xls" as the import data.

If you want to place "ImportData.xls" on desktop, select Desktop as below, then click on the save button.



2-2. Select Plot Type and Forest Type (2)

Plot Type and Forest Type are mandatory. Refer to [Reference] sheet for the code.

2-3. Input of Tree information (3)

You can copy from existing excel spreadsheets which you have kept.

"Strip No.", "Plot No.", "Tree No.", "Species Code", "Form", "Diameter" and "Height" need to be entered into the spreadsheet "FIPS Import Data Creator". There is no need to enter "Volume".

If you want to clear all entered data, click on the clear button. (5)

A	8	C		D	E	F		G	H	1		3	K	6	-	
CENTRA	AL NEW IRE	LANDLO	GGED	OVER - PUL	WOOD.	- 29 - 43	cm d	1.0.11	-						-16	
Sten No	Plet No.	Tree No	See	cian Code F	-	Diame		ianht (m)	Volume (m3)							
01-0-11-	1	1	1	650	-	3	33	9	0.51600953					-	120	
			2	451		3	35	91	0.5853951		_		-	-		
		2	8	456		3	28	7.1	0.3076513	- 12						
			4	408		3	28	6.5	0.28663092	- 12	Co	n TT	"C	+ 10	in	No." "Dlot No.
			5	431		2	44	14	1,29243106			ъЪ	0	πī	\mathbf{p}	100., 1100100
		4	6	614		1	21	7.7	0.18534108							
		5	7	424		2	35	5.6	0.39672265		~~r		~ N	Jo		"Spacing Code
		7	8	431		2	45	12	1 20187478		-	re	еr	٩U		Species Code
		8	9	451		3	24	8.6	0.26391566							
			10	533		3	30	8.4	0.40385518			۲.	10100		۲	Diamatar" and
			11	665		3	34	77	0.48339244			ΓU	rш	L,	1	Jameter, and
			12	451		3	23	82	0.16235396	- 12						
		5	13	646		1	25	5.9	0.21177045						ит т	[. :]. <i>±</i> "
	1	3	14	539		3	34	6.5	0 42191883						п	leignt.
	1	4	15	520		3	28	5.9	0.26526122							
	1	7	16	451		3	45	6.8	0.76521394							
		8	17	520		2	32	7.7	0.42836757							
	1	9	18	440		3	28	6.7	0.29367652							
	2	1	19	421		2	26	4.4	0.18154535	-						
			20	421		2	28	4.4	0.21030871							
	2	2	21	537		3	45	10	1.04194834							
			22	537		3	39	8.5	0.68796089							
			23	537		3	25	6.4	0.22598628							
			24	505		3	25	6.1	0.21747999							
	2	3	25	505		3	22	5.4	0.15317674							
	2	4	26	431		2	39	. 9	0.72010932							
			27	431		2	35	7	0.47442074							
			28	607		2	27	6.9	0 17847454						10.0	

2-3-1. Copy from existing excel spread datasheet

Attention

Delete blank line before copy. Don't remain the blank line.



Otherwise, the data below the blank line are not imported.

2-3-2. Paste into the FIPS_ImportDataCreator



2-3-3. The case for the separate field data files

When you have separate field data sheet (e.g. pulp log and sawlog), copy and paste other field data again.

	A B	C	D	E	F	G	н	1	1	5 m								
2		TIPS	ort Data Cre	nlör						100								
4 514	Path Cillisersijie	asupport.PNGFA	Desidop/FIP	S_importin	steChool	Select				1								
6							图印	S_ImportDataCrea	tor [Competil	biiity Me	sdie]							E 8
8	Create Impo	rt Data	1	Clear			1.0	A B	0		D	Ę	F	G	н	1	3	K
9							2		-	FIPS Im	port Data Cre	Nor						
1 Prot	Type	orest Type					4	File Patri Ciluse	rsijicasuppor	1.PNGF	ADesitop/FIP	S_importVn	nportData	Select				
3 Strip	No. Plot No. T	-ono Spec	ies Code	Form Diam	veter (cm) H	leight.(m)	6											
46		233	520	3	49	77	7	Greate	Import Data			lear	-					
47	36	234	665	3	27	5.9	9											
49	37	236	627	2	40	83	10	Plot Type	ForestTyr	e								
51	-						12	Strip No. Plot No	Tree No.	Spa	cies Code F	orm Dian	neter (cm)	ieight (m)				
52							245	1	14 2	32	656	3	28	6				
54							240		2	33 34	665	3	49	5.9				
55 56				- 5			248	3	16 2	35	442	3	45	9				
57				-			249		37 2	36	627	2	40	83				
58	_			_			200		1	1	421	4	80	98				
58									3	3	531	20	50	82				
60	D . 2			1	_				5	4	525	3	52	9.9				
	Don t	rema	un t	ne			-			5	539	3	65	13				
24							257		6	6	627	3	53	12				
2						Del	256		7	7	421	1	98	14				
	hle	ank li	ne		_	11.CL	257		~	8	319	2	95	14				
	010		ne.				258		0	10	491	2	60	12				
							260		0	11	421	1	55	12				
							261		~	12	421	3	61	55				
							262	-	1	13	431	1	70	16				
							10000				40.4	10	FO					

2-4. Execution of process (4)

Execute the process by clicking the "Create Import Data" button. A confirmation dialog is displayed, after finishing the process.

	Tree No.	Species Code	Form	Diameter	(cm)
crosoft Excel	1	408	0		28
		100	2		49
Dreate Success.	Micro	soft Excel			25
[30
OK I	Ther	e is an invalid val	lue. (yell	ow cells)	30
					35
		L. OK	i		20
	8	039	- 3	-	25

Cells will be filled in, in yellow if there are errors.

Species Code has to be selected from species list in [Reference] sheet. You need to change it to the species code which [Reference] sheet shows.

2-5. Save "FIPS Import Data Creator" with a different name. It is better to add the survey name to the original excel file name.

Eg. FIPS_ImportDataCreator_vanimo_LOI.xls

2-6. Open the excel file saved in 2-5 and add the GPS information for start point an end point of strip (The case for adding GPS information).

The excel file is listed by the plot, but GPS information is measured for each strip. You have to copy the GPS information into all plots for each strip.

After adding GPS information, save the data.

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1001		1000	10	344			816	18	14	3	I 001	-4	1000	11	002 (8)	-1.405	152.078	3.368	152.088 1	456	28	7,1	1
100		3000	31	365		-	344	34	8.2		-= 001	4	3000	11	003	3,405	152.078	-3.368	252.088 1	531	.50	8.2	2
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100		1000		30			300	- 34		2	28 001		1000	11	625	3,405	152.078	-3.365	152.088	431	32	73	2
100		1000		208		- 2	14.0		1.0		27 001	4	2000	11	026	-1.400	152.078	-3.368	152.088	421	25	5.9	
991		1000		347		- 2	2				28 001		3000	11	027	3.405	152.078	3.368	152.048	0			
100		1000		308							29 001	4	1000	11	028	-3.405	352.078	-3.368	152.088 1	0			
944		3000		30		- X	900		3.8		33 001	4	1000	11	029	-3.405	152.078	-1.368	152.088 1	421	15	5.9	2
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901	4	2000	- 54	394		1	348			3	32 001	4	3000	11	032	1.405	152.078	-3.368	152.088 1	525	.85	3.6	2
0.00		1000	10	345		1	344	-28	6.1	2	34 002	4	\$000	11	003				1	451	-25	6.3	1
1.000		1000	- 10	Sec.			- 50	14	1.4	3	35, 017		1000	11	602				1	451	14	5.6	- A.

Note: You can add the GPS information by FIPS directly (See step3-6).

3. Import the field book data from the excel spreadsheet into new FIPS

After exporting the excel file "ImportData.xls" from "FIPS Import Data Creator", you can import the excel file "ImportData.xls" to new FIPS.

- 3-1. Select the survey name from the FIPS main window.
- 3-2. Click on the DETAILS/STATUS button.

If you already have the "Details And Processing Status of a Survey" Screen of the survey open, you can go to the next step 3-3.

ГІГО)			and it considered	
PROCESSING SYSTEM		USI	ER tadain		LÓGOL
	List of sur	vevo recorded b	v-FIPS		
Autor New	Provide a	Samery Date	South File	trosteininer) (presente Texant luminal
10007 WAPET S' WEST	West Seplik	1994/11/23	18		
10000 E'CIT AJTAPE	West Seplik	1894/12/21	1-		
TDODS PALAT	West Seplik	1895/11/16	1;-		
10810 WES	West Sepik	1997/11/20	1=		
10011 AMANAB-5	West Sepik	1999/10/18	1.5		
10012 AMANAB-6	West Sepik	1988/10/18	17		
TIDDI HARAIN SARDH	Enot Smolk	1988/01/04	3-		
11002 EAST HABAIN	East Sepik	1988/10/81	314		
11000 APRIL-SALUME	East Sepik	1885/11/18	1.		
B1011 KIUNGA	East Sepik	1880/94/24	1.5		
12001 JOSEPHETAAL	Medang	1998/10/10	8.0		
12002 BIGES	Medang	1991/92/28	2.0		
14000 KORON	and a second	1996/09/14	11-		
12999 RAMU BLOCK2	Medang	2113/04/25	1 -	10 20	38
13001 (OMGIS 6-8	Morobe	1908/11/08	18		
13992 BURDE 1.6.	MOTODE	1980/05/98	2-		
13003 NGALAGINEIN	Morobe	1991/12/06	1-		
13004 MAZTE	Morobe	1898/05/28	1 -		
LO-P: H + 68/109 +	R KOLD-CL	RR [4]			
ENTER INCOMATION	FIG & NEW SHOULD	1	FIPS SYS	TEN FILES	
DETAILS /	STATUS		USER MAI	AGEMENT	
00107 1107	of cooutyr		TWIT PA	CH C100	

3-3. Detail And Processing Status of a Survey screen is open, then click on the ENTER DATA button. You need to enter the field book data in every block.

FI	PS						Date :: Time :	2013/07/10 11:52:59	
PROCESSING	SYSTEM				US	ER :a	dsin	0	LOGOUT
	Deb	ails An	d Process	ing St	alus (of a Si	urvey.		
Survey D	etails		Process	ing St	atus				
kevey Mader	12999		k Ares of	Data	Data	Result			
lame of Survey	RAMU BLOCK2	01	8870	7 No	No	No	ENTER DATA	POCESSING	RESULT
rovince	Medang:	12		No	No	No	DAILS DAIN	ACCESSING	RESUL
Nate of Survey	2013/04/25		-	No	No	No	ENTER DATA	PROCESSING	RESUL
Tie/Ret. Number		04		No	No	No	ENTER DATA	PROCESSING	RESULT
russ area. In	38.	107 05		No	No	No	ENTER DATA	PROCESSING	REGUL
kunber of Blocks		36		No	No	No	ENTER DATA	PROCESSING	RESULT
Pierr ID	180	014 07		No	No	No	ENTER DATA	PROCESSION	PESUL1
firgin er LOL	Virein	01		No	No	No	ENTER DATA	PHOLESSING.	HEALET
repetation	B	01		No	No	No	ENTER DATA	PHOCESSING	RESULT
Siope	10-	20 10		No	No	No	ENTER DATA	PROCESSING	RED.M.T
Elevation	30-	40							
idjusted Net forest Area	450	000	FINS	1					

3-4. Click on IMPORT FROM EXCEL FILE button, then select the excel file "ImportData.xls" exported at step2-4 (You should select an excel file which is built with "FIPS Import Data Creator".).

FIPS		Date : 201 Time : 11:	3/07/10 57:44	
PROCESSING SYSTEM	USER	: adein	LOGOUT	
	Select the method			
utvey Ausber 12999 Surve	7 NAGE RANU BLOCK2	Biock Number 0	11	
C.	ENTER DATA TO FIPS		Confirm	nation
	IMPORT FROM EXCEL FILE			hotim /
			Impo [C:¥]	rt Completed. Jsers¥yo42617¥Desktop¥ImportData.xls]
		CAN	NCEL	

3-5. Click on the OK button, then click on the Cancel button.

3-6. Add the GPS information by FIPS, if the GPS information has not included in the excel file "ImportData.xls" exported at step2-4.

Open the "Edit of Field Book Data" window for each strip number and enter the GPS information, then the GPS information is reflected for all of plot data that has

surveyed in the same strip.



4. Run calculation(PROCESSING), print reports and output to excel file

4-1. After importing the Excel file, the PROCESSING button will become active.



4-2. Click on the PROCESSING button, then the result will be calculated.

If processing is successful, a confirmation window appears and shows "Processing Completed".

After Clicking on the Ok button, the RESULT button will become active. This means that the Processing is finished. Therefore you can confirm several reports of the survey.

		A Forest Inventory Processing System (UIPS)	10.000	(core)	- × -
FIPS	Date : 15/07/2013 Time : 11:19:06 AM	FIPS		Date :19/07/2013 Time :11:21:02 AM	
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		Detailt	s And Processing Status of a Surv	éy.	
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4-3.If you click on the PRINT WHOLE SURVEY RESULTS, you can see all reports. You can switch between printing Single Block or Whole Survey reports by pressing the "Please select" radio button.

A Forest Inventory Processing System ((FIPS)	105		arest Inventory Piccessing System - (F	RN			
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			FIELD BOOK DATA STATISTICAL ANALYSIS	PLOT LISTING SLIMMRY REPORT	FOREST	TYPES	
						CLOSE	à

4-4.Click on the Result button, then you can output the result of the processing to an excel file. You can edit it for any purpose.

Forest Inventory Processing System (FIPS)			- 8.0				Forest Inventory Processing System - SelectResultMethod	08-0
FILE PORCESSING SYSTEM			USER :	Date : Time :	19/07/2013 11:21:02 /	LDGOUT	FIPE PS	Date :18/07/2013 Time :11:57:42 AM
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EDIT SURVEY	PRINT WHOLE :	SURVEY RE	SULTS	1	(a)	DSE	OUTPUT TO COV FILE	CANCEL

Specify where to save the file and its name.

modified (2013-11-40 - (2013-8-32 AI (2012-9-49 AI (2012-9-49 AI	Type File folder M. File folder	HI • See	
modified (2013 11:40 - /2013 8:32 Ai /2012 9:49 Ai	Type File folder M. File folder	Site	
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		_	-
	Tools	Toola • Save	Tools + See Cance

The contents of the exported Excel file are followings:

Field	Field Name	Contents/Comments
1	SPEC_CODE	Species Code
2	SPEC_NAME	Species Name
3	A_VOL10	10-19cm Volume of Form A
4	B_VOL10	10-19cm Volume of Form B
5	C_VOL10	10-19cm Volume of Form C
6	D_VOL10	10-19cm Volume of Form D
7	E_VOL10	10-19cm Volume of Form E
8	F_VOL10	10-19cm Volume of Form F
9	TOTAL_VOL10	Total 10-19cm Volume
10	VOL10_PER_HA	10-19cm Volume per Hectare
11	COMP_VOL10	Percent of 10-19cm Volume
12	BA10	Total 10-19cm Basal Area
13	A_PVOL	20-49cm Volume of Form A
14	B_PVOL	20-49cm Volume of Form B
15	C_PVOL	20-49cm Volume of Form C
16	D_PVOL	20-49cm Volume of Form D
17	E_PVOL	20-49cm Volume of Form E
18	F_PVOL	20-49cm Volume of Form F
19	TOTAL_PVOL	Total 20-49cm Volume
20	PVOL_PER_HA	20-49cm Volume per Hectare
21	COMP_PVOL	Percent of 20-49cm Volume
22	PBA	Total 20-49cm Basal Area
23	A_SVOL	50cm+ Volume of Form A
24	B_SVOL	50cm+ Volume of Form B
25	C_SVOL	50cm+ Volume of Form C
26	D_SVOL	50cm+ Volume of Form D
27	E_SVOL	50cm+ Volume of Form E
28	F_SVOL	50cm+ Volume of Form F
29	TOTAL_SVOL	Total 50cm+ Volume
30	SVOL_PER_HA	50cm+ Volume per Hectare
31	COMP_SVOL	Percent of 50cm+ Volume
32	SBA	Total 50cm+ Basal Area
33	SPEC_GROUP	Species Group(= Mep Group)

2. Use of the Forest Resource Database

2.1. Overview of FIMS database in SQL Server of pngfa-hq-srv3 server

The data of the new FIMS are stored in ArcGIS GeoDatabase "geodb01" as the database of SQL Server. You can use the FIMS data by ArcMap10 and Microsoft Access2010 without FIMS.



"geodb01" is a database name in SQL Server, which stores FIMS map data.

- Centralized management of a wide variety of geographic information.
- Large data management in a continuous integrated environment (raster/vector)

The following specific users can only access "geodb01" and edit values (shape and attribute). (As of 5/2/2014):

pngfa¥jicasupport pngfa¥cbigol pngfa¥pmalan pngfa¥plaa pngfa¥jantiko

2.2. Access to the FIMS database "geodb01" from ArcMap10 or ArcCatalog10

2-1. Create a direct connection to the FIMS database from ArcGIS Desktop

If you want to use FIMS database "geodb01" directly without FIMS, you need to make a spatial database connection.

This configuration is needed for accessing first time to the database. From next time, you can connect easily.

(1) Start ArcCatlog.

(2) Double click "Add Spatial Database Connection" under "Database Connections" in Catalog Tree.



(3) You need to fill the "geodb01" information after "Spatial Database Connection" window open.

Server: "pngfa-hq-srv3"

Service: "esri_sde"

Database: "geodb01"

Account: select "Operating system authentication"

Connection details: Click on the Change button and select "dbo. DEFAULT"

Server:	pngfa-hg-srv3	Connection Details
Service:	esri sde	Please specify the details of this connection.
Database	deodb01	This connection refers to a transactional version
	(# supported by your DBMS)	Version Name Version Description description Instance default version.
Account		
💮 Database a	uthentication	
Usemanie:	88	This connection refers to a historical version
Password:		Connect using a historical marker.
	Save usemame and password	
Operating s	vstem authentication	Opmett using a specific date and time.
		Tuesday , 19 November 2013, 2:59:07 PM
Connection deta The following tr	ils ansactional version will be used:	OK Cancel
dbo.DEFAULT		Change
1		

The database connection will be established, then you can see the FIMS map tables.

File Edit View Go Geoprocessing	g Customize Windo	ws Help ⊡¦‡∞•? _a s.a.a.a.ore	0.24	
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Bi Cal Folder Connections	* Nam	e	Туре	-
Database Servers Database Connections Add OLE DB Connection Add OLE DB Connection Add OLE DB Connection Geomethase Connection geodb01.PROFA\GISUSERI geodb01.DBO.AMD_rapidey geodb01.DBO.ConcessionA geodb01.dbo.ctrl_East_New geodb01.dbo.ctrl_East_Sepil geodb01.dbo.ctrl_East_Sepil geodb01.dbo.ctrl_East_Sepil geodb01.dbo.ctrl_East_Sepil geodb01.dbo.ctrl_East_Sepil	on ge l'japan ge re_utmS4s_C ge re_utmS4s_C ge re_utmS5s_C ge re_utmS5s_ir ge re_utmS	edb01. "PNGFA/GISUSER1" japan edb01.DBO.AMD_rapideye_utm54s_CSL edb01.DBO.AMD_rapideye_utm54s_O edb01.DBO.AMD_rapideye_utm55s_O edb01.DBO.AMD_rapideye_utm56s_i edb01.DBO.AMD_rapideye_utm56s_i edb01.DBO.ConcessionArea edb01.dbo.concessionFile edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_conc edb01.dbo.ctnl_East_New_Britain_Conc edb01.dbo.ctnl_East_New_Britain_New_	SDE Feature Class SDE Feature Class SDE Table SDE Fable SDE Fable SDE Feature Class SDE Table SDE Table	-

(4) If you have already established database connection once, it is only necessary to select "connection to pngfa-hq-srv3" in the database connection.



2-2. Display the FIMS map layers by using ArcMap10

You can open the FIMS map layers as same as opening shape-file.

FIMS map layers in "geodb01" are as follows:

geodb01.DBO.FMU geodb01.DBO.ConcessionArea geodb01.DBO.Logged_NotLandUse_Current geodb01.DBO.LandUse_NotLogged_Current geodb01.DBO.Logged_LandUse_Current geodb01.DBO.PlanArea geodb01.DBO.Protected_Area geodb01.DBO.Extreme_Altitude geodb01.DBO.Extreme_Inundation geodb01.DBO.Extreme_Karst geodb01.DBO.Extreme_Mangrove geodb01.DBO.Extreme_Slope geodb01.DBO.Serious_Inundation geodb01.DBO.Serious_SlopeRelief geodb01.DBO.PROV geodb01.DBO.png2000 prov region

OPrint Maps

The new FIMS has a simplified print template, but you can not arrange layout of the map.

If you want to make and print a variety map, it will be better to create that by ArcMap10.

 \bigcirc Edit shape and attribute of layer

You can edit map layers by using new FIMS and ArcMap10. Editable layers are as follows:

geodb01.DBO.ConcessionArea geodb01.DBO.Logged_NotLandUse_Current geodb01.DBO.LandUse_NotLogged_Current geodb01.DBO.Logged_LandUse_Current geodb01.DBO.PlanArea geodb01.DBO.Protected_Area

2.3. Access to FIMS database "geodb01" from Microsoft Access2010

3-1. Create a new Microsoft Access 2010 file

(1) Start Microsoft Access2010, then select File > New > Blank database.

A B AN AN	Microsoft Ac	CARES	(incite)	-8
File Home Create	External Data Database Tools			- 3
Save	Available Templates		Blank database	-
E Save Delistant As	+ + 🙆 Home			
📴 Open	AA			
Tal Close Distabase	I R	B		
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E FIPS.mdb	database database te	mplates		
B FIFS.mdb	AL A			
in the second second				
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PINZ				-1
Save & Poblinti	Assets Contacts Ed	ucation	File Name	
Help		_	C/Users\aisuserI\Documents\	
-) Ontines	-121	2		
		12	D	
	Finance Issues & No Tasks	n-Profit	Create	
				100

(2) After new table "Table1" will open, then close this table by clicking " \times " top right corner of the table. Because you will import tables from the FIMS database "geodb01".


3-2. Create a link to the FIMS database from Microsoft Access2010

(1) Select External Data > ODBC Database.



(2) "Get External Data" window will open, then select "Link to the data source by creating a linked table" and click "OK".

t External Data - ODBC Database	8 X
Select the source and destination of the data	11-
Specify how and where you want to store the data in the current database.	
Import the source data into a new table in the current database. If the specified object does not exist, Access will create it. If the specified object already exists, name of the imported object. Changes made to source objects (including data in tables) will not	, Access will append a number to the be reflected in the current database.
Ink to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. Changes made to the data source and vice versa.	in Access will be reflected in the
	OK Cancel

(3) "Select Data Source" window will open, then select the file data source "C:¥FIMS¥exe¥report.dsn". This file describes an access point for pngfa-hq-rv3. New FIMS is using this file. Then click "OK".

ile Data So	urce Machine Data Source	1		
Look in:	exe	32		
Log	Computer OS (C:) FIMS		Select Data Source	-
	Local Disk (D:) Local Disk (E:) DVD RW Drive (F:)		File Data Source Machine Data Source	
	-		Look in: exe	
Select th	e file data source that describes the driver that you wish to con	nect to.	Autor Corporation	
You can on your n	use any file data source that refers to an ODBC driver which is nachine.	Installed	DSN Name: report	
	OK Cancel	Help	Select the file data source that describes the d	river that you wish to connect to
			on your machine.	

(4) "Link Table" window will open, you can select the tables that you want to use. The exercise of this time, select "dbo_CONCESSIONAREA", then click "OK".



(5) Select Create > Report Wizard, then you can make a report.

Report Wizard window will open. Select Tables or Queries, then select fields which you want to print.

A Database12 : Datab	base (Access 2007) - Microsoft Access
Home Create External Data Database Tools F Home Create External Data Database Tools Application Table Table Table Table Parts * Tables Query Query Templates Tables Queries	Image: Second
All Access Objects 🕞 «	
Tables	
* dbo_CONCESSIONAREA	
Report Wizard	Report Wizard
Which fields do you want on your report? You can choose from more than one table or query Tables/Queries Table: dbo_CONCESSIONAREA Available Fields: <u>OBECTIO</u> PLAN LD NAME AREA PURCHASE EXP CONSTYPE STATUS Cancel Cancel <u>Next > En</u>	y. y. PLAN_ID NAME STATUS PLAN_ID PL
Report Wizard	Report Wizard
What sort order and summary information do you want for detail records? You can sort records by up to four fields, in either ascending or descending order. 1 Image: Ascending or descending or desc	How would you like to lay out your report?
Summary Options Cancel < Back Next > Ein	✓ Adjust the field width so all fields fit on a page. nish Cancel < Back Next >
CONCESSIONAREA	
PROVINCE PLAN_ID	NAME STATUS
1001	Waimare (Oriomo) Concession
1001	Wawoi Guavi Block 1 Concession

1001	Waimare (Oriomo)	Concession
1002	Wawoi Guavi Block 1	Concession
1003	Wawoi Guavi Block 2	Concession
1004	Wawoi Guavi Block 3	Concession
1005	Makapa	Concession
1006	SEMABO	Concession
1007	EASTAWIN	Concession
1008	Wipim Tapila FMA	Concession
1009	Balimo Elv	Proposed

2.4. Query on Microsoft Access2010 using SQL

When you want to bring data from a database, you can ask for the data using Structured Query Language(SQL).

4-1. Preparation for using SQL

(1) Create a new Microsoft Access 2010 file and link to "dbo_FMU". (See 3.)

A J	base9 : Database (Access 2007	7) - Microsoft Access	
File Home Create Exte	Arnal Data Database Tools		۵ 🕜
	Text File	8	
Saved Linked Table Excel Access Imports Manager D Import & Link	ODBC atabase	Collect Data *	
All Access Objects 💿 «			
Search			
Tables 🏾 🕆			
* dbo_FMU			
Ready			Num Lock

(2) Select Create > Query Design. "Show Table" window will open, then close it, and select View > SQL View.

A	FIMS_0	ercise : Database (Access 2007) - Microsoft Access Show Table	8 ×
Application Parts Tables Templates	harePoint Lists + Usts +	ry pr Form Form Blank Design Form Form	Tables Queries Both	
All Access Objects Search	© «			
Tables * dbo_FMU	*			
	1		Add	Close



4-2. Main structure of commonly-used tables for the reports

Field name in dbo_FMU	Description
PROVINCE	Province code
FMU	FMU No
ZONE	Forest Zone code
VEG_TYPE	Vegetation type
VEG_AREA	Vegetation area (hectares)
NO_DIST	Forest type code without reference to disturbance
VEG_TYPE_1	First Vegetation Type (in Complex)
VOLUME	Timber volume estimate for forest type per hectare
AREA_750	Gross forest area adjusted in 1975
VOL_75	Gross forest volume in 1975(adjusted forest area *
	timber volume)
AREA3	Revised adjusted forest area at present
FOREST_VOL	Revised forest volume at present

The following table shows a main structure of "dbo_FMU" table.

The following table shows a main structure of "dbo_CONCESSIONAREA" table.

Field name in	Description
dbo_CONCESSIONAREA	
PLAN_ID	ID given to the concession area of each province
NAME	Name of the concession area

Field name in	Description			
dbo_CONCESSIONAREA				
STATUS	An existing concession area has the status			
	'Concession'. A new concession area has the status			
	"Proposed".			
PROVINCE	Province code			

The following table shows a structure of "dbo_master_Province" table.

You can replace a province code with a province name by using this table. (See 4.10)

Field name in	Description	
dbo_master_Province		
code_n	Province code	
code_a	Province short name	
descrip	Province name	

Exercise 4-2

Add link to dbo_CONCESSIONAREA table and dbo_master_Province table.

When the following window opens, select "code_n".



<u>Result</u>



4-3.SQL Clauses

SQL clause	What it does
SELECT	Lists the fields that contain data of interest.
FROM	Lists the tables that contain the fields listed in the SELECT clause.
WHERE	Specifies field criteria that must be met by each record to be included
	in the results.
ORDER BY	Specifies how to sort the results.
GROUP BY	In a SQL statement that contains aggregate functions, lists fields that
	are not summarized in the SELECT clause.
HAVING	In a SQL statement that contains aggregate functions, specifies
	conditions that apply to fields that are summarized in the SELECT
	statement.

The following table lists the most common SQL clauses.

4-4. SELECT and FROM statements

SELECT and FROM statements are basic SQL clauses.

Enter the following code: SELECT * FROM dbo_FMU

Select Design > ! RUN, then you can check the result.

	Query T	FIMS_exercise : Da	atabase (Access 2	007) - Microsoft	Access
File Home Create Exte F C C C View Run Results	In a Data Database Tools Design Update O Union Up Crosstab Pass-Through Delete Data Definition Ta Query Type	nn Berlinsert Rows Delete Rows ble Builder Query S	성 Insert Colum 양 Delete Colum 폐 Return: etup	ns D Totals	Property Sheet Table Names Show/Hide
All Access Objects 🛛 🛞 «	Query1		×	Property Sheet	×
Search	SELECT * FROM dbo_FMU		-	Selection type: Q General	uery Properties
* dbo_FMU				Description Default View	Datasheet
				Record Locks	No Locks
				ODBC Timeout	60
				Filter Order Ry	
				Max Records	
				Orientation	Left-to-Right
				Subdatasheet Na	ame
				Link Child Fields	
				Link Master Field	is
				Subdatasheet He	eight Ocm
				Subdatasheet Ex	panded No
				Order By On Load	d Ves
Ready]		*	Order By On Loa Nun	d Yes 1 Lock 🗇 🏦 🕮 🕵 😪

The result will show all fields of FMU table. If you want to go back to SQL View window, Select View > SQL View.

- "SELECT" lists the fields that contain data of interest.
- "*" means to select all fields.
- "FROM" lists the tables that contain the fields listed in the SELECT clause.

Retrieve all fields of "dbo_master_Province" table.

Result

🛛 code_n 👻	code_a 👻	descrip 👻	
1	Wes	Western	
2	Gul	Gulf	
3	Cen	Central	
5	Mil	Milne Bay	
6	Nth	Northern	
7	Shy	Southern Highlands	
8	Eng	Enga	
9	Why	Western Highlands	
10	Sim	Simbu	
11	Ehy	Eastern Highlands	
12	Mor	Morobe	
13	Mad	Madang	
14	Esk	East Sepik	
15	Wsk	West Sepik	
16	Man	Manus	
17	Nir	New Ireland	
18	Enb	East New Britain	
19	Wnb	West New Britain	
20	Nsl	North Solomons	

When you want to pick up specific fields, you need to specify the field name after "SELECT".

Enter the following code:

SELECT PROVINCE, FMU, ZONE, VEG_TYPE FROM dbo_FMU

Retrieve "code_n" and "descrip" of dbo_master_Province table.

$ \mathcal{L} $	code_n	-	descrip ,		
		1	Western		
		2	Gulf		
		3	Central		
		- 5	Milne Bay		
		6	Northern		
		- 7	Southern Highlands		
		8	Enga		
		- 9	Western Highlands		
		10) Simbu		
		11	11 Eastern Highlands		
		12 Morobe			
		13	Madang		
		14	East Sepik		
		15	West Sepik		
		16	Manus		
		17	New Ireland		
		18	East New Britain		
		19	West New Britain		
		20	North Solomons		

4-5. Rename the original field name to field alias

When you want to rename column name that is displayed for any field in datasheet view, you can name by using "AS".

Enter the following code:

SELECT PROVINCE, FMU, ZONE, VEG_TYPE AS Vegetaion FROM dbo_FMU

Rename the columns of the dbo_master_Province table, from "code_n" to "ProvinceCode", from "code_a" to "ShortName" and from "descrip" to "ProvinceName".

\angle	ProvinceCode 🚽	ShortName 👻	ProvinceName 🚽
	1	Wes	Western
	2	Gul	Gulf
	3	Cen	Central
	5	Mil	Milne Bay
	6	Nth	Northern
	7	Shy	Southern Highlands
	8	Eng	Enga
	9	Why	Western Highlands
	10	Sim	Simbu
	11	Ehy	Eastern Highlands
	12	Mor	Morobe
	13	Mad	Madang
	14	Esk	East Sepik
	15	Wsk	West Sepik
	16	Man	Manus
	17	Nir	New Ireland
	18	Enb	East New Britain
	19	Wnb	West New Britain
	20	Nsl	North Solomons

4-6. Sort the results

You can sort the result using "ORDER BY" statement. Enter the following code:

> SELECT PROVINCE, FMU, ZONE, VEG_TYPE FROM dbo_FMU ORDER BY PROVINCE ASC, FMU DESC

- "ORDER BY" clause contains a list of the fields that you want to sort
- "ASC" means ascending order (A to Z, 0 to 9).
- "DESC" means descending order (Z to A, 9 to 0).
- The default sort order is ascending order, so you can omit "ASC".

Retrieve "PLAN_ID", "NAME" and "STATUS" from "dbo_CONCESSIONAREA". List the concession area of "proposed" status before of "concession" status. List the "PLAN_ID" in ascending order.

	PLAN_ID 🚽	NAME 👻	STATUS 🚽	
	1009	Balimo Fly	Proposed	
	1010	Fly Block 1	Proposed	
	1011	Fly Block 2	Proposed	
	1015	Lake Murray Block 1	Proposed	
	1016	Nomad Strickland	Proposed	
	1017	Lake Murray Block 2	Proposed	
	1019	Ningerum	Proposed	
	1020	Morehead / Suki Block 1	Proposed	
1 0 2 1		Morehead / Suki Block 2	Proposed	
1022		East Awin Extension	Proposed	
	2014	Kakoro	Proposed	
	2015	Meporo(Malalaua)	Proposed	
	2096	Polopa	Proposed	
	2097	Vailala_Purari_oilpalm	Proposed	
	2098	Bulldog_oilpalm	Proposed	
	2099	Vailala Blk 1 ext	Proposed	
	3008	Ormand Lako TRP	Proposed	

The rest is omitted.

4-7. Limit the results (specify condition)

When you want to use data to limit the number of records that are returned in a query, you can use "WHERE" statement.

Enter the following code:

SELECT PROVINCE, FMU, ZONE, VEG_TYPE AS Vegetation FROM dbo_FMU Where PROVINCE = 9

ORDER BY PROVINCE ASC, FMU DESC

- "Where" clause is set after "FROM" clause.
- Operator

Operator	Description	Example	
=	equal	PROVINCE=9	
	VEG_TYPE="Hm" (When Data Ty		
		Field is "Text", you need to enclose a	
		value with " double quotation")	
<>	not equal	PROVINCE<>9	
>	grater than	PROVINCE>9	
<	less than	PROVINCE<9	

>=	grater than or equel	PROVINCE>=9
<=	Less than or equel	PROVINCE<=9
NOT	Not	NOT (PROVINCE =9)
OR	Or	PROVINCE=9 OR PROVINCE=10
AND	And	PROVINCE = 9 AND VEG_TYPE="O"
IN	In	PROVINCE IN (1,2,3)
IS NULL	equal NULL	PROVINCE is null
IS NOT NULL	not equal NULL	PROVINCE is not null

<u>Exercise 4-7 (1)</u>

Retrieve "PLAN_ID", "NAME" and "STATUS" from "dbo_CONCESSIONAREA".

Find the concession area of the proposed status.

List the "NAME" in ascending order.

\angle	PLAN_ID 👻	NAME 🚽	STATUS 🚽
	19064	Agulu Reserve	Proposed
	15023	Amanab 7	Proposed
	3017	Amaru	Proposed
	14012	April River	Proposed
	15010	Arko-Samei	Proposed
	19063	Asirim	Proposed
	15011	Au East West	Proposed
	1 0 0 9	Balimo Fly	Proposed
	5009	Basilaki Island	Proposed
	1 0 0 0 1	BiII	Proposed
	16005	BLOCK 3	Proposed
	16006	BLOCK 4	Proposed
	16007	BLOCK 5	Proposed
	16008	BLOCK 6	Proposed
	1 6009	BLOCK 7	Proposed
	1 0002	BOGO KAWA	Proposed
	14013	Border (Nuku)	Proposed
	12027	Borong Timber Area	Proposed
	7009	Bosavi	Proposed
	3024	Brown River Timber Area	Proposed
	2098	Bulldog_oilpalm	Proposed
	12096	Bunsi-Awom	Proposed
	18024	Cape Bogan	Proposed
			TT1

The rest is omitted.

Exercise 4-7 (2)

Retrieve "PROVINCE", "FMU", "VEG_TYPE" and "Volume" as TimberVolume from "dbo_FMU".

Find the FMUs which have more than 30 of timber volume in Madang province.

List the "VEG_TYPE" in ascending order, "VOLUME" in descending order.

PROVINCE .	FMU +	VEG_TYPE +	VOLUME -
13	1226	Fri/Sc/Hm	45
13	174	Fsw/Po	40
13	658	FswC	30
13	670	FswC	30
13	735	FswC	30
13	764	FswC	30
13	765	FswC	30
13	350	G/Hmd5	38
13	462	Hm	50
13	610	Hm	50
13	614	Hm	50
13	617	Hm	50
13	737	Hm	50
		T 1	. • • • • •

The rest is omitted.

4-8. Aggregate function

When you want to work with summarized data, you can use "GROUP BY" statement, aggregate functions (such as SUM, COUNT, AVG, MAX or MIN). Enter the following code:

SELECT VEG_TYPE, COUNT(*) as Count, MAX(VOLUME) as MAX,MIN(VOLUME) as MIN, AVG(VOLUME) as AVG, SUM(VEG_AREA) as SUM_AREA From dbo_FMU GROUP BY VEG_TYPE ORDER BY VEG_TYPE ASC

- The above statement retrieves the number of each veg_type and, highest and lowest volume, average of timber volume and total of forest area in each vegetation type.
- GROUP BY clause is used in conjunction with the aggregate functions to group the result-set by one or more columns.
- GROUP BY clause follows FROM clause if there is no WHERE clause.
- GROUP BY clause lists the fields to which you do not apply an aggregate function.
- Major aggregate functions are as follows:

NAME	Description
AVG()	Calculate the average of the values in a field
COUNT()	Count the number of values in a field
MAX()	Extract the highest value in a field
MIN()	Extract the lowest value in a field
SUM()	Calculate the total of the values in a field

- The following statement retrieves the number of each veg_type and, highest and lowest volume, average of timber volume and total of forest volume in each vegetation type.
- Operator "*" for multiplication : "VOLUME*VEG_AREA" means "VOLUME" multiplied by "VEG_AREA".

SELECT VEG_TYPE, COUNT(*) AS Count, MAX(VOLUME) AS MAX, MIN(VOLUME) AS MIN, AVG(VOLUME) AS AVG, SUM(VOLUME*VEG_AREA) AS FOREST_VOLUME FROM dbo_FMU GROUP BY VEG_TYPE ORDER BY VEG_TYPE

- The following statement retrieves the number of each veg_type and, highest and lowest timber volume, average of timber volume and total volume of forest volume in each province and vegetation type.
- If you want to round the figure of aggregate result, you can use "ROUND" function. SELECT PROVINCE, VEG_TYPE, COUNT(*) as Count, MAX(VOLUME) as MAX,MIN(VOLUME) as MIN, ROUND(AVG(VOLUME),2) as AVG, SUM(VOLUME*VEG_AREA) as FOREST_VOLUME From dbo_FMU GROUP BY_PROVINCE, VEG_TYPE ORDER BY PROVINCE ASC, VEG_TYPE ASC, AVG(VOLUME) ASC

Find the number of FMUs in each province.

Reneme the Column name that shows figure of the number to "Count".

List province code in ascending order.

\angle	PROVINCE 🔻	COUNT -
	1	1992
	2	986
	3	774
	5	1105
	6	711
	7	545
	8	288
	9	186
	10	120
	11	224
	12	802
	13	1228
	14	1324
	15	775
	16	327
	17	521
	18	338
	19	878
	20	584

Exercise 4-8 (2)

Retrieve first vegetation type (in complex) "Hm" in each province.

Find the number of "Hm" polygons in each province.

Find the maximum value, minimum value and average amount of "Hm".

Find the total area of "Hm" in each province.

Find the total forest volume and adjusted forest volume in each province.

\mathbf{Result}

AdjForest_Volume 🔹	Forest_Volume 🔹	AREA -	Avg -	Min 👻	Max 👻	Count 👻	ovince 🔻 Veg_Type_1 🔹
83625284	103813419	3140363	37.91	16	45	165	1 Hm
50627680	58648482	1665238	35.15	16	40	178	2 Hm
25571199	29644734	651241	45.1	44	50	63	3 Hm
6413550	8508300	283338	30.18	30	40	55	5 Hm
15712482	17811472	407655	36.87	26	60	68	6 Hm
16029960	17675790	468096	38.27	25	40	113	7 Hm
1266440	1406760	35169	40	40	40	18	8 Hm
2531840	3269300	74603	41.67	40	60	24	9 Hm
4342895	5151715	129153	40.52	25	50	29	10 Hm
1988940	2117140	48053	43.64	40	60	33	11 Hm
26178119	38713384	713267	54.6	45	68	176	12 Hm
23354910	35872411	834465	44.73	20	50	175	13 Hm
42322815	44517140	1005613	43.7	25	50	169	14 Hm
567504	2837016	67548	42	42	42	28	16 Hm
7862180	18694478	575329	32.59	25	45	128	17 Hm
18790212	33467552	931110	36.52	28	40	116	18 Hm
17067805	39451724	1322764	30.98	28	40	217	19 Hm
11851725	15037695	358241	41.9	30	45	92	20 Hm

4-9. Limiting aggregate values by using group criteria

When you want to use criteria to limit the results, but the field that you want to apply criteria to is used in an aggregate function, you cannot use a WHERE clause.

Instead, you can use a HAVING clause. A HAVING clause works like a WHERE clause, but is used for aggregated data.

Enter the following code:

SELECT PROVINCE, VEG_TYPE, COUNT(*) as Count, MAX(VOLUME) as MAX,MIN(VOLUME) as MIN, ROUND(AVG(VOLUME),2) as AVG, SUM(VEG_AREA) as SUM_AREA, SUM(VOLUME*VEG_AREA) as FOREST_VOLUME From dbo_FMU WHERE PROVINCE = 1 GROUP BY PROVINCE, VEG_TYPE HAVING COUNT(*)>=10 ORDER BY COUNT(*) DESC

- The above statement finds if any vegetation type has more than 10 polygons in Western province (province code = 1).
- A statement can have a WHERE clause and a HAVING clause criteria for fields that are not used in an aggregate function go in the WHERE clause, and criteria for fields that are used with aggregate functions go in the HAVING clause.

• "WHERE" clause appears in front of "GROUP BY" clause.

• "HAVING" clause is set after "GROUP BY" clause.

Exercise 4-9

Retrieve first vegetation type (in complex) in Western Highlands province (province code=9).

Find the total area and total adjusted area in each vegetation type.

Find the total forest volume and adjusted forest volume in each vegetation type.

Find the total forest volume more than 0.

List the total forest volume in descending order.

 $\underline{\mathbf{Result}}$

PROVINCE - FirstVegetaionT	ype -	AREA -	ADJUSTED_AREA +	FOREST_VOLUME +	AdjFOREST_VOLUME ·
9 L		247675	166674	13782310	9590770
9 LN		137260	125857	9608200	8809990
9 Hm		74603	56332	3269300	2531840
9 HmAr		40450	35397	1901150	1663659
9 Lc		7026	7026	667470	667470
9 Ls		2129	2129	64544	64544
9 LsN		69	69	2070	2070

5. ADVANCED

5.1. Combine tables

If you want to replace province code with province name on table of result, you can retrieve province name from another table.

"dbo_master_Province" table has both province code and province name.

"code_n" field of "dbo_master_Province" table means province code.

"descrip" field of "dbo_master_Province" table means province name.

On the other hand, "dbo_FMU" table also has the "province" field which shows province code.

"dbo_FMU" table and "dbo_master_Province" has province code as common field.

You can combine tables by using this common field.

By uniting "province" with "code_n", you can show province name on table of result.

Enter the following code:

SELECT F.province, P.descrip AS ProvinceName, SUM(F.veg_area) AS TotalArea FROM dbo_FMUAS F, dbo_master_Province AS P WHERE F.province = P.code_n GROUP BY F.province, P.descrip ORDER BY F.province;

Result:

🛛 province 👻	ProvinceName -	TotalArea 👻
1	Western	9845211
2	Gulf	3480065
3	Central	2987176
5	Milne Bay	1426403
6	Northern	2277222
7	Southern Highlands	2574829
8	Enga	1182384
9	Western Highlands	914120
10	Simbu	613361
11	Eastern Highlands	1120510
12	Morobe	3393295
13	Madang	2909527
14	East Sepik	4381318
15	West Sepik	3605390
16	Manus	215029
17	New Ireland	961034
18	East New Britain	1534365
19	West New Britain	2045590
20	North Solomons	943273

• The above statement, "province" column is retrieved from "dbo_FMU", and "ProvinceName" column is retrieved from "dbo_master_Province". "TotalArea" column is calculated using field of "dbo_FMU"

(Regarding table structure, see 4.2)

• "WHERE" clause shows a condition for combination.

From	dbo_	_FMU				Fror	n dbo	_ma	iste	r_Pro	vince
PROVII	NCE	TotalArea				Code	e_n	des	crip		
1	9	9845211		Com	bine	1		We	sterr	۱	
2	:	3480065				2		Gul	f		
3	:	2987176				3		Cen	tral		
					/						-
	Prov	ince	Toal	Area	Code_n		descri	р			
(1		984	5211 🤇	1		Weste	rn			
	1		984	5211	2		Gulf				
	1		984	5211	3		Centra	ıl [Ex	tract	
	2		348	0065	1		Weste	rn	W	HERE	province = code_n
(2		348	0065 🤇	2		Gulf				
	2		348	0065	3		Centra	ıl			
	3		298	7176	1		Weste	rn			
	3		298	7176	2		Gulf				
(3		298	7176 🤇	3		Centra	ıl			
				Res	ult				_		
	Provi	nce	Toal	Area	Code_n		descri	ip			
	1		984	5211	1		Weste	ern			
	2		3480	0065	2		Gulf				
	3		298	7176	3		Centra	al			

- The readability of a SELECT statement can be improved by giving a table an alias. A table alias can be assigned either with or without the AS keyword.
 - o table_name AS table alias
 - o table_name table_alias

Retrieve province code, province name and total area of first vegetation type (in complex) "O" and "Hm" in each province.

Find the total area of each vegetation.

List the province code in ascending order.

<u>Result</u>

ProvinceCode	*	ProvinceName 🚽 👻	Vegetation 👻	TotalArea 🚽
	1	Western	Hm	31 40363
	1	Western	0	102240
	2	Gulf	Hm	1665238
	2	Gulf	0	65010
	З	Central	Hm	651241
	З	Central	0	375449
	5	Milne Bay	Hm	283338
	5	Milne Bay	0	162728
	6	Northern	Hm	407655
	6	Northern	0	167366
	-7	Southern Highlands	Hm	468096
	-7	Southern Highlands	0	472314
	8	Enga	Hm	35169
	8	Enge	0	309257

The rest is omitted.

5.2. Nested table

If you want to know the portion of first vegetation type(in complex) in each province, you need to divide the area of each first vegetation type(in complex) by the total area of each province.

"dbo_FMU" table does not have the total area of each province, so you can create a temporary virtual table(Nested table) for the total area of each province.

Enter the following code:

SELECT PROVINCE, SUM(VEG_AREA) AS TotalArea FROM dbo_FMU GROUP BY PROVINCE

Create temporary virtual table

4	PROVINCE 🚽	TotalArea 👻
	ា	9845211
	2	3480065
	3	2987176
	5	1426403
	6	2277222
	7	2574829
	8	1182384
	9	914120
	10	613361
	11	1120510
	12	3393295
	13	2909527
	14	4381318
	15	3605390
	16	215029
	17	961034
	18	1534365
	19	2045590
	20	943273

You need to prepare another table of result which shows the area of the area of each first vegetation type (in complex).

Enter the following code:

SELECT F.PROVINCE, F.Veg_Type_1, SUM(F.VEG_AREA) AS AREA FROM dbo_FMU AS F GROUP BY F.PROVINCE, F.Veg_Type_1 ORDER BY F.PROVINCE, SUM(F.VEG_AREA) DESC;

🔟 PROVINCE 👻	Veg_Type_1 👻	AREA 🚽	
1	Hm	31 40363	
1	D	1156099	
1	Hs	736479	This table shows the area of
1	W	634048	and first vagatation type in
1	Sa	556160	each mist vegetation type m
1	Gsw	468613	province.
1	Sc	466456	
1	Fsw	387764	
1	Wsw	279272	
1	FswMI	258458	
1	SaMI	208645	
1	Po	187349	
1	E	183748	
1	L	179829	
1	Hsw	162108	
1	WswMI	156916	
1	M	130484	
1	0	102240	
1	Ps	59045	The rest is omitted.
1	ls	58714	

After you retrieve the area of each first vegetation type (in complex) in each province, you can find portion of each first vegetation type (in complex).

You need to combine the above two tables.

The following statement extracts the first vegetation type (incomplex) which accounts for 5% or more of the each province area.

Enter the following code:

SELECT F.PROVINCE, F.Veg_Type_1, SUM(F.VEG_AREA) AS AREA, Nest.TotalArea AS AreaOfProvince, ROUND((SUM(F.VEG_AREA)/Nest.TotalArea),2) AS PROPORTION FROM dbo_FMU AS F, (SELECT PROVINCE, SUM(VEG_AREA) AS TotalArea FROM dbo_FMU GROUP BY PROVINCE) As Nest WHERE F.PROVINCE=Nest.PROVINCE GROUP BY F.PROVINCE, F.Veg_Type_1, Nest.TotalArea HAVING ROUND((SUM(F.VEG_AREA)/Nest.TotalArea),2)>=0.05

ORDER BY F.PROVINCE ASC, SUM(F.VEG_AREA) DESC;

Z PROVINCE - Veg_Type_1 -	AREA 👻	AreaOfProvince 👻	PROPORTION 👻
1 Hm	3140363	9845211	0.32
1 D	1156099	9845211	0.12
1 Hs	736479	9845211	0.07
1 W	634048	9845211	0.06
1 Sa	556160	9845211	0.06
1 Gsw	468613	9845211	0.05
1 Sc	466456	9845211	0.05
2 Hm	1665238	3480065	0.48
2 Fsw	400704	3480065	0.12
2 Po	261685	3480065	0.08
2 Hs	260649	3480065	0.07
2 M	251122	3480065	0.07
3 Hm	651241	2987176	0.22
3 Hs	466971	2987176	0.16
3 0	375449	2987176	0.13
3 L	369546	2987176	0.12
3 LN	221967	2987176	0.07
5 Hs	478172	1 4 2 6 4 0 3	0.34
5 Hm	283338	1 4 2 6 4 0 3	0.2
5 O	162728	1 4 2 6 4 0 3	0.11
5 L	91763	1 4 2 6 4 0 3	0.06
5 Ps	88406	1 426403	0.06
5 G	69276	1 4 2 6 4 0 3	0.05
5 Gf	68689	1 4 2 6 4 0 3	0.05

The rest is omitted.

• The above statement is using two tables.

Result

- o "dbo_FMU", which alias name is "F"
- Temporary virtual table, which alias name is "Nest".
- The virtual table (Nested table) is placed into FROM statement.
- Operator "/" for division: "(SUM(F.VEG_AREA)/Nest.TotalArea" means total of "F.VEG_AREA" divided by "Nest.TotalArea".

Change the last example statement.

Limit to only the result of Madang Province.

Extract the first vegetation type (incomplex) which accounts for 10% or more.

<u>Result</u>

2	PROVINCE 👻	Veg_Type_1 👻	AREA 👻	AreaOfProv 🗸	PROPORTI 🗸
	13	Hm	834465	2909527	0.29
	13	L	447638	2909527	0.15
	13	Hmd	399021	2909527	0.14
	13	0	393133	2909527	0.14

***********	 	~~~~	

Answer

$\underline{\text{Exercise4-4}(1)}$

SELECT * FROM dbo_master_province;

<u>Exercise4-4 (2)</u>

SELECT dbo_master_Province.code_n, dbo_master_Province.descrip FROM dbo_master_Province;

$\underline{\text{Exercise4-5}}$

SELECT code_n as ProvinceCode, descrip as ProvinceName FROM dbo_master_Province;

Exercise4-6

SELECT PLAN_ID, NAME, STATUS From dbo_CONCESSIONAREA ORDER BY Status DESC, Plan_ID ASC;

Exercise 4-7(1)

SELECT PLAN_ID, NAME, STATUS FROM dbo_CONCESSIONAREA WHERE STATUS = "PROPOSED" ORDER BY NAME;

$\underline{\text{Exercise4-7}(2)}$

SELECT PROVINCE, FMU,VEG_TYPE,VOLUME FROM dbo_FMU WHERE VOLUME>=30 AND PROVINCE=13 ORDER BY VEG_TYPE ASC, VOLUME DESC

Exercise 4-8(1)

SELECT dbo_FMU.PROVINCE, Count(*) AS COUNT FROM dbo_FMU GROUP BY dbo_FMU.PROVINCE ORDER BY dbo_FMU.PROVINCE;

<u>Exercise4-8 (2)</u>

SELECT Province, Veg_Type_1, Count(*) AS Count, Max(Volume) AS Max, Min(Volume) AS Min, Round(Avg(Volume),2) AS Avg, SUM(VEG_AREA) AS AREA, SUM(Volume*VEG_AREA) AS FOREST_VOLUME,SUM(Volume*AREA3) AS AdjFOREST_VOLUME FROM dbo_Fmu WHERE Veg_type_1="Hm" GROUP BY Province, Veg_Type_1 ORDER BY Province, Veg_Type_1;

$\underline{Exercise4-9}$

SELECT PROVINCE, VEG_TYPE_1 AS FirstVegetaionType, SUM(VEG_AREA) AS AREA, SUM(AREA3) AS ADJUSTED_AREA, SUM(Volume*VEG_AREA) AS FOREST_VOLUME, SUM(Volume*AREA3) AS AdjFOREST_VOLUME FROM dbo_FMU WHERE PROVINCE = 9 GROUP BY PROVINCE, VEG_TYPE_1 HAVING SUM(VOLUME*VEG_AREA) > 0 ORDER BY SUM(VOLUME*VEG_AREA) DESC;

Exercise5-1

SELECT F.province AS ProvinceCode, P.descrip AS ProvinceName, F.VEG_TYPE_1 AS Vegetation, Sum(F.VEG_AREA) AS TotalArea FROM dbo_FMUAS F, dbo_master_Province AS P WHERE (F.province=P.code_n) AND ((F.VEG_TYPE_1)="O" OR (F.VEG_TYPE_1)="Hm") GROUP BY F.province, P.descrip, F.VEG_TYPE_1 ORDER BY F.province ASC;

Exercise5-2

SELECT F.PROVINCE, F.Veg_Type_1, SUM(F.VEG_AREA) ASAREA, Nest.TotalArea ASAreaOfProvince, ROUND((SUM(F.VEG AREA)/Nest.TotalArea),2) AS PROPORTION FROM dbo_FMU AS F, (SELECT PROVINCE, SUM(VEG_AREA) AS TotalArea FROM dbo_FMU GROUP BY PROVINCE) AS Nest WHERE F.PROVINCE=Nest.PROVINCE AND F.PROVINCE=13 GROUP BY F.PROVINCE, F.Veg_Type_1, Nest.TotalArea HAVING ROUND((SUM(F.VEG_AREA)/Nest.TotalArea),2)>=0.1 ORDER BY F.PROVINCE, SUM(F.VEG AREA) DESC;

3. Maintenance of the Forest Resource Database

3.1. Backup and Restoring

FIPS data is stored on an SQL Server, so backup is carried out in accordance with normal SQL Server backup procedures.

3.1.1. Backup setting procedure

Backup of data is automated by the following procedure.

(1) Prepare the backup destination

Prepare a hard disk for storing the backup files.

(2) Prepare a backup batch file

Prepare a batch file for performing the backup.

In the following, the SQLServer instance is "PNG-SERVER", the login user is "sa", the login password is "pngf@123". The DBs to be stored are "geodb01" and "FIPS", the storage destination is "E:¥DB_BACKUP", and the criterion for deleting files is "files that are 30 days old or more".

echo off
rem
rem SQL Server backup
rem
rem Get Date
set TODAY=%date:~-10,2%%date:~-7,2%%date:~-4,4%
rem echo %TODAY%
rem BackUp Main Process
echo Start Backup
sqlcmd –U sa –P pngf@123 -S PNG-SERVER -Q "BACKUP DATABASE geodb01 TO DISK
= N'E:¥DB_BACKUP¥%TODAY%_geodb01.bak' WITH INIT''
sqlcmd –U sa –P pngf@123 -S PNG-SERVER -Q "BACKUP DATABASE FIPS TO DISK =
N'E:¥DB_BACKUP¥%TODAY%_FIPS.bak' WITH INIT"

rem Delete Old Backup echo Delete Old Backup... forfiles /P E:¥DB_BACKUP /S /D -30 /C "cmd /c del /F /S /Q e:¥DB_BACKUP¥@file"

The login user and password for SQL Server need to be included in the batch file. Therefore, it is desirable for security that the batch file is in a location that normal users cannot see it.

(3) Prepare backup task

A Task is registered in the Task Scheduler in order to perform periodic backups and delete old backup files.

Start up Server Manager, and select Configuration->Task Scheduler->Task Scheduler Library from the tree on the left.

Then, select Create Basic Task from Actions.



Figure 3-1 Task Scheduler Library

Create Basic Task Wizard opens, so enter the Task name in Name, and click the Next button.

Create Basic Task Wizard	(×
Create a Basic Task Trigger Action Finish	Use this wizar such as multij N <u>a</u> me: <u>D</u> escription:	d to quickly schedule a common task. For more advanced options or settings ple task actions or triggers, use the Create Task command in the Actions pane. DatabaseBackup
		< Back Next > Cancel

Figure 3-2 Create Basic Task Wizard (1)

Select the interval for performing the Task, and click the Next button.

Create Basic Task Wizard		×
🔟 Task Trigger		
Create a Basic Task Trigger Action Finish	When do you want the task to start? © Daily © Weekly © Monthly © One time © When the computer starts © When I log on © When a specific <u>e</u> vent is logged	
	< <u>B</u> ack <u>N</u> ext >	Cancel

Figure 3-3 Create Basic Task Wizard (2)

Specify the timing (date and time) for performing the Task.

Also, specify the interval for performing the Task, and click the Next button.

Create Basic Task Wizard		×
迿 Daily		
Create a Basic Task	Start: 19/04/2013 🔻 2:00:00 AM 🚔 🗖 Synchronize across time zones	
Trigger		
Action	Re <u>c</u> ur every: 1 days	
Finish		
	< Back Next > Cancel	

Figure 3-4 Create Basic Task Wizard (3)

Select Start a program, and enter the path to the prepared batch file (it is not necessary to set arguments, etc.). Then, click the Next button.

Create Basic Task Wizard	×
o Action	
Create a Basic Task	
Trigger Daily	What action do you want the task to perform?
Action	Start a program
Finish	© Send an e-mail
	C Display a <u>m</u> essage
	< Back Next > Cancel

Figure 3-5 Create Basic Task Wizard (4)

Create Basic Tas	k Wizard				×
🦢 Start a	a Program				
Create a Basic Ta	sk				
Trigger		Program/script:			
Daily		C:\tools\backup.bat		E	rowse
Action		, Add annun anta (antiana).			
Start a Program	n	Add arguments (optional):			
Finish		Start in (optional):			
			< <u>B</u> ack	<u>N</u> ext >	Cancel

Figure 3-6 Create Basic Task Wizard (5)

Finally, confirm the settings, and click the Finish button.

Summary Create a Basic Task Trigger Name: DatabaseBackurg Description: Action Start a Program Finish Trigger: Daily; At 2:00 AM every day Action: Start a program; C:\tools\backup.bat Image: Open the Properties dialog for this task when I click Finish When you click Finish, the new task will be created and added to your Windows schedule. <a>Back	Create Basic Task Wizar	rd	×
Create a Basic Task Trigger Daily Description: Action Start a Program Finish Trigger: Daily; At 2:00 AM every day Action: Start a program; C:\tools\backup.bat Copen the Properties dialog for this task when I click Finish When you click Finish, the new task will be created and added to your Windows schedule. QBack Einish Cancel	5 Summary		
Trigger Name: DatabaseBackup Daily Description: Action Start a Program Finish Trigger: Daily: At 2:00 AM every day Action: Start a program; C:\tools\backup.bat Open the Properties dialog for this task when I click Finish When you click Finish, the new task will be created and added to your Windows schedule. < gack	Create a Basic Task		
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< <u>B</u> ack <u>F</u> inish Cancel			-1
		<u> </u>	

☑ 3-7 Create Basic Task Wizard (6)

After preparing the Task, right click the prepared Task with the mouse and select Properties. Then select "Run whether user is logged on or not" from the Security options of the General tab, then click the OK button. (Input of the password is required, so input the password.)

🕭 DatabaseBac	:kup Properties (PNG-SERVER)	×			
General Trig	gers Actions Conditions Settings History				
Na <u>m</u> e:	DatabaseBackup	-			
Location:	X				
Author:	PNGFA\Administrator				
<u>D</u> escription:					
Security opt	, tions ————————————————————————————————————				
When runni	ing the task, use the following user account:				
PNGFA\Adr	ministrator Change <u>U</u> ser or Group				
O Run only when user is logged on					
Run whe	Run whether user is logged on or not				
Do not store password. The task will only have access to local computer resources.					
🗖 Run w <u>i</u> th	h highest privileges				
□ Hidd <u>e</u> n	Configure for: Windows Vista™, Windows Server™ 2008]			
	OK Cancel				

Figure 3-8 Task Properties

This completes the backup settings.

3.1.2. Restore procedure

Restoring files that have been backed up should be performed for DBs with the same name as during backup.

(If the GeoDatabase backup file is restored to a DB with a different name, it may not operate correctly.)

Restoring a database is performed by the following procedure.

(1) Stop and restart services

Stop the ArcSDE service, and restart SQL Server services.

Restoring SQL Server will not terminate normally if there is access to the database (session), so access (the session) is forcibly severed by restarting the SQL Server service, etc.

a. Start Server Manager, and select Configuration->Services from the tree on the left.

b. From the list, select ArcSde Service(***), and Stop it.



Figure 3-9 Services

c. Open the Start menu, and select All Program->Microsoft SQL Server 2008->Configuration Tools->SQL Server Configuration Manager.

d. From SQL Server Service, right click SQL Server (***) with the mouse, and select Restart.

🔚 Sql Server Configuration Manager				
File Action View Help (= =) (2) (2) (2) (0) (0) (0)				
SQL Server Configuration Manager (Local)	Name	State	Start Mode	Log On As
SQL Server Services SQL Server Network Configuration (32bit) SQL Server Network Configuration (32bit) SQL Server Network Configuration SQL Server Network Configuration SQL Native Client 10.0 Configuration	SQL Server (PNG) SQL Server (SQLEXPRESS) SQL Full-text Filter Daemon Launche SQL Full-text Filter Daemon Launche SQL Server (MSSQLSERVER) SQL Server Agent (PNG) SQL Server Agent (SQLEXPRESS) SQL Server Browser SQL Server Agent (MSSQLSERVER)	Stert Stop Pause Resume Restart Properties Help	Automatic Automatic Manual Automatic Manual Other (Boot, System Automatic Other (Boot, System	PNGFA\Administrato .\Administrator NT AUTHORITY\LOC NT AUTHORITY\LOC PNGFA\Administrato PNGFA\Administrato NT AUTHORITY\NET NT AUTHORITY\NET

Figure 3-10 SQL Server Configuration Manager

(2) Restore the DB

a. Start SQL Server Management Studio, right click the DB whose data is to be restored using the mouse, and select Tasks->Restore->Database.


Figure 3-11 SQL Server Management Studio

b. In the General menu, select [From device] from Source for restore, and select the backed up DB file. Then, enter a check in the list.

🥫 Restore Database - geodb()1							_ 🗆 🗙	
Select a page	Script	🖌 📑 Help							
General	Destinati	stination for restore							
	Selec	Select or type the name of a new or existing database for your restore operation.							
	T <u>o</u> da	To database: geodb01							
	<u>I</u> o a	oint in time:		Mos	t recent possible				
	Source fr	or restore							
	Spec	fy the source	and location of	backup :	sets to restore.				
	0 F <u>r</u>	om database:						Ψ.	
	Fr	om <u>d</u> evice:		C:\b	ools\20042013_ge	eodb01.bak			
	Selec	t the backup :	sets to restore:						
	Rest	ore Name	Component	Туре	Server	Database	Position	First LSN	
			Database	Full	PNG-SERVER	geodbU1	1	1042600000	
Connection									
Server: PNG-SERVER\png									
Connection: PNGFA\Administrator									
View connection properties									
Progress									
Ready									
THE P	•								
						0	к	Cancel	

Figure 3-12 Restore Menu (General)

c. Select Options, and select [Overwrite the existing database].

📕 Restore Database - geodb()1						
ielect a page	Script + 🔓 Help						
G uptions	Restore options						
	Original File Name	File Type	Restore As				
	geodb01_dat	Rows Data	c:\Program Files\Microsoft SQL				
	geodb01_log	Log	c:\Program Files\Microsoft SQL				
Server: PNG-SERVER\png Connection:	 Leave the database non transaction logs can be r Leave the database in re 	operational, and do not ro estored.(RESTORE WITH ad-only mode, Undo unco	Il back uncommitted transactions. Additional I NORECOVERY)				
PNGFAVAdministrator	actions in a standby file s	o inal lecovely effects ca	n be reversed (hear one with a tANDBT)				
A view connection properties	Standby No.	I.					
Fingress							
Ready	The Full-Text Upgrade rebuilt, or reset.	Dption server property co	ontrols whether full-text indexes are imported,				
			OK Cancel				

Figure 3-13 Restore Menu (Options)

- d. Click the OK button, and execute the restore.
- X If the database is in use (if a session remains) when the operation in (1) is performed, the restore will fail with an error. In this case, execute the sp_who command in SQL Server Management Studio to check the session.

Search for the DB session whose dbname is the target of the restore, and delete the session by executing the kill [spid] command so that restore can be carried out.

Microsoft SQL Server Management Studio										
the Edit Yew Query Endous India Mindow Query	ky 18	•		a lest		5. Log 1	an 2 4	A		
Const. 3/ 32 = 7 5	SQ	Query	1.50	PIG S.r(59))*	212	20	28	-	• >
PMG-SERVERiping (SQL Server 10.50.2500 - PMGFA)Administra So Databases E System Databases		_	-				_	_		-
Database Snapshots Jacobse Snapshots	-	Secure .	L.J.B.	feosages	I tonication 1	hottome	14	(decasis)	and	
R i føstest	21	24	0	sleeping	18	- tearing a	0	mailer	TASK MANAGER	-
H (Hids	24	51	0	sleeping	48 NT AU.	PNG-S.	0	masher geod	AWNTING COMMA	io.
B California Collects	25	52	0	sleeping deeping	NT AU	PNG-5.	0	geod.	AWWITING COMMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING COMUNICATING CO	0
B A Management	28	54	0	pleeping	58	PNG-S.	0	geod.	AWWTING COMMA	NO
ii 🗊 242 biinii olaat	23	55	0	sleeping	50	PNG-S.	-	geod.	AWANTING COMMAN	1
<u>ار ا</u>	39	n.	ING-SD	EVERIping (D	3.50 SP1) P8	12FA Adresis	ty at o	(595 ma	ster 00:00:00 35 m	-
Ready					in?			al 6 kg	7	6

Figure 3-14 sp_who Command

- (3) Restart the service
- a. Start Server Manager, and select Configuration->Services from the tree on the left.
- b. From the list, select ArcSde Service(***), and Start it.

3.2. Adding and deleting FIMS users

FIM-ADM	IN Version 3.0	PNG Forest Inver	i Forest Authority ntory and Mapping
Provinces Code Provinces	Admin Menu Layer Management User Management FIPS E 2 ft		
Province	User Management dmin kkc kkc2 3	Edit Edit Edit	Delete Delete
Proposed Carbosson	Add		

This screen is displayed by clicking the User Management button in the Admin screen.

- Province : Click to go to the Provinces screen and display the list of provinces.
 EXIT : Click to exit the system.
- Layer Management : Click to go to the Layer Management screen.
 User Management : Click to go to theUser Management screen.
 FIPS Data Import : Click to go to the FIPS Data Import screen..
- 3. Displays user information.

Edit: Click to go to the Edit User screen.

Delete: Click to delete user information.

Add: Click to go to the Add User screen.

3.3. Adding and deleting FIPS users

You can manage the accounts of FIPS users. User management requires the administrative authority or the developer authority to run, and the user with general authority cannot use this option.

The user with administrative authority can manage only the account of users with administrative authority or general authority. The developer authority is superior to the administrative authority; therefore the user with administrative authority cannot add / edit the account of user with developer authority.

The user with developer authority can manage all the accounts of users.

3.3.1. Logging in with administrative authority or developer authority

Login with administrative authority or developer authority. The Microsoft Access menu is displayed.

3.3.2. Access to tables for user management

Double click "F_USER" in Tables on the left side of the screen, and the user management table opens.



3.3.3. Adding or modifying users

To add or modify a user, enter "USER_NAME", "PASSWORD", "AUTHORITY".

Field Name	Description	Points to note		
USER_NAME	User name	50 text characters or less		
PASSWORD	Password	50 text characters or less		
		Enter either 1, 2, or 3		
	Lloon's outh onity	1 : Developer authority		
AUTHORITT	User's authority	2 : Administrative authority		
		3 : General authority		



3.3.4. Deleting a user

To delete a user, select the user to be deleted, and right click. Select "Delete" from the menu.

Forest Resource Database specification

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1.1 FIMS application schema

	< <polygon>> FMU</polygon>		< <objectclass>> Ctrl_*_Concession_FMU</objectclass>
-< <f< td=""><td></td><td><<i< td=""><td>rovince :esriFieldTypeInteger</td></i<></td></f<>		< <i< td=""><td>rovince :esriFieldTypeInteger</td></i<>	rovince :esriFieldTypeInteger
+	FMLL :esriFieldTypeDouble	+	FMU esriFieldTypeInteger
+	zone :esriFieldTypeDouble	+	Zone :esriFieldTypeInteger
+	map no :esriFieldTypeDouble	+	Map No :esriFieldTypeDouble
+	map id :esriFieldTypeDouble	+	Map_id :esriFieldTypeDouble
+	veg_type :esriFieldTypeString	+	Veg_Type :esriFieldTypeString
+	veg_area :esriFieldTypeDouble	+	Veg_Area :esriFieldTypeDouble
+	slope :esriFieldTypeDouble	+	Extreme_Slope :esriFieldTypeDouble
+	altitude :esriFieldTypeDouble	+	Extreme_Altitude :esriFieldTypeDouble
+	karst :esriFieldTypeDouble	+	Extreme_Karst :esriFieldTypeDouble
+	inundation :esriField IypeDouble	+	Extreme_inundation :esriFieldTypeDouble
+	mangrove :esriFieldTypeDouble	÷	Extreme_Mangrove ceshFieldTypeDouble
+	inundatio : : : : : : : : : : : : : : : : : : :	+	Serious Inundation :esriFieldTypeDouble
+	area :esriFieldTypeDouble	+	Extreme Constraints Area :esriFieldTypeDouble
+	area0 :esriFieldTypeDouble	+	Serious Constraints Area :esriFieldTypeDouble
+	extreme :esriFieldTypeDouble	+	Prop Extreme :esriFieldTypeDouble
+	serious :esriFieldTvpeDouble	+	Prop_Serious :esriFieldTypeDouble
+	area1 :esriFieldTypeDouble	+	Protected_Area :esriFieldTypeDouble
+	ext_sl :esriFieldTypeDouble	+	Protected_Ext_Sl :esriFieldTypeDouble
+	ext_alt :esriFieldTypeDouble	+	Protected_Ext_Alt :esriFieldTypeDouble
+	ext_kst :esriFieldTypeDouble	+	Protected_Ext_Kst :esriFieldTypeDouble
+	ext_in :esriFieldTypeDouble	+	Protected_Ext_In :esnFieldTypeDouble
+	ext_man :esriField I ypeDouble	+	Protected_Ext_Man :esriFieldTypeString
+	ser_si :esnFieldTypeDouble	÷	Protected_Ser_SI :esriFieldTypeDouble
- -	ser_in :esriFieldTypeDouble	+	Fragile Forest Type :esriFieldTypeInteger
+	no dist :esriFieldTypeString	+	Forest Type No Dist jesriFieldTypeString
+	veg type 1 :esriFieldTypeString	+	Forest Type Base :esriFieldTypeString
+	veg_type_1 :esriFieldTypeString	+	Gross Forest Area 75 :esriFieldTypeDouble
+	veg type 3 :esriFieldTypeString	+	Disturbance_Index :esriFieldTypeDouble
+	type_base :esriFieldTypeString	+	Complext_Percent :esriFieldTypeDouble
+	area_75 :esriFieldTypeDouble	+	Adjusted_Forest_Area_75 :esriFieldTypeDouble
+	index_ :esriFieldTypeDouble	+	Timber_Volume :esriFieldTypeDouble
+	percent_ :esriFieldTypeDouble	+	Gross_Freost_Vol_/5 :esriField lypeDouble
+	area_/50 :esriFieldTypeDouble	+	Logged_NotLandUse_/5to96 :esriFieldTypeDouble
+	volume :esriField I ypeDouble	+	Logged_LandUse_/3to90 :esriFieldTypeDouble
+	vol_75 :esriFieldTypeDouble	+	Landose_NotLogged_75to96 est SL :estiFieldTypeDouble
+	togo .esriFieldTypeDouble	+	LogAndLUse 75to96 Ext_ol .csni leid TypeDouble
+	to961 :esriFieldTypeDouble	+	LogAndLUse 75to96 Ext Kst :esriFieldTypeDouble
+	ext sl0 :esriFieldTypeDouble	+	LogAndLUse 75to96 Ext In :esriFieldTypeDouble
+	ext_alt0 :esriFieldTypeDouble	+	LogAndLUse_75to96_Ext_Man :esriFieldTypeDouble
+	ext_kst0 :esriFieldTypeDouble	+	LogAndLUse_75to96_Ser_SI :esriFieldTypeDouble
+	ext_in0 :esriFieldTypeDouble	+	LogAndLUse_75to96_Ser_In :esriFieldTypeDouble
+	ext_man0 :esriFieldTypeDouble	+	Logged_NotLandUse_Current :esriFieldTypeDouble
+	ser_sl0 :esriFieldTypeDouble	+	Logged_LandUse_Current :esriFieldTypeDouble
+	ser_in0 :esriFieldTypeDouble	+	LandUse_NotLogged_Current :esriField I ypeDouble
+	current_ :esriField ypeDouble	+	LogAndLlos Current Strate
+	currentu :esni-ieidiypeDouble	+	LogAnd Use Current Ext Alt JestiField Type Double
+	current 1 :esriField TypeDouble	+	LogAndLUse Current Ext Kst :esriFieldTypeDouble
+	ext sl1 :esriFieldTypeDouble	+	LogAndLUse Current Ext In :esriFieldTypeDouble
+	ext_alt1_:esriFieldTypeDouble	+	LogAndLUse Current Ext Man :esriFieldTypeDouble
+	ext kst1 :esriFieldTvpeDouble	+	LogAndLUse_Current_Ser_SI :esriFieldTypeDouble
+	ext_in1 :esriFieldTypeDouble	+	LogAndLUse_Current_Ser_In :esriFieldTypeDouble
+	ext_man1 :esriFieldTypeDouble	+	Rev_Gross_Forest_Area :esriFieldTypeDouble
+	ser_sl1 :esriFieldTypeDouble	+	Rev_Adjusted_Forest_Area :esriFieldTypeDouble
+	ser_in1 :esriFieldTypeDouble	+	Rev_Gross_Forest_Vol :esriFieldTypeDouble
+	area2 :esriFieldTypeDouble	+	plan_id :esriField ypeInteger
+	area3 :esriField I ypeDouble		
+	forest_vol :esnFieldTypeDouble		

<<Polygon>> ConcessionArea

<< Field>>

- plan id :esriFieldTypeDouble + name :esriFieldTypeString
- area :esriFieldTypeDouble purchase :esriFieldTypeDate
- exp :esriFieldTypeDate constype :esriFieldTypeString status :esriFieldTypeString
- scale :esriFieldTypeString
- province :esriFieldTypeDouble

<<Polygon>> PlanĂrea

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble
- +
- type :esriFieldTypeString PRJHARVOL :esriFieldTypeDouble plan_id :esriFieldTypeDouble
- + year :esriFieldTypeString
- +
- name :esriFieldTypeString area2 :esriFieldTypeDouble

<<Polygon>> Extreme_Karst

<<Field>>

- province :esriFieldTypeDouble provname :esriFieldTypeString
- area :esriFieldTypeDouble
- landform :esriFieldTypeSmallInteger

<<Polygon>> Extreme_Inundation

- <<Field>> province :esriFieldTypeDouble

- provname :esriFieldTypeDouble inund :esriFieldTypeString
- iextent :esriFieldTypeSmallInteger

<<Polygon>> Serious_SlopeRelief

<<Field>>

- province :esriFieldTypeDouble
- provname :esriFieldTypeDouble
- slope1 :esriFieldTypeSmallInteger slope2 :esriFieldTypeString relief :esriFieldTypeString

<<Polyline>> F_Strip_Line

<<Field>>

+

+

+

- vegetation :esriFieldTypeString plan_id :esriFieldTypeInteger survey_number :esriFieldTypeString survey_name :esriFieldTypeString + +
- survey_date :esrFieldTypeDate block_number :esriFieldTypeString strip :esriFieldTypeString + +
- strip_volume_tesriFieldTypeDouble strip_volume_per_ha_tesriFieldTypeDouble start_lat_tesriFieldTypeDouble + +
- +
- + start_lon :esriFieldTypeDouble +
- end_lat :esriFieldTypeDouble end_lon :esriFieldTypeDouble +
- +
- last_update :esriFieldTypeDate loi_flag :esriFieldTypeString slope_min :esriFieldTypeDouble +
- ++ slope_max :esriFieldTypeDouble
- +
 - elevation_min :esriFieldTypeDouble elevation_max :esriFieldTypeDouble

<<Polygon>> Extreme_Altitude

- <<Field>>
- province :esriFieldTypeDouble
- + provname :esriFieldTypeDouble
- altitude :esriFieldTypeString

<<Polygon>> Extreme_Slope

<<Field>>

- slope1 :esriFieldTypeDouble + +
- province :esriFieldTypeDouble +
- provname :esriFieldTypeString area :esriFieldTypeDouble

<<Polygon>> Extreme_Mangrove

<<Field>>

- province :esriFieldTypeDouble
- vegtype :esriFieldTypeDouble area :esriFieldTypeDouble

<<Polygon>> Serious_Inundation

<<Field>>

- province :esriFieldTypeDouble provname :esriFieldTypeString
- + area :esriFieldTypeDouble
- + +
- inund :esriFieldTypeString iextent :esriFieldTypeSmallInteger

<<Polygon>> Logged_NotLandUse_Current

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble
- + area2 :esriFieldTypeDouble
- type :esriFieldTypeString acharvol :esriFieldTypeDouble
- + plan_id :esriFieldTypeDouble year :esriFieldTypeString
- name :esriFieldTypeString

<<Polygon>> Logged_LandUse_Current

<<Field>>

- province :esriFieldTypeDouble
- area :esriFieldTypeDouble +
- area2 :esriFieldTypeDouble
- type :esriFieldTypeString acharvol :esriFieldTypeDouble
- plan_id :esriFieldTypeDouble year :esriFieldTypeString name :esriFieldTypeString +

<<Polygon>> LandUse_NotLogged_Current

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble
- area2 :esriFieldTypeDouble
- type :esriFieldTypeString acharvol :esriFieldTypeDouble
- + plan_id :esriFieldTypeDouble
- year :esriFieldTypeString name :esriFieldTypeString

<<Polygon>> PROV

- <<Field>>
- code :esriFieldTypeDouble province :esriFieldTypeString

<<Polygon>> Protected_Area

<<Field>>

- protected_id :esriFieldTypeDouble name :esriFieldTypeString type :esriFieldTypeString

- gaz_date :esriFieldTypeString province :esriFieldTypeString
- location :esriFieldTypeString
- + + tenure :esriFieldTypeString area :esriFieldTypeDouble
- altitude :esriFieldTypeString
- logitude :esriFieldTypeString latitude :esriFieldTypeString

<<Polygon>> Logged_NotLandUse_7596

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble

<<Polygon>> Logged_NotLandUse_Current_Merge

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble +++

<<Polygon>> Logged_LandUse_7596

<<Field>>

- province :esriFieldTypeDouble area :esriFieldTypeDouble +

<<Polygon>> Logged_LandUse_Current_Merge

<<Field>>

- + province :esriFieldTypeDouble area :esriFieldTypeDouble +

<<Polygon>> LandUse_NotLogged_7596

<<Field>>

privnce :esriFieldTypeDouble area :esriFieldTypeDouble

<<Polygon>>

LandUse_NotLogged_Current_Merge

<<Field>>

province :esriFieldTypeDouble + area :esriFieldTypeDouble

<<Polygon>> Logged_And_LUse_Current

<<Field>>

province :esriFieldTypeDouble area :esriFieldTypeDouble

<<Polygon>> Logged_And_LUse_7596

<<Field>>

- + area :esriFieldTypeDouble
- privnce :esriFieldTypeDouble

<<Polygon>> Tmpinfo

<<Field>> province :esriFieldTypeString FMU :esriFieldTypeDouble + zone :esriFieldTypeDouble map_no :esriFieldTypeDouble map_id :esriFieldTypeDouble + + + veg_type :esriFieldTypeString veg_area :esriFieldTypeDouble slope :esriFieldTypeDouble + + + altitude :esriFieldTypeDouble + karst :esriFieldTypeDouble inundation :esriFieldTypeDouble + + mangrove :esriFieldTypeDouble sloperelie :esriFieldTypeDouble inundati0 :esriFieldTypeDouble + + + area :esriFieldTypeDouble area0 :esriFieldTypeDouble extreme :esriFieldTypeDouble + + + serious :esriFieldTypeDouble area1 :esriFieldTypeDouble ext_sl :esriFieldTypeDouble + + + ext_alt :esriFieldTypeDouble + ext_kst :esriFieldTypeDouble ext_in :esriFieldTypeDouble + + ext_man :esriFieldTypeDouble + ser_sl :esriFieldTypeDouble ser in :esriFieldTypeDouble + + type :esriFieldTypeSmallInteger + no_dist :esriFieldTypeString veg_type_1 :esriFieldTypeString veg_type_2 :esriFieldTypeString + + + veg_type_3 :esriFieldTypeString type_base :esriFieldTypeString + + index_ :esriFieldTypeDouble percent_ :esriFieldTypeDouble area_75 :esriFieldTypeDouble + + + area_750 :esriFieldTypeDouble + volume :esriFieldTypeDouble vol_75 :esriFieldTypeDouble + to96 :esriFieldTypeDouble + to960 :esriFieldTypeDouble to961 :esriFieldTypeDouble ext_sl0 :esriFieldTypeDouble + + ext_alt0 :esriFieldTypeDouble ext_kst0 :esriFieldTypeDouble + + ext_in0 :esriFieldTypeDouble ext_man0 :esriFieldTypeDouble ser_sl0 :esriFieldTypeDouble ser_in0 :esriFieldTypeDouble + + + current_ :esriFieldTypeDouble current0 :esriFieldTypeDouble current1 :esriFieldTypeDouble + + + current2 :esriFieldTypeDouble ext_sl1 :esriFieldTypeDouble ext_alt1 :esriFieldTypeDouble + ext_kst1 :esriFieldTypeDouble ext_in1 :esriFieldTypeDouble ext_man1 :esriFieldTypeDouble + + + ser_sl1 :esriFieldTypeDouble ser_in1 :esriFieldTypeDouble area2 :esriFieldTypeDouble + + area3 :esriFieldTypeDouble forest_vol :esriFieldTypeDouble plan_id :esriFieldTypeString + name :esriFieldTypeString + constype :esriFieldTypeString status :esriFieldTypeString scale :esriFieldTypeString +

<<Polygon>> TmpLayer

<<Field>>

- province :esriFieldTypeString
- fmu :esriFieldTypeDouble +
- zone :esriFieldTypeDouble +
- plan_id :esriFieldTypeDouble

<<Polygon>> TmpLayer2

<<Field>>

- province :esriFieldTypeString +
- fmu :esriFieldTypeDouble zone :esriFieldTypeDouble
- + plan_id :esriFieldTypeDouble
- KEY_ID :esriFieldTypeString

< <objectclass>> master_Species</objectclass>	< <objectclass>> master_Report</objectclass>	< <objectclass>> ctrl_TimberVolume</objectclass>
 Province :int Zone :int Species :string D :double D/Fsw :double D/W :double FriK :double FriK :double 	 + Description :string + ReportName :string + ReportType :int + Group :int + Priority :int 	+ Province :int + Zone :int + VegType :string + Vol/ha :double + OriginalVol/ha :double + Comments :string
FriTb :double FriTb :double FriTB/Wri :double	< <objectclass>> master_TmpReport</objectclass>	< <objectclass>> master_Database</objectclass>
+ Fsw :acuble + FswC :double + FswTb :double + HI :double + HI/Hm :double + HIN :double	+ TmpReportName :string + sysdate :date/time + MachineName :string + DeleteFlag :int	+ Database :string + Last_Update :date/time + Del :int
+ Hm :double + Hm/D :double + Hm/D/Fsw :double + Hm/Fsw :double	< <objectclass>> master_PlanAreaType</objectclass>	< <objectclass>> master_LoggedOverType</objectclass>
+ Hm/Fsw/Wsw :double + Hm/Hs :double + Hm/Hs/Fsw :double	+ id :int + name :string	+ id :int + name :string
+ Hm/HsN :double + Hm/Sc :double + HmAr :double + Hmd :double	< <objectclass>> master_Zones</objectclass>	< <objectclass>> F_SURVEY_SUMMARY</objectclass>
+ Hme/Hm :double + Hm/HmAr :double + Hm/Ps :double + Hs :double + Hs :double	 + Zone :int + Name :string + Description :string 	+ plan_id :int + SURVEY_NUMBER :string + SURVEY_NAME :string + ADJ_NET_FOREST_AREA :double
 HsAr :double Hs/Fsw :double Hs/Fsm :double Hs/Ps :double Hs/Sa :double Hse :double L :double L/Lc :double L/LN :double 	< <objectclass>> master_VegTypes+ VegType :string+ Group :string+ Description :string+ Merchantable :int</objectclass>	+ VOL10_PER_HA :double + PVOL_PER_HA :double + SVOL_PER_HA :double + TOTALVOL_PER_HA :double + MVOL_PER_HA :double + VOL10_GRP_PER_HA :double + PVOL_GRP_PER_HA :double + SVOL_GRP_PER_HA :double + TOTALVOL_GRP_PER_HA :double
+ L/Ls :double + LAr :double + Lc :double + LN :double	< <objectclass>> master_Province</objectclass>	+ MVOL_GRP_PER_HA :double + LAST_UPDATE :date/time + FIMS_FLAG :boolean
+ LN/LsN :double + Ls :double + LsAr :double + Ls/L :double + Ls/L :double	+ CODE_N :int + CODE_A :string + DESCRIP :string	
+ LsN :double + LsN/LN :double + M :double	< <objectclass>> master_SusceptibleVegTypes</objectclass>	< <objectclass>> ctrl_LastCalclationDate</objectclass>
+ PI :double + PI/FriK :double + PI/Frix :double + PI/Fsw :double + PI/Hm :double	 Province :int FMU :int VegType :string SusceptibleType :string 	 + Province :int + ConcessionFlag :int + CalcDate :date/time
+ Po :double + Po/FriK :double + Po/Fsw :double		
+ Po/FswTb :double + Po/Hs :double + Po/Hs :double	< <objectclass>> master_user</objectclass>	< <objectclass>> concessionFile</objectclass>
+ Po/Wsw :double + Ps :double + Ps/FriK :double + W :double	 + usemame :string + password :string + authority :int 	+ id :int + plan_id :int + filename :string + fdata :binary

1.2 Documentation of FIMS application schema

1.2.1 FMU

Forest Mapping Unit(FMU). The FMU is the basic mapping unit.

An FMU is an area of forest or other vegetation mapped as a polygon during the 1:100,000 mapping process.

Each FMU is assigned a code describing the vegetation/forest type. A total of 58 forest and other vegetation types are distinguished, and of these 35 are forest types. A further four types deal with land use, urban areas, bare areas and lakes. FMU numbering commences with 1 for each Province.

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code

Value Domain CODE_N value of master_Province

FMU : esriFieldTypeDouble

FMU

- Value Domain
 - Sequence number from 1 in each province

Zone : esriFieldTypeDouble

Forest Zone code

- Value Domain Zone number of master_Zone
- Map_No : esriFieldTypeDouble Original map number from 1:100,000 sheets

Map_id : esriFieldTypeDouble

1:100,000 sheet id

Veg_Type : esriFieldTypeString Vegetation type

Veg_Area : esriFieldTypeDouble Vegetation area (hectares)

Slope : esriFieldTypeDouble

Extreme physical limitations - slope (ha) - derived from PNGRIS overlay slope1> 30 degrees (slope1=6)

Altitude : esriFieldTypeDouble

Extreme physical limitations - altitude (ha) - derived from PNGRIS overlay altitude>2,400m (altitude=7 or 8) (Note: Extreme slope takes precedence)

Karst : esriFieldTypeDouble

Extreme physical limitations - karst (ha) - derived from PNGRIS overlay landform polygonal karst (landform=55)

Inundation : esriFieldTypeDouble

Extreme physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation > 80% of area (inund=5 or 6, iextent=4)

Mangrove : esriFieldTypeDouble

Extreme physical limitations - mangrove (ha) - derived from FIM vegetation type of Mangrove (Veg_Type='M')

SlopeRelief : esriFieldTypeDouble

Serious physical limitations - slope and relief (ha) - derived from PNGRIS overlay slope1=20-30 degrees, slope2=0 or 30 degrees (slope2=0 or 6), very high or high relief (relief=4,5)

Inundati0 : esriFieldTypeDouble Serious physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation 50- 80% of area (inund=5 or 6, iextent=3)

Area : esriFieldTypeDouble Total of extreme constraint area

Area0 : esriFieldTypeDouble Total of serious constraint area

Extreme : esriFieldTypeDouble Proportion of FMU in extreme constraint area

Serious : esriFieldTypeDouble Proportion of FMU in serious constraint area

Area1 : esriFieldTypeDouble Protected area (DEC layer) in FMU

Ext_SI : esriFieldTypeDouble Protected area (DEC layer) in extreme slope area

Ext_Alt : esriFieldTypeDouble Protected area (DEC layer) in extreme altitude area

Ext_Kst : esriFieldTypeDouble Protected area (DEC layer) in extreme karst area

Ext_In : esriFieldTypeDouble Protected area (DEC layer) in extreme inundation area

Ext_Man : esriFieldTypeDouble Protected area (DEC layer) in extreme mangrove area

Ser_SI : esriFieldTypeDouble Protected area (DEC layer) in serious slope area Ser_In : esriFieldTypeDouble

Protected area (DEC layer) in serious inundation area

Type : esriFieldTypeInteger Fragile forest type flag (DEC)

No_Dist : esriFieldTypeString Forest type code without reference to disturbance

VEG_TYPE_1 : esriFieldTypeString Forest type code 1

VEG_TYPE_2 : esriFieldTypeString Forest type code 2

VEG_TYPE_3 : esriFieldTypeString Forest type code 3

Type_Base : esriFieldTypeString Forest type code without reference to disturbance or complex

Area_75 : esriFieldTypeDouble Gross forest area in 1975

Index_ : esriFieldTypeDouble Level of disturbance (eg. 9 = 90% undisturbed)

Percent_: esriFieldTypeDouble Perecentage of vegetation type complex that is forest

Area_750 : esriFieldTypeDouble Gross forest area adjusted for disturbance and complex

Volume : esriFieldTypeDouble Timber volume estimate for forest type

Vol_75 : esriFieldTypeDouble

Gross forest volume in 1975 (adjusted forest area * timber volume)

to96 : esriFieldTypeDouble

Area logged but not converted to land use - 1975 to 1996

to960 : esriFieldTypeDouble

Area logged and converted to land use - 1975 to 1996

to961 : esriFieldTypeDouble

Area land use not logged (cleared) and converted to land use - 1975 to 1996

Ext_SI0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme slope constraint area

Ext_Alt0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme altitude constraint area

Ext_Kst0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme karst constraint area

Ext_In0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme inundation constraint area

Ext_Man0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in extreme mangrove constraint area

Ser_SI0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in serious slope/relief constraint area

Ser_In0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in serious inundation constraint area

Current_: esriFieldTypeDouble

Area logged but not converted to land use - current

Current0 : esriFieldTypeDouble Area logged and converted to land use - current

Current1 : esriFieldTypeDouble Area land use not logged (cleared) and converted to land use - current

Current2 : esriFieldTypeDouble Total Area Logged and Land Use

Ext_SI1 : esriFieldTypeDouble Total logged and land use area - current - in extreme slope constraint area

Ext_Alt1 : esriFieldTypeDouble Total logged and land use area - current - in extreme altitude constraint area

Ext_Kst1 : esriFieldTypeDouble Total logged and land use area - current - in extreme ksrst constraint area

Ext_In1 : esriFieldTypeDouble Total logged and land use area - current - in extreme inundation constraint area

Ext_Man1 : esriFieldTypeDouble Total logged and land use area - current - in extreme mangrove constraint area

Ser_SI1 : esriFieldTypeDouble Total logged and land use area - current - in serious slope/relief constraint area

Ser_In1 : esriFieldTypeDouble Total logged and land use area - current - in serious inundation constraint area

Area2 : esriFieldTypeDouble Revised gross forest area

Area3 : esriFieldTypeDouble Revised adjusted forest area

Forest_Vol : esriFieldTypeDouble Revised timber volume

1.2.2 Ctrl_*_Concession_FMU

Forest Mapping Unit(FMU) in Concession Area

FeatureType : ObjectClass

isAbstract : False

Attribute

province : esriFieldTypeInteger

Province code

Value Domain CODE_N value of master_Province

FMU : esriFieldTypeInteger

FMU

- Value Domain FMU value
- Zone : esriFieldTypeInteger

Forest Zone code

- Value Domain Zone code of master_Zone
- Map_No : esriFieldTypeDouble Original map number from 1:100,000 sheets

Map_id : esriFieldTypeDouble 1:100,000 sheet id

Veg_Type : esriFieldTypeString

Vegetation type

Veg_Area : esriFieldTypeDouble Vegetation area (hectares)

Extreme_Slope : esriFieldTypeDouble

Extreme physical limitations - slope (ha) - derived from PNGRIS overlay slope1> 30 degrees (slope1=6)

Extreme_Altitude : esriFieldTypeDouble

Extreme physical limitations - altitude (ha) - derived from PNGRIS overlay altitude>2,400m (altitude=7 or 8) (Note: Extreme slope takes precedence)

Extreme_Karst : esriFieldTypeDouble

Extreme physical limitations - karst (ha) - derived from PNGRIS overlay landform polygonal karst (landform=55)

Extreme_Inundation : esriFieldTypeDouble

Extreme physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation > 80% of area (inund=5 or 6, iextent=4)

Extreme_Mangrove : esriFieldTypeDouble

Extreme physical limitations - mangrove (ha) - derived from FIM vegetation type of Mangrove (Veg_Type='M')

Serious_SlopeRelief : esriFieldTypeDouble

Serious physical limitations - slope and relief (ha) - derived from PNGRIS overlay slope1=20-30 degrees, slope2=0 or 30 degrees (slope2=0 or 6), very high or high relief (relief=4,5)

Serious_Inundation : esriFieldTypeDouble

Serious physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation 50- 80% of area (inund=5 or 6, iextent=3)

Extreme_Constraints_Area : esriFieldTypeDouble Total of extreme constraints area

Serious_Constraints_Area : esriFieldTypeDouble Total of serious constraints area

Prop_Extreme : esriFieldTypeDouble Proportion of FMU in extreme constraints area

Prop_Serious : esriFieldTypeDouble Proportion of FMU in serious constraints area

Protected_Area : esriFieldTypeDouble Protected area (DEC layer) in FMU

Protected_Ext_SI : esriFieldTypeDouble Protected area (DEC layer) in extreme slope area

Protected_Ext_Alt : esriFieldTypeDouble Protected area (DEC layer) in extreme altitude area

Protected_Ext_Kst : esriFieldTypeDouble Protected area (DEC layer) in extreme karst area

Protected_Ext_In : esriFieldTypeDouble Protected area (DEC layer) in extreme inundation area

Protected_Ext_Man : esriFieldTypeDouble Protected area (DEC layer) in extreme mangrove area

Protected_Ser_SI : esriFieldTypeDouble Protected area (DEC layer) in serious slope area

Protected_Ser_In : esriFieldTypeDouble Protected area (DEC layer) in serious inundation area Fragile_Forest_Type : esriFieldTypeInteger Fragile forest type flag (DEC)

Forest_Type_No_Dist : esriFieldTypeString Forest type code without reference to disturbance

Forest_Type_Base : esriFieldTypeString Forest type code without reference to disturbance or complex

Gross_Forest_Area_75 : esriFieldTypeDouble Gross forest area in 1975

Disturbance_Index : esriFieldTypeDouble Level of disturbance (eg. 9 = 90% undisturbed)

Complex_Percent : esriFieldTypeDouble Perecentage of vegetation type complex that is forest

Adjusted_Forest_Area_75 : esriFieldTypeDouble Gross forest area adjusted for disturbance and complex

Timber_Volume : esriFieldTypeDouble Timber volume estimate for forest type

Gross_Forest_Vol_75 : esriFieldTypeDouble Gross forest volume in 1975 (adjusted forest area * timber volume)

Logged_NotLandUse_75to96 : esriFieldTypeDouble Area logged but not converted to land use - 1975 to 1996

Logged_LandUse_75to96 : esriFieldTypeDouble Area logged and converted to land use - 1975 to 1996

LandUse_NotLogged_75to96 : esriFieldTypeDouble Area land use not logged (cleared) and converted to land use - 1975 to 1996 LogAndLuse_75to96 : esriFieldTypeDouble

Total Area Logged and Land Use - 1975 to 1996

LogAndLUse_75to96_Ext_SI : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme slope constraint area

LogAndLUse_75to96_Ext_Alt : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme altitude constraint area

LogAndLUse_75to96_Ext_Kst : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in extreme karst constraint area

LogAndLUse_75to96_Ext_In : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme inundation constraint area

LogAndLUse_75to96_Ext_Man : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in extreme mangrove constraint area

LogAndLUse_75to96_Ser_SI : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in serious slope/relief constraint area

LogAndLUse_75to96_Ser_In : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in serious inundation constraint area

Logged_NotLandUse_Current : esriFieldTypeDouble Area logged but not converted to land use - current

Logged_LandUse_Current : esriFieldTypeDouble Area logged and converted to land use - current

LandUse_NotLogged_Current : esriFieldTypeDouble Area land use not logged (cleared) and converted to land use - current LogAndLuse_Current : esriFieldTypeDouble Total Area Logged and Land Use

LogAndLUse_Current_Ext_SI : esriFieldTypeDouble Total logged and land use area - current - in extreme slope constraint area

LogAndLUse_Current_Ext_Alt : esriFieldTypeDouble Total logged and land use area - current - in extreme altitude constraint area

LogAndLUse_Current_Ext_Kst : esriFieldTypeDouble Total logged and land use area - current - in extreme ksrst constraint area

LogAndLUse_Current_Ext_In : esriFieldTypeDouble Total logged and land use area - current - in extreme inundation constraint area

LogAndLUse_Current_Ext_Man : esriFieldTypeDouble Total logged and land use area - current - in extreme mangrove constraint area

LogAndLUse_Current_Ser_SI : esriFieldTypeDouble Total logged and land use area - current - in serious slope/relief constraint area

LogAndLUse_Current_Ser_In : esriFieldTypeDouble Total logged and land use area - current - in serious inundation constraint area

Rev_Gross_Forest_Area : esriFieldTypeDouble Revised gross forest area

Rev_Adjusted_Forest_Area : esriFieldTypeDouble Revised adjusted forest area

Rev_Gross_Forest_Vol : esriFieldTypeDouble Revised timber volume

plan_id : esriFieldTypeInteger Concession Area ID

1.2.3 ConcessionArea

Concession Area or Proposed Concession Area

FeatureType : Polygon

isAbstract : False

Attribute

plan_id : esriFieldTypeDouble

The Province (these numbers are formally listed in the Plans Listing document held by the Mapping Branch Manager.

name : esriFieldTypeString

Name of the new concession area.

area : esriFieldTypeDouble

Area in hectares of the new concession area.

purchase : esriFieldTypeDate Purchase date

exp : esriFieldTypeDate Expand date

constype : esriFieldTypeString Concession Type

status : esriFieldTypeString

Status of a new concession area as Proposed.

Value is [Proposed] or [Concession]

scale : esriFieldTypeString Scale value

province : esriFieldTypeDouble Province code Value Domain

CODE_N value of master_Province

1.2.4 Protected_Area

Protected Area

FeatureType : Polygon

isAbstract : False

Attribute

protected_id : esriFieldTypeDouble Protected area id

name : esriFieldTypeString Name of the new protected area.

type : esriFieldTypeString Protected area type

gaz_date : esriFieldTypeString Designated date by protected area

province : esriFieldTypeString Province code

> Value Domain CODE_N value of master_Province

location : esriFieldTypeString Protected area's location (Character string)

tenure : esriFieldTypeString Protected area's holder

area : esriFieldTypeDouble Area in hectares of the new protected area. altitude : esriFieldTypeString Altitude description

logitude : esriFieldTypeString Protected area's location (longitude)

latitude : esriFieldTypeString Protected area's location (latitude)

1.2.5 Extreme_Altitude

Extreme physical limitations - altitude (ha) - derived from PNGRIS overlay altitude>2,400m (altitude=7 or 8) (Note: Extreme slope takes precedence)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain
 - CODE_N value of master_Province

provname : esriFieldTypeString Province name.

area : esriFieldTypeDouble Ext Altitude Area (ha).

altitude : esriFieldTypeString Description

1.2.6 Extreme_Karst

Extreme physical limitations - karst (ha) - derived from PNGRIS overlay landform

polygonal karst (landform=55)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

provname : esriFieldTypeString Province name.

area : esriFieldTypeDouble Ext Karst Area (ha).

landfrom : esriFieldTypeSmallInteger Description

1.2.7 Extreme_Slope

Extreme physical limitations - slope (ha) - derived from PNGRIS overlay slope1> 30 degrees (slope1=6)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

provname : esriFieldTypeString Province name.

area : esriFieldTypeDouble Ext Slope Area (ha).

slope1 : esriFieldTypeString Description

1.2.8 Extreme_Inundation

Extreme physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation > 80% of area (inund=5 or 6, iextent=4)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

provname : esriFieldTypeString Province name.

area : esriFieldTypeDouble Ext Altitude Area (ha).

inund : esriFieldTypeString description1

iextent : esriFieldTypeSmallInteger description2

1.2.9 Extreme_Mangrove

Extreme physical limitations - mangrove (ha) - derived from FIM vegetation type of Mangrove (Veg_Type='M')

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

vegtype : esriFieldTypeString Vegetation Type.

area : esriFieldTypeDouble Ext Altitude Area (ha).

1.2.10 Serious_Inundation

Serious physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation 50- 80% of area (inund=5 or 6, iextent=3)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

provname : esriFieldTypeString province name.

area : esriFieldTypeDouble Ser Inundation Area (ha).

inund : esriFieldTypeString description1

iextent : esriFieldTypeSmallInteger description2

1.2.11 Serious_Relief

Serious physical limitations - slope and relief (ha) - derived from PNGRIS overlay slope1=20-30 degrees, slope2=0 or 30 degrees (slope2=0 or 6), very high or high relief (relief=4,5)

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

provname : esriFieldTypeString Province name.

area : esriFieldTypeDouble Ser Relief Area (ha).

slope1 : esriFieldTypeSmallInteger description1 slope2 : esriFieldTypeString description2

relief : esriFieldTypeString description3

1.2.12 Logged_And_LUse_Current

Total Area Logged and Land Use

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Total Area Logged and Land Use (ha).

1.2.13 Logged_And_Luse_7596

Total Area Logged and Land Use - 1975 to 1996

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain
 - CODE_N value of master_Province

area : esriFieldTypeDouble

Total Area Logged and Land Use (ha).

1.2.14 Logged_NotLandUse_Current

Area logged but not converted to land use

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain CODE_N value of master_Province
- area : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Manual input)

area2 : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Automatic input by FIMS)

type : esriFieldTypeString

Logged over area type.

Value Domain
 Code value of master_LoggedOverType

acharvol : esriFieldTypeDouble Actual harvest Volume.

Plan_id : esriFieldTypeDouble plan_id to be associated with the area

year : esriFieldTypeString

Years of logging

name : esriFieldTypeString

Name

1.2.15 Logged_NotLandUse_7596

Area logged but not converted to land use - 1975 to 1996

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha).

1.2.16 Logged_NotLandUse_Current_Merge

Layer for process of area logged but not converted to land use - current

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain
 - CODE_N value of master_Province

area : esriFieldTypeDouble
Area logged but not converted to land use (ha).

1.2.17 Logged_LandUse_Current

Area logged and converted to land use

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Manual input)

area2 : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Automatic input by FIMS)

type : esriFieldTypeString

Logged Over Area Type.

Value Domain
Code of master_LoggedOverType

ACHARVOL : esriFieldTypeDouble Actual harvest Volume.

Plan_id : esriFieldTypeDouble Concession ID.

YEAR : esriFieldTypeString Years of logging

name : esriFieldTypeString

Name

1.2.18 Logged_LandUse_7596

Area logged and converted to land use - 1975 to 1996

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha).

1.2.19 Logged_LandUse_Current_Merge

Layer for processing of area logged and converted to land use - Current

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain
 - CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha).

1.2.20 LandUse_NotLogged_Current

Area land use not logged (cleared) and converted to land use

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain CODE_N value of master_Province
- area : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Manual input)

area2 : esriFieldTypeDouble

Area logged but not converted to land use (ha). (Automatic input by FIMS)

type : esriFieldTypeString

Logged Over Area Type.

Value Domain
Code of master_LoggedOverType

ACHARVOL : esriFieldTypeDouble Actual harvest Volume.

Plan_id : esriFieldTypeDouble Concession ID.

YEAR : esriFieldTypeString

Years of logging.

name : esriFieldTypeString

Name

1.2.21 LandUse_NotLogged_7596

Area land use not logged (cleared) and converted to land use - 1975 to 1996

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha).

1.2.22 LandUse_NotLogged_Current_Merge

Layer for processing of area land use not logged (cleared) and converted to land use – Current

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

- Value Domain
 - CODE_N value of master_Province

area : esriFieldTypeDouble

Area logged but not converted to land use (ha).

1.2.23 PROV

Layer for moving process to minimap in Province Window

FeatureType : Polygon

isAbstract : False

Attribute

code : esriFieldTypeDouble

Province code.

Value Domain

CODE_N value of master_Province

province : esriFieldTypeString province name.

1.2.24 F_STRIP_LINE

Attribute of STRIP LINE of FIPS

FeatureType : PolyLine

isAbstract : False

Attribute

plan_id : esriFieldTypeInteger

the Province (these numbers are formally listed in the Plans Listing document held by the Mapping Branch Manager.

Survey_number : esriFieldTypeString FIPS Survey Number.

Survey_name : esriFieldTypeString

FIPS Survey Name.

Survey_date : esriFieldTypeDate FIPS Survey Date.

Block_number : esriFieldTypeString FIPS Block Number.

Strip : esriFieldTypeString FIPS Strip Line Number.

Strip_volume : esriFieldTypeDouble Strip Forest Volume.

Strip_volume_per_ha : esriFieldTypeDouble Strip Forest Volume / ha.

Start_lat : esriFieldTypeDouble Strip Line Start Point (Lat).

Start_lon : esriFieldTypeDouble Strip Line Start Point (Lon).

End_lat : esriFieldTypeDouble Strip Line End Point (Lat).

End_lon : esriFieldTypeDouble Strip Line End Point (Lon).

Last_update : esriFieldTypeDate Calculation time and date of FIPS

LOI_flag : esriFieldTypeString Type of Survey

Slope_min : esriFieldTypeDouble

Minimum angle of slope

Slope_max : esriFieldTypeDouble Maximum angle of slope

Elevation_min : esriFieldTypeDouble Minimum elevation

Elevation_max : esriFieldTypeDouble Maximum elevation

Vegetation : esriFieldTypeString Representative vegetation type

1.2.25 PlanArea

Plan Area

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeDouble

Province code.

Value Domain CODE_N value of master_Province

area : esriFieldTypeDouble

Plan area company reported (ha).

area2 : esriFieldTypeDouble

Plan Area (automatic calculation by FIMS) (ha).

type : esriFieldTypeString

Plan Area Type.

Value Domain

Code value of master_PlanAreaType

PRJHARVOL : esriFieldTypeDouble Project harvest Volume.

Plan_id : esriFieldTypeDouble Concession ID.

YEAR : esriFieldTypeString Years of logging.

name : esriFieldTypeString Logged Over Area name.

1.2.26 TMPINFO

Calculation Temporary Table

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeInteger

Province code

Value Domain CODE_N value of master_Province

FMU : esriFieldTypeInteger

FMU

Value Domain

Sequence number from 1 in each province

Zone : esriFieldTypeInteger

Forest Zone code

- Value Domain
 - Zone number of master_Zone

Map_No : esriFieldTypeDouble Original map number from 1:100,000 sheets

Map_id : esriFieldTypeDouble 1:100,000 sheet id

Veg_Type : esriFieldTypeString Vegetation type

Veg_Area : esriFieldTypeDouble Vegetation area (hectares)

Slope : esriFieldTypeDouble Extreme physical limitations - slope (ha) - derived from PNGRIS overlay slope1> 30 degrees (slope1=6)

Altitude : esriFieldTypeDouble

Extreme physical limitations - altitude (ha) - derived from PNGRIS overlay altitude>2,400m (altitude=7 or 8) (Note: Extreme slope takes precedence)

Karst : esriFieldTypeDouble

Extreme physical limitations - karst (ha) - derived from PNGRIS overlay landform polygonal karst (landform=55)

Inundation : esriFieldTypeDouble

Extreme physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation > 80% of area (inund=5 or 6, iextent=4)

Mangrove : esriFieldTypeDouble

Extreme physical limitations - mangrove (ha) - derived from FIM vegetation type of Mangrove (Veg_Type='M')

SlopeRelief : esriFieldTypeDouble

Serious physical limitations - slope and relief (ha) - derived from PNGRIS overlay slope1=20-30 degrees, slope2=0 or 30 degrees (slope2=0 or 6), very high or high

relief (relief=4,5)

Inundati0 : esriFieldTypeDouble

Serious physical limitations - inundation (ha) - derived from PNGRIS overlay permanent or near permanent inundation 50- 80% of area (inund=5 or 6, iextent=3)

Area : esriFieldTypeDouble Total of extreme constraints area

Area0 : esriFieldTypeDouble Total of serious constraints area

Extreme : esriFieldTypeDouble Proportion of FMU in extreme constraints area

Serious : esriFieldTypeDouble Proportion of FMU in serious constraints area

Area1 : esriFieldTypeDouble Protected area (DEC layer) in FMU

- Ext_SI : esriFieldTypeDouble Protected area (DEC layer) in extreme slope area
- Ext_Alt : esriFieldTypeDouble Protected area (DEC layer) in extreme altitude area
- Ext_Kst : esriFieldTypeDouble Protected area (DEC layer) in extreme karst area
- Ext_In : esriFieldTypeDouble Protected area (DEC layer) in extreme inundation area
- Ext_Man : esriFieldTypeDouble Protected area (DEC layer) in extreme mangrove area

Ser_SI : esriFieldTypeDouble

Protected area (DEC layer) in serious slope area

Ser_In : esriFieldTypeDouble Protected area (DEC layer) in serious inundation area

Type : esriFieldTypeInteger Fragile forest type flag (DEC)

No_Dist : esriFieldTypeString Forest type code without reference to disturbance

VEG_TYPE_1 : esriFieldTypeString Forest type code 1

VEG_TYPE_2 : esriFieldTypeString Forest type code 2

VEG_TYPE_3 : esriFieldTypeString Forest type code 3

Type_Base : esriFieldTypeString Forest type code without reference to disturbance or complex

Area_75 : esriFieldTypeDouble Gross forest area in 1975

- Index_ : esriFieldTypeDouble Level of disturbance (eg. 9 = 90% undisturbed)
- Percent_: esriFieldTypeDouble Perecentage of vegetation type complex that is forest
- Area_750 : esriFieldTypeDouble Gross forest area adjusted for disturbance and complex

Volume : esriFieldTypeDouble

Timber volume estimate for forest type

Vol_75 : esriFieldTypeDouble

Gross forest volume in 1975 (adjusted forest area * timber volume)

- to96 : esriFieldTypeDouble Area logged but not converted to land use - 1975 to 1996
- to960 : esriFieldTypeDouble Area logged and converted to land use - 1975 to 1996
- to961 : esriFieldTypeDouble

Area land use not logged (cleared) and converted to land use - 1975 to 1996

Ext_SI0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme slope constraint area

Ext_Alt0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in extreme altitude constraint area

Ext_Kst0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme karst constraint area

Ext_In0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in extreme inundation constraint area

- Ext_Man0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in extreme mangrove constraint area
- Ser_SI0 : esriFieldTypeDouble Total logged and land use area 1975 to 1996 in serious slope/relief constraint area

Ser_In0 : esriFieldTypeDouble

Total logged and land use area 1975 to 1996 in serious inundation constraint area

Current_ : esriFieldTypeDouble Area logged but not converted to land use - current

Current0 : esriFieldTypeDouble Area logged and converted to land use - current

Current1 : esriFieldTypeDouble Area land use not logged (cleared) and converted to land use - current

Current2 : esriFieldTypeDouble Total Area Logged and Land Use

Ext_SI1 : esriFieldTypeDouble Total logged and land use area - current - in extreme slope constraint area

Ext_Alt1 : esriFieldTypeDouble Total logged and land use area - current - in extreme altitude constraint area

Ext_Kst1 : esriFieldTypeDouble Total logged and land use area - current - in extreme ksrst constraint area

Ext_In1 : esriFieldTypeDouble Total logged and land use area - current - in extreme inundation constraint area

Ext_Man1 : esriFieldTypeDouble Total logged and land use area - current - in extreme mangrove constraint area

Ser_SI1 : esriFieldTypeDouble Total logged and land use area - current - in serious slope/relief constraint area

Ser_In1 : esriFieldTypeDouble Total logged and land use area - current - in serious inundation constraint area

Area2 : esriFieldTypeDouble Revised gross forest area

Area3 : esriFieldTypeDouble Revised adjusted forest area

Forest_Vol : esriFieldTypeDouble Revised timber volume

plan_id : esriFieldTypeInteger the Province (these numbers are formally listed in the Plans Listing document held by the Mapping Branch Manager.

name : esriFieldTypeString name of the new concession area.

constype : esriFieldTypeString Concession Type

status : esriFieldTypeString status of a new concession area as Proposed. Value is 「Proposed」 or 「Concession」

scale : esriFieldTypeString scale value

1.2.27 TMPLAYER

Calculation Temporary Table

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeInteger

Province code

Value Domain

CODE_N value of master_Province

FMU : esriFieldTypeInteger

FMU

Value Domain
Seuence number from one in each province

Zone : esriFieldTypeInteger

Forest Zone code

Value Domain Zone number of master_Zone

PLAN_ID : esriFieldTypeDouble Concession Area ID

1.2.28 TMPLAYER2

Calculation Temporary Table

FeatureType : Polygon

isAbstract : False

Attribute

province : esriFieldTypeInteger

Province code

- Value Domain
 - CODE_N value of master_Province

FMU : esriFieldTypeInteger

FMU

Value Domain

Sequence number from 1 in each province

Zone : esriFieldTypeInteger

Forest Zone code

Value Domain
Zone number of master_Zone

PLAN_ID : esriFieldTypeDouble Concession Area ID

KEY_ID : esriFieldTypeString Key_ID

1.2.29 Master_Species

species Percentages by Forest Type by zone

FeatureType : ObjectClass

isAbstract : False

Attribute

province : int

Province code.

Value Domain CODE_N value of master_Province

zone : int

Forest Zone code

Value Domain Zone number of master_Zone

species : int

species name.(Forest Type name)

D : double

Spacies percentages by Forest Type by zone by Type "D"

D/Fsw : double

Spacies percentages by Forest Type by zone by Type "D/Fsw"

D/W : double

Spacies percentages by Forest Type by zone by Type "D/W"

FriK : double

Spacies percentages by Forest Type by zone by Type "FriK"

FriK/Ps : double

Spacies percentages by Forest Type by zone by Type "FriK/Ps"

FriTb : double

Spacies percentages by Forest Type by zone by Type "FriTb"

FriTb/Wri : double

Spacies percentages by Forest Type by zone by Type "FriTb/Wri"

$\mathsf{Fsw}:\mathsf{double}$

Spacies percentages by Forest Type by zone by Type "Fsw"

FswC : double

Spacies percentages by Forest Type by zone by Type "FswC"

Fsw/Tb : double

Spacies percentages by Forest Type by zone by Type "Fsw/Tb"

HI: double

Spacies percentages by Forest Type by zone by Type "HI"

HI/Hm : double

Spacies percentages by Forest Type by zone by Type "HI/Hm"

HIN : double

Spacies percentages by Forest Type by zone by Type "HIN"

Hm : double

Spacies percentages by Forest Type by zone by Type "Hm"

Hm/D : double

Spacies percentages by Forest Type by zone by Type "Hm/D"

Hm/D/Fsw : double

Spacies percentages by Forest Type by zone by Type "Hm/D/Fsw"

Hm/Fsw : double

Spacies percentages by Forest Type by zone by Type "Hm/Fsw"

Hm/Fsw/Wsw : double

Spacies percentages by Forest Type by zone by Type "Hm/Fsw/Wsw"

Hm/Hs : double

Spacies percentages by Forest Type by zone by Type "Hm/Hs"

Hm/Hs/Fsw : double

Spacies percentages by Forest Type by zone by Type "Hm/Hs/Fsw"

Hm/HsN : double

Spacies percentages by Forest Type by zone by Type "Hm/HsN"

Hm/Sc : double

Spacies percentages by Forest Type by zone by Type "Hm/Sc"

HmAr : double

Spacies percentages by Forest Type by zone by Type "HmAr"

Hmd : double

Spacies percentages by Forest Type by zone by Type "Hmd"

Hme/Hm : double

Spacies percentages by Forest Type by zone by Type "Hme/Hm"

Hm/HmAr : double

Spacies percentages by Forest Type by zone by Type "Hm/HmAr"

Hm/Ps : double

Spacies percentages by Forest Type by zone by Type "Hm/Ps"

Hs : double

Spacies percentages by Forest Type by zone by Type "Hs"

HsAr : double

Spacies percentages by Forest Type by zone by Type "HsAr"

Hs/Fsw : double

Spacies percentages by Forest Type by zone by Type "Hs/Fsw"

Hs/Hm : double

Spacies percentages by Forest Type by zone by Type "Hs/Hm"

Hs/Ps : double

Spacies percentages by Forest Type by zone by Type "Hs/Ps"

Hs/Sa : double

Spacies percentages by Forest Type by zone by Type "Hs/Sa"

Hse : double

Spacies percentages by Forest Type by zone by Type "Hse"

L : double

Spacies percentages by Forest Type by zone by Type "L"

L/Lc : double

Spacies percentages by Forest Type by zone by Type "L/Lc"

L/LN : double

Spacies percentages by Forest Type by zone by Type "L/LN"

L/Ls : double

Spacies percentages by Forest Type by zone by Type "L/Ls"

LAr : double

Spacies percentages by Forest Type by zone by Type "LAr"

Lc : double

Spacies percentages by Forest Type by zone by Type "Lc"

LN : double

Spacies percentages by Forest Type by zone by Type "LN"

LN/LsN : double

Spacies percentages by Forest Type by zone by Type "LN/LsN"

Ls : double

Spacies percentages by Forest Type by zone by Type "Ls"

$\mathsf{LsAr}:\mathsf{double}$

Spacies percentages by Forest Type by zone by Type "LsAr"

Ls/L : double

Spacies percentages by Forest Type by zone by Type "Ls/L"

Ls/Lc : double

Spacies percentages by Forest Type by zone by Type "Ls/Lc"

LsN : double

Spacies percentages by Forest Type by zone by Type "LsN"

LsN/LN : double

Spacies percentages by Forest Type by zone by Type "LsN/LN"

M : double

Spacies percentages by Forest Type by zone by Type "M"

PI : double

Spacies percentages by Forest Type by zone by Type "PI"

PI/FriK : double

Spacies percentages by Forest Type by zone by Type "PI/FriK"

PI/Fsw : double

Spacies percentages by Forest Type by zone by Type "PI/Fsw"

Pl/Hm : double

Spacies percentages by Forest Type by zone by Type "Hm"

Po : double

Spacies percentages by Forest Type by zone by Type "Po"

Po/FriK : double

Spacies percentages by Forest Type by zone by Type "Po/FriK"

$\mathsf{Po}/\mathsf{Fsw}:\mathsf{double}$

Spacies percentages by Forest Type by zone by Type "Po/Fsw"

Po/FswTb : double

Spacies percentages by Forest Type by zone by Type "Po/FswTb"

Po/Hs : double

Spacies percentages by Forest Type by zone by Type "Po/Hs"

Po/PI : double

Spacies percentages by Forest Type by zone by Type "Po/PI"

Po/Wsw : double

Spacies percentages by Forest Type by zone by Type "Po/Wsw"

Ps : double

Spacies percentages by Forest Type by zone by Type "Ps"

Ps/FriK : double

Spacies percentages by Forest Type by zone by Type "Ps/FriK"

W : double

Spacies percentages by Forest Type by zone by Type "W"

1.2.30 Master_Report

Report List

FeatureType : ObjectClass

isAbstract : False

Attribute

Description : string

Viewer's Report Name

ReportName : string

System's Report Name.

ReportType : int

Report Type.

Group : int

Group ID. 1=Province Report, 2=Concession Report, 3=Proposed Concession Report

Priority : int

Viewer's Sort Key

1.2.31 Ctrl_TimberVolume

TimberVolume data by Zone

FeatureType : ObjectClass

isAbstract : False

Attribute

Province : int

Province code

Value Domain

CODE_N value of master_Province

zone : int

Forest Zone code

Value Domain
Zone number of master_Zone

VegType : string Vegetation Type.

Vol/ha : double TimberVolume per ha

OriginalVol/ha : double Original TimberVolume per ha. This field is not update.

Comments : double Comment field.

1.2.32 Master_Zone

zone data

FeatureType : ObjectClass

isAbstract : False

Attribute

zone : int

Forest Zone code

name : string

Forest Zone name

description : string description

1.2.33 Master_VegTypes

Vegetation Type data

FeatureType : ObjectClass

isAbstract : False

Attribute

VegType : string Vegetation Type

Group : string

Vegetation Group ID

description : string description

Merchantable : int Merchantable 0 = false, 1 = true.

1.2.34 Master_Province

Province data

FeatureType : ObjectClass

isAbstract : False

Attribute

$\mathsf{CODE}_\mathsf{N}:\mathsf{int}$

Province code

$\mathsf{CODE}_\mathsf{A}:\mathsf{string}$

Province Short Name

DESCRIP : string

Province Name

1.2.35 Master_SusceptibleVegTypes

Susceptible Vegetation Type data

FeatureType : ObjectClass

isAbstract : False

Attribute

Province : int

Province code

Value Domain CODE_N value of master_Province

FMU : int

FMU code.

Value Domain FMU value

VegType : string Vegetation Type.

SusceptibleType : string SusceptibleType

1.2.36 Master_user

user data

FeatureType : ObjectClass

isAbstract : False

Attribute

username : string

user name (Unique Key)

password : string login password.

authority : int

user's authority

0 = viewer

- 1 = high rank user
- 2 = administrator

1.2.37 Master_Database

Layer Management

FeatureType : ObjectClass

isAbstract : False

Attribute

Database : string

Layer name which Layer Management displays

Last_Update : date/time Date last modified

Del : int

Delete flag

1.2.38 Master_TmpReport

Report Management

FeatureType : ObjectClass

isAbstract : False

Attribute

TmpReportName : string Report name

sysdate : date/time report output date

MachineName : string Report output computer name

DeleteFlag : int

Delete flag

1.2.39 Master_LoggedOverType

Management of type of Logged Over Area

FeatureType : ObjectClass

isAbstract : False

Attribute

id : int

id

name : string type name

1.2.40 Master_PlanAreaType

Management of type of Plan Area

FeatureType : ObjectClass

isAbstract : False

Attribute

id : int

id

name : string

Type name

1.2.41 F_SURVEY_SUMMARY

Management of TimberVolume related to Survey of FIPS

FeatureType : ObjectClass

isAbstract : False

Attribute

Plan_id : int

Concession ID.

SURVEY_NUMBER : string Survey Number of FIPS

SURVEY_Name : string Survey Name of FIPS

Adjusted_forest_area : double Adjusted forest Area of FIPS

VOL10_per_ha : double 10cm-19cm TimberVolume of FIPS

PVOL_per_ha : double 20cm-49cm TimberVolume of FIPS

SVOL_per_ha : double 50cm over TimberVolume of FIPS TotalVol_per_ha : double 20cm over TimberVolume of FIPS

MVOL_per_ha : double 50cm over (rank A-C) TimberVolume of FIPS.

VOL10_grp_per_ha : double 10cm-19cm TimberVolume belonging to MEP group 1 and 2 of FIPS

PVOL_grp_per_ha : double 20cm-49cm TimberVolume belonging to MEP group 1 and 2 of FIPS

SVOL_ grp_per_ha : double 50cm over TimberVolume belonging to MEP group 1 and 2 of FIPS

TotalVol_grp_per_ha : double 20cm over TimberVolume belonging to MEP group 1 and 2 of FIPS

MVOL_ grp_per_ha : double 50cm over (rank A-C) TimberVolume belonging to MEP group 1 and 2 of FIPS

1.2.42 Ctrl_LastCalclationDate

Management of last processed date

FeatureType : ObjectClass

isAbstract : False

Attribute

province : int

Province code

Value Domain

CODE_N value of master_Province

ConcessionFrag : int

- 0 = Calclation for Province
- 1 = Calclation for Concession

CalcDate : date/time Date and time of calclation

1.2.43 concessionFile

Management of files uploaded on Concession screen

FeatureType : ObjectClass

isAbstract : False

Attribute

id : int

Primary Key.

Plan_id : int

plan_id of Concession related to files

filename : string

File name uploaded

fdata : varbinary

Soft copy uploaded

Soft copies can not be downloaded by using except FIMS because the file is binary data.

2 Data content and structure of FIPS Database

2.1 FIPS application schema



2.2 Documentation of FIPS application Schema

2.2.1 Survey Information

Dataset of Survey of FIPS

FeatureType : ObjectClass

isAbstract : True

Attribute

2.2.2 Survey Recor

Details of Survey

FeatureType : ObjectClass

isAbstract : False

Attribute

Survey Number : string

Survey Number (unique).

The first two digits shows province Number, the last three digits shows sequence number from 001 to 999

Value Domain 01001~19999

Name of Survey : string Survey name.

Date of the Survey (Completion date) : string Survey date.

File Reference Number : string Reference number of file Gross Area of Resource Area in Hectares : int Total area of all blocks

Number or Blocks : int

Number of blocks

Value Domain

 $1 \sim 10$

Adjusted Net Forest Area : double Area of Adjusted Net Forest Area

LOI Flag : LOI Code

Type of Survey

Value Domain

code	value	
0	Virgin	
1	LOI	
2	Unlogged Forest Survey	

Minimum Slope : double

Minimum angle of slope

Maximum Slope : double

Maximum angle of slope

Minimum Elevation : double Minimum elevation

Maximum Elevation : double Maximum elevation

Plan id : int

Plan Id of Concession in FIMS

The first two digits shows province number, the last three digits shows sequential code from 001 to 999

Value Domain 1000~99999 Vegetation : string

Vegetation Type of FIMS

Value Domain

VegType value of Master VegType(FIMS)

2.2.3 Block Record

Block details related to survey

FeatureType : ObjectClass

isAbstract : False

Attribute

Block Number : string

Block Number.

Value Domain 01~10.

Area in Hectares : int Area of Block

Whether of not data entry has been completed : boolean Existence or non-existence of Field Book Data

2.2.4 Survey Details

The information to link Survey Record and Field Record

FeatureType : ObjectClass

isAbstract : False

Attribute

Survey Number : string

Survey Number.

Value Domain

Survey Number value of Survey Record

Block Number : string

Block Number.

Value Domain

01~10.

2.2.5 Field Record

Data related to Strip Line and Plot Area

FeatureType : ObjectClass

isAbstract : False

Attribute

Strip Number : string

Strip Number.

Value Domain 001~999.

Forest Type : string

Forest Type.

Value Domain TypeCode value of Master ForestType

Plot Number : string

Plot Number.

Plot Type : Plot Type

Plot Type.

Value Domain

code	Main Plot Area	Sub plot Area
1	2000m2	2000m2
2	2000m2	1000m2
3	1000m2	1000m2
code	Main Plot Area	Sub plot Area
------	----------------	---------------
4	1000m2	500m2
5	1257m2	1257m2
6	1257m2	628m2
7	1257m2	314m2

2.2.6 Strip Location

Coordinates of the start point and the end point for Strip Line

FeatureType : ObjectClass

isAbstract : False

Attribute

Start Point : Address

Coordinates (latitude and longitude) of the start point of Strip Line

End Point : Address

Coordinates (latitude and longitude) of the end point of Strip Line

2.2.7 Trees

Each tree of Field Book

FeatureType : ObjectClass

isAbstract : False

Attribute

tree # : int

Page Number.

Field Book can have twelve records in a page

Species : string

Species Code.

Value Domain

Code value of Master Species

Diameter : int

Diameter.

Length : int

Length.

Form : string

Form Class.

Value Domain

code	value
1	A
2	В
3	С
4	D
5	E
6	F

2.2.8 Master Species

Master table (Species).

FeatureType : ObjectClass

isAbstract : False

Attribute

Code : string

Species Code (unique).

MEP Group : string MEP Group.

Occurrence : int

Occurrence.

Species Name : string Species Name.

Synomym or old name : string Synomym or old name.

Family Name : string Family Name.

Standard Trade : string Standard Trade.

Common Name : string Common Name.

2.2.9 Master Province

Master table (Province).

FeatureType : ObjectClass

isAbstract : False

Attribute

Province Number : string

Province Number (unique).

Value Domain

01~19.

Province Name : string Province Name.

2.2.10 Master ForestType

Master table (Forest Type).

FeatureType : ObjectClass

isAbstract : False

Attribute

Type Code : string Forest Type Code(unique).

Topography : string Topography.

Forest Descr : string Forest Descr.

Description : string Description.

Dominant species or feature : string Dominant species or feature.

Altitudinal Minimum : int Altitudinal Minimum.

Range Maximum : int Range Maximum.

2.2.11 Master VegType(FIMS)

Master table (VegType by FIMS).

FeatureType : ObjectClass

isAbstract : False

Attribute

VegType : string

Veg Type Code(unique).

Group : string Veg Type group name.

Description : string Description.

Merchantable : int

Merchantable.

Value Domain

0 = false

1 = true

2.2.12 Master User

Master table (User).

FeatureType : ObjectClass

isAbstract : False

Attribute

User Name : string

User name(unique).

password : string

Password.

AUTHORITY : Auth Type

AUTHORITY.

Value Domain

code	value
0	Administrator
1	user
2	developer

添付資料3 全国森林基盤図 Version1 (州毎の出力図面)

Forest Basemap 2012 (Version 1): Forest & Vegetation Type

Color	Code	Forest/Vegetation Type	Definition (based on PNGRIS/FIMS)	Elevation
	Ρ	Low Altitude Forest on Plains & Fans	Low Altitude Forest on Plains and Fans,	below 1,000m
	н	Low Altitude Forest on Uplands	Low Altitude Forest on Uplands	below 1,000m
	L	Lower Montane Forest	Lower Montane Forest	above 1,000m
	Мо	Montane Forest	Montane Forest	above 3,000m
	D	Dry Seasonal Forest	The forest is restricted to southwest PNG in a low-rainfall area (1800-2500mm), and occurs on well to imperfectly-drained, very gently undulating to low hilly terrain.	
	В	Littoral Forest	The forest occurs on dry sandy beach plains and on beach ridges	
	Fri	Seral Forest	The forest is heterogeneous, comprising many seral stages, from low forest to original levee forest, following changes in the course of a river.	
	Fsw	Swamp Forest	The forest occurs on low-lying, permanently swampy river back plains and deltas.	
	м	Mangrove Forest	All vegetation of the saline or brackish communities, tidal zone. Ranges from forest over 30m tall, to low halophytic herbs.	
	w	Woodland	Tree with separated crowns. Generally low, up to 10m tall, rarely to 20m, but lower in the case of non-tree life forms e.g. sago palms and Pandanus. A clearly visible ground layer of shrubs, herbs and/or grasses.	
	Sa	Savanna	Scattered to moderately dense layer of trees. Generally less than 6m tall. A clearly visible ground layer of herbs and/or grasses	
	Sc	Scrub	Dense shrubs with or without scattered low trees. Generally less than 6m tall	
	G	Grassland and Herbland	Grasses, sedges, herbs and very low woody shrubs. Generally less than 3m tall. Scattered trees may be present	
	Ga	Grassland (Alpine)	Grasses: above 3,200m	
	Gi	Grassland (Subalpine)	Grasses: 2,500m - 3,200m	
	Z	Bare areas		
	U	Larger Urban Centres		
	E	Lake & Larger Rivers		
	0	Cropland/Agriculture land		
	Qf	Forest Plantation		
	Qa	Plantation other than Forest		



















































Vegetation Type Area calculated from Forest Basemap 2012 (Version 1)

	Forest BaseMap(ver.1: Landcover + Draft Crop	land/Agricultu	re landuse): V	egetation Ty	pe Area (ha)	x Province																		
	VEG VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	P Low Altitude Forest on Plains & Fans	8,807,748	293,750	94	366,161	221,194	1,075,639	3,220,005	91,822	487,003	707,761	1,033,140	8,351	2,737	2,098	153,930	22,430	9,478	9,270	523,167	135,528	67,885	141,382	234,924
	H Low Altitude Forest on Uplands	12,404,244	1,100,041	46	727,773	652,785	1,215,112	629,402	843,806	920,004	1,025,687	1,433,010	116,969	69,566	56,309	436,558	145,102	21,918	70,655	1,095,925	829,389	106,676	529,731	377,781
	L Lower Montane Forest	8,221,846	679,811		485,631	135,618	154,309	290,116	1,420,922	481,891	230,304	610,991	283,143	624,163	596,689	626,502	740,816	141,218	201,264	68,328	269,522		102,982	77,625
	Mo Montane Forest	358,050	39,092		30,140	645		2,679	39,274	21,832	649	18,044	15,856	110,171	13,339	12,042	19,521	16,103	18,664					
	D Dry Seasonal Forest	957,387						957,387																
	B Littoral Forest	69,994	11,989		681	4,318	1,011	37,485	1,091	1,056	2,040	2,237								1,110	2,447			4,530
	Fri Seral Forest	158,783	6,736		26,425	1,144	353	9,825	3,658	5,780	24,339	2,975								21,096	18,296		6,857	31,300
	Fsw Swamp Forest	2,070,809	9,067		18,206	1,122	498,173	684,835	20,438	95,092	510,195	137,546		373		15,444	241	88	47	25,802	60		642	53,439
	M Mangrove Forest	524,582	48,508	296	14,027	49,993	240,787	117,673	2,914	173	17,789	657								8,307	2,565	3,617	14,612	2,662
	W Woodland	3,091,027	173,332	1,096	177,449	11,913	138,596	1,596,062	51,913	97,841	685,667	66,725				14,341	380			33,786	2,306		20,241	19,379
	Sa Savanna	651,825	113,965	9,919	23,591	76	14,455	489,695						124										
	Sc Scrub	394,340	6,738	982	1,628	1,329		376,410	13			276					114			112	30			6,708
	G Grassland and Herbland	3,357,766	249,049	430	143,755	132,610	79,463	1,026,961	301,373	168,836	637,169	111,323	30,652	26,276	194,267	62,960	31,533	13,136	9,125	37,525	21,367	6,243	28,038	45,676
	Ga Grassland (Alpine)	113,383	19,591		8,392	2,161	1	923	10,968	2,313	508	1,794	792	41,535	853	3,363	17,863	2,200	111					15
	Gi Grassland (Subalpine)	88,624	11,523		6,503	427		338	18,136	6,816	189	2,540	6,168	8,046	663	13,717	753	8,714	4,091					
	Z Bare areas	21,950	95		397			22	8,701	2,786		1,501		19	169	1,459	200	320	233	1,069	1,229	999		2,752
	U Larger Urban Centres	21,484	387	5,918	239	517	188	648	7,211	1,415	704	256	592		819	319		0		172	595	497	332	672
	E Lake & Larger Rivers	579,052	17,749	149	19,328	4,768	40,357	248,378	22,471	28,490	116,120	26,647	3,234	2,149	3,888	11,718	3,988	755	1,177	13,805	5,346	399	2,760	5,377
	O Cropland/Agriculture land	4,504,510	149,657	1,011	134,574	256,982	107,839	186,173	469,892	540,728	484,334	141,658	147,416	338,452	236,155	265,017	187,467	228,565	159,974	130,701	201,458	6,106	78,779	51,571
	Qf Forest Plantation	66,380	18,083			1,208			17,686	4,850				25	4,887	315		1,464			17,863			
	Qa Plantation other than Qf	427,005	6,413		78,392	25,647	1,061		34,970	23,397	1,335	1,280	168	122	4,539	23		9,578	5,910	161,009	21,471	719	16,165	34,805
	SUM	46,890,788	2,955,577	19,941	2,263,290	1,504,458	3,567,345	9,875,015	3,367,258	2,890,302	4,444,790	3,592,598	613,341	1,223,758	1,114,676	1,617,708	1,170,407	453,535	480,521	2,121,916	1,529,472	193,140	942,521	949,218
			_		-			_		-	-													
	Forest Cover Area	a (ha))																					
	Forest	t 33,639,823	2,207,077	436	1,669,044	1,068,027	3,185,385	5,949,406	2,441,611	2,017,681	2,518,764	3,238,600	424,319	807,035	673,322	1,244,791	928,110	190,268	299,900	1,743,735	1,275,670	178,177	796,206	782,261
	Forest&Woodland	36,730,851	2,380,409	1,532	1,846,492	1,079,940	3,323,980	7,545,468	2,493,524	2,115,522	3,204,431	3,305,324	424,319	807,035	673,322	1,259,132	928,490	190,268	299,900	1,777,521	1,277,976	178,177	816,448	801,641
*	Forest&Woodland&Scrub&Savanna	a 37,777,015	2,501,112	12,434	1,871,710	1,081,346	3,338,435	8,411,573	2,493,536	2,115,522	3,204,431	3,305,600	424,319	807,159	673,322	1,259,132	928,604	190,268	299,900	1,777,633	1,278,006	178,177	816,448	808,348
		•																					-	
	Forest Cover Rate	e (%))																					
	Forest	t 71.7%	5 74.7%	2.2%	73.7%	71.0%	89.3%	60.2%	72.5%	69.8%	56.7%	90.1%	69.2%	65.9%	60.4%	76.9%	79.3%	42.0%	62.4%	82.2%	83.4%	92.3%	84.5%	82.4%
	Forest&Woodland	d 78.3%	80.5%	7.7%	81.6%	71.8%	93.2%	76.4%	74.1%	73.2%	72.1%	92.0%	69.2%	65.9%	60.4%	77.8%	79.3%	42.0%	62.4%	83.8%	83.6%	92.3%	86.6%	84.5%
*	Forest&Woodland&Scrub&Savanna	al 80.6%	SI 84.6%	62.4%	82.7%	71.9%	93.6%	85.2%	74.1%	73.2%	72 1%	92.0%	69.2%	66.0%	60.4%	77.8%	79.3%	42 0%	62.4%	83.8%	83.6%	92.3%	86.6%	85.2%









Above Ground Living Biomass

	Fores	t BaseMap(ver.1: Landcover + Draft Cropla	and/Agriculture	e landuse): B	iomass (abov	e ground livin	g) x Province	e																	
	VEG	VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	Р	Low Altitude Forest on Plains & Fans	2,642.32	88.13	0.03	109.85	66.36	322.69	966.00	27.55	146.10	212.33	309.94	2.51	0.82	0.63	46.18	6.73	2.84	2.78	156.95	40.66	20.37	42.41	70.48
	н	Low Altitude Forest on Uplands	3,721.27	330.01	0.01	218.33	195.84	364.53	188.82	253.14	276.00	307.71	429.90	35.09	20.87	16.89	130.97	43.53	6.58	21.20	328.78	248.82	32.00	158.92	113.33
	L	Lower Montane Forest	1,151.06	95.17		67.99	18.99	21.60	40.62	198.93	67.46	32.24	85.54	39.64	87.38	83.54	87.71	103.71	19.77	28.18	9.57	37.73		14.42	10.87
	Мо	Montane Forest	50.13	5.47		4.22	0.09		0.38	5.50	3.06	0.09	2.53	2.22	15.42	1.87	1.69	2.73	2.25	2.61					
	D	Dry Seasonal Forest	172.33						172.33																
	В	Littoral Forest	12.60	2.16		0.12	0.78	0.18	6.75	0.20	0.19	0.37	0.40								0.20	0.44			0.82
	Fri	Seral Forest	47.63	2.02		7.93	0.34	0.11	2.95	1.10	1.73	7.30	0.89								6.33	5.49		2.06	9.39
	Fsw	Swamp Forest	621.24	2.72		5.46	0.34	149.45	205.45	6.13	28.53	153.06	41.26		0.11		4.63	0.07	0.03	0.01	7.74	0.02		0.19	16.03
	М	Mangrove Forest	100.72	9.31	0.06	2.69	9.60	46.23	22.59	0.56	0.03	3.42	0.13								1.59	0.49	0.69	2.81	0.51
	W	Woodland	401.83	22.53	0.14	23.07	1.55	18.02	207.49	6.75	12.72	89.14	8.67				1.86	0.05			4.39	0.30		2.63	2.52
	Sa	Savanna	45.63	7.98	0.69	1.65	0.01	1.01	34.28						0.01										
	Sc	Scrub	27.60	0.47	0.07	0.11	0.09		26.35	0.00			0.02					0.01			0.01	0.00			0.47
	G	Grassland and Herbland																							
	Ga	Grassland (Alpine)																							
	Gi	Grassland (Subalpine)																							
	Z	Bare areas																							
	U	Larger Urban Centres																							
	E	Lake & Larger Rivers																							
	0	Cropland/Agriculture land																							
	Qf	Forest Plantation																							
	Qa	Plantation other than Qf																							
		SUM	8,994.37	565.98	1.00	441.43	293.97	923.83	1874.00	499.85	535.83	805.65	879.29	79.46	124.62	102.93	273.04	156.84	31.47	54.78	515.56	333.95	53.06	223.44	224.42
		Biomass(above ground living)	(Mt)																						
		Forest	8,519.31	535.00	0.10	416.59	292.33	904.80	1,605.88	493.10	523.11	716.51	870.59	79.46	124.61	102.93	271.18	156.78	31.47	54.78	511.16	333.65	53.06	220.81	221.43
		Forest&Woodland	8,921.14	557.53	0.24	439.66	293.88	922.82	1,813.37	499.85	535.83	805.65	879.27	79.46	124.61	102.93	273.04	156.83	31.47	54.78	515.55	333.95	53.06	223.44	223.95
*		Forest&Woodland&Scrub&Savanna	8,994,37	565.98	1.00	441.43	293.97	923.83	1.874.00	499.85	535.83	805.65	879.29	79.46	124.62	102.93	273.04	156.84	31.47	54.78	515.56	333.95	53.06	223.44	224.42

Above Ground Living Carbon Stock

Forest BaseMap(ver.1: Landcover + Draft Cropl	land/Agricultu	re landuse): C	arbon Stock	(above groun	d living) x Pr	ovince																	
VEG VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
P Low Altitude Forest on Plains & Fans	1,241.89	41.42	0.01	51.63	31.19	151.67	454.02	12.95	68.67	99.79	145.67	1.18	0.39	0.30	21.70	3.16	1.34	1.31	73.77	19.11	9.57	19.93	33.12
H Low Altitude Forest on Uplands	1,749.00	155.11	0.01	102.62	92.04	171.33	88.75	118.98	129.72	144.62	202.05	16.49	9.81	7.94	61.55	20.46	3.09	9.96	154.53	116.94	15.04	74.69	53.27
L Lower Montane Forest	541.00	44.73		31.95	8.92	10.15	19.09	93.50	31.71	15.15	40.20	18.63	41.07	39.26	41.22	48.75	9.29	13.24	4.50	17.73		6.78	5.11
Mo Montane Forest	23.56	2.57		1.98	0.04		0.18	2.58	1.44	0.04	1.19	1.04	7.25	0.88	0.79	1.28	1.06	1.23					
D Dry Seasonal Forest	80.99						80.99																
B Littoral Forest	5.92	1.01		0.06	0.37	0.09	3.17	0.09	0.09	0.17	0.19								0.09	0.21			0.38
Fri Seral Forest	22.39	0.95		3.73	0.16	0.05	1.39	0.52	0.81	3.43	0.42								2.97	2.58		0.97	4.41
Fsw Swamp Forest	291.98	1.28		2.57	0.16	70.24	96.56	2.88	13.41	71.94	19.39		0.05		2.18	0.03	0.01	0.01	3.64	0.01		0.09	7.53
M Mangrove Forest	45.42	4.20	0.03	1.21	4.33	20.85	10.19	0.25	0.01	1.54	0.06								0.72	0.22	0.31	1.27	0.23
W Woodland	188.86	10.59	0.07	10.84	0.73	8.47	97.52	3.17	5.98	41.89	4.08				0.88	0.02			2.06	0.14		1.24	1.18
Sa Savanna	21.45	3.75	0.33	0.78	0.00	0.48	16.11						0.00										
Sc Scrub	12.97	0.22	0.03	0.05	0.04		12.38	0.00			0.01					0.00			0.00	0.00			0.22
G Grassland and Herbland																						,	
Ga Grassland (Alpine)																							
Gi Grassland (Subalpine)																							
Z Bare areas																							
U Larger Urban Centres																							
E Lake & Larger Rivers																							
O Cropland/Agriculture land																							
Qf Forest Plantation																							
Qa Plantation other than Qf																							
SUM	4,225.44	265.83	0.47	207.42	137.99	433.32	880.35	234.92	251.84	378.59	413.26	37.34	58.57	48.38	128.33	73.71	14.79	25.75	242.28	156.95	24.93	104.96	105.47
Carbon Stock (above ground living)	(Mt))																					
Forest	4002.16	251.27	0.05	195.75	137.21	424.38	754.33	231.75	245.86	336.70	409.18	37.34	58.57	48.38	127.45	73.69	14.79	25.75	240.21	156.81	24.93	103.73	104.06
Forest&Woodland	4191.02	261.86	0.11	206.59	137.94	432.85	851.85	234.92	251.84	378.59	413.25	37.34	58.57	48.38	128.33	73.71	14.79	25.75	242.28	156.95	24.93	104.96	105.25
* Forest&Woodland&Scrub&Savanna	4225.44	265.83	0.47	207.42	137.99	433.32	880.35	234.92	251.84	378.59	413.26	37.34	58.57	48.38	128.33	73.71	14.79	25.75	242.28	156.95	24.93	104.96	105.47

Below Ground Living Biomass

	Forest BaseMap(ver.1: Landcover + Draft Cropla	and/Agriculture	e landuse): Bi	iomass (belov	w ground livin	g) x Provinc	e																	
	VEG VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	P Low Altitude Forest on Plains & Fans	977.66	32.61	0.01	40.64	24.55	119.40	357.42	10.19	54.06	78.56	114.68	0.93	0.30	0.23	17.09	2.49	1.05	1.03	58.07	15.04	7.54	15.69	26.08
	H Low Altitude Forest on Uplands	1,376.87	122.10	0.01	80.78	72.46	134.88	69.86	93.66	102.12	113.85	159.06	12.98	7.72	6.25	48.46	16.11	2.43	7.84	121.65	92.06	11.84	58.80	41.93
	L Lower Montane Forest	310.79	25.70		18.36	5.13	5.83	10.97	53.71	18.22	8.71	23.10	10.70	23.59	22.55	23.68	28.00	5.34	7.61	2.58	10.19		3.89	2.93
	Mo Montane Forest	13.53	1.48		1.14	0.02		0.10	1.48	0.83	0.02	0.68	0.60	4.16	0.50	0.46	0.74	0.61	0.71					
	D Dry Seasonal Forest	41.36						41.36																
	B Littoral Forest	3.02	0.52		0.03	0.19	0.04	1.62	0.05	0.05	0.09	0.10								0.05	0.11			0.20
	Fri Seral Forest	17.62	0.75		2.93	0.13	0.04	1.09	0.41	0.64	2.70	0.33								2.34	2.03		0.76	3.47
	Fsw Swamp Forest	229.86	1.01		2.02	0.12	55.30	76.02	2.27	10.56	56.63	15.27		0.04		1.71	0.03	0.01	0.01	2.86	0.01		0.07	5.93
	M Mangrove Forest	49.35	4.56	0.03	1.32	4.70	22.65	11.07	0.27	0.02	1.67	0.06								0.78	0.24	0.34	1.37	0.25
	W Woodland	112.51	6.31	0.04	6.46	0.43	5.04	58.10	1.89	3.56	24.96	2.43				0.52	0.01			1.23	0.08		0.74	0.71
	Sa Savanna	18.25	3.19	0.28	0.66	0.00	0.40	13.71						0.00										
	Sc Scrub	11.04	0.19	0.03	0.05	0.04		10.54	0.00			0.01					0.00			0.00	0.00			0.19
	G Grassland and Herbland																							
	Ga Grassland (Alpine)																							
	Gi Grassland (Subalpine)																							
	Z Bare areas																							
	U Larger Urban Centres																							
	E Lake & Larger Rivers																							
	O Cropland/Agriculture land																							
	Qf Forest Plantation																							
	Qa Plantation other than Qf																							
	SUM	3,161.88	198.41	0.39	154.39	107.78	343.59	651.86	163.94	190.04	287.20	315.71	25.21	35.83	29.54	91.92	47.38	9.44	17.19	189.57	119.76	19.72	81.33	81.69
	Biomass (below ground living)	(Mt)																						
	Forest	3,020.07	188.72	0.04	147.23	107.30	338.14	569.51	162.05	186.48	262.24	313.28	25.21	35.82	29.54	91.40	47.36	9.44	17.19	188.34	119.68	19.72	80.59	80.80
	Forest&Woodland	3,132.58	195.03	0.08	153.68	107.74	343.18	627.60	163.94	190.04	287.20	315.71	25.21	35.82	29.54	91.92	47.38	9.44	17.19	189.57	119.76	19.72	81.33	81.50
*	Forest&Woodland&Scrub&Savanna	3.161.88	198.41	0.39	154.39	107.78	343.59	651.86	163.94	190.04	287.20	315.71	25.21	35.83	29.54	91.92	47.38	9.44	17.19	189.57	119.76	19.72	81.33	81.69

Below Ground Living Carbon Stock

	Fores	st BaseMap(ver.1: Landcover + Draft Cropla	and/Agricultur	e landuse): C	arbon Stock	(below grour	ıd living) x Pr	rovince																	
	VEG	VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	Р	Low Altitude Forest on Plains & Fans	459.50	15.32	0.00	19.10	11.54	56.12	167.99	4.79	25.41	36.92	53.90	0.44	0.14	0.11	8.03	1.17	0.49	0.48	27.29	7.07	3.54	7.38	12.26
	Н	Low Altitude Forest on Uplands	647.13	57.39	0.00	37.97	34.06	63.39	32.84	44.02	48.00	53.51	74.76	6.10	3.63	2.94	22.78	7.57	1.14	3.69	57.17	43.27	5.57	27.64	19.71
	L	Lower Montane Forest	146.07	12.08		8.63	2.41	2.74	5.15	25.24	8.56	4.09	10.85	5.03	11.09	10.60	11.13	13.16	2.51	3.58	1.21	4.79		1.83	1.38
	Мо	Montane Forest	6.36	0.69		0.54	0.01		0.05	0.70	0.39	0.01	0.32	0.28	1.96	0.24	0.21	0.35	0.29	0.33					
	D	Dry Seasonal Forest	19.44						19.44																
	В	Littoral Forest	1.42	0.24		0.01	0.09	0.02	0.76	0.02	0.02	0.04	0.05								0.02	0.05			0.09
	Fri	Seral Forest	8.28	0.35		1.38	0.06	0.02	0.51	0.19	0.30	1.27	0.16								1.10	0.95		0.36	1.63
	Fsw	Swamp Forest	108.03	0.47		0.95	0.06	25.99	35.73	1.07	4.96	26.62	7.18		0.02		0.81	0.01	0.00	0.00	1.35	0.00		0.03	2.79
	М	Mangrove Forest	22.26	2.06	0.01	0.60	2.12	10.22	4.99	0.12	0.01	0.75	0.03								0.35	0.11	0.15	0.62	0.11
	W	Woodland	52.88	2.97	0.02	3.04	0.20	2.37	27.31	0.89	1.67	11.73	1.14				0.25	0.01			0.58	0.04		0.35	0.33
	Sa	Savanna	8.58	1.50	0.13	0.31	0.00	0.19	6.44						0.00										
	Sc	Scrub	5.19	0.09	0.01	0.02	0.02		4.95	0.00			0.00					0.00			0.00	0.00			0.09
	G	Grassland and Herbland																							
	Ga	Grassland (Alpine)																							
	Gi	Grassland (Subalpine)																							
	Z	Bare areas																							
	U	Larger Urban Centres																							
	E	Lake & Larger Rivers																							
	0	Cropland/Agriculture land																							
	Qf	Forest Plantation																							
	Qa	Plantation other than Qf																							
		SUM	1,485.14	93.17	0.18	72.54	50.57	161.06	306.16	77.04	89.32	134.95	148.38	11.85	16.84	13.88	43.20	22.27	4.44	8.08	89.08	56.28	9.26	38.20	38.39
			-		-																				
	-	Carbon Stock (below ground living)	(Mt)																						
		Forest	1418.50	88.61	0.02	69.17	50.34	158.50	267.46	76.16	87.64	123.22	147.24	11.85	16.84	13.88	42.96	22.26	4.44	8.08	88.50	56.24	9.26	37.85	37.97
		Forest&Woodland	1471.38	91.58	0.04	72.21	50.55	160.87	294.76	77.04	89.32	134.95	148.38	11.85	16.84	13.88	43.20	22.27	4.44	8.08	89.08	56.28	9.26	38.20	38.30
*		Forest&Woodland&Scrub&Savanna	1485.14	93.17	0.18	72.54	50.57	161.06	306.16	77.04	89.32	134.95	148.38	11.85	16.84	13.88	43.20	22.27	4.44	8.08	89.08	56.28	9.26	38.20	38.39

Above and Below Ground Living Biomass

	Fores	st BaseMap(ver.1: Landcover + Draft Cropla	nd/Agriculture	e landuse): Bi	iomass (abov	e and below	ground living) x Province																	
	VEG	VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	Р	Low Altitude Forest on Plains & Fans	3,619.98	120.73	0.04	150.49	90.91	442.09	1323.42	37.74	200.16	290.89	424.62	3.43	1.12	0.86	63.27	9.22	3.90	3.81	215.02	55.70	27.90	58.11	96.55
	Н	Low Altitude Forest on Uplands	5,098.14	452.12	0.02	299.11	268.29	499.41	258.68	346.80	378.12	421.56	588.97	48.07	28.59	23.14	179.43	59.64	9.01	29.04	450.43	340.88	43.84	217.72	155.27
	L	Lower Montane Forest	1,461.84	120.87		86.35	24.11	27.44	51.58	252.64	85.68	40.95	108.63	50.34	110.98	106.09	111.39	131.72	25.11	35.78	12.15	47.92		18.31	13.80
	Мо	Montane Forest	63.66	6.95		5.36	0.11		0.48	6.98	3.88	0.12	3.21	2.82	19.59	2.37	2.14	3.47	2.86	3.32					
	D	Dry Seasonal Forest	213.69						213.69																
	В	Littoral Forest	15.62	2.68		0.15	0.96	0.23	8.37	0.24	0.24	0.46	0.50								0.25	0.55			1.01
	Fri	Seral Forest	65.26	2.77		10.86	0.47	0.15	4.04	1.50	2.38	10.00	1.22								8.67	7.52		2.82	12.86
	Fsw	Swamp Forest	851.10	3.73		7.48	0.46	204.75	281.47	8.40	39.08	209.69	56.53		0.15		6.35	0.10	0.04	0.02	10.60	0.02		0.26	21.96
	М	Mangrove Forest	150.07	13.88	0.08	4.01	14.30	68.88	33.66	0.83	0.05	5.09	0.19								2.38	0.73	1.03	4.18	0.76
	W	Woodland	514.35	28.84	0.18	29.53	1.98	23.06	265.58	8.64	16.28	114.10	11.10				2.39	0.06			5.62	0.38		3.37	3.22
	Sa	Savanna	63.88	11.17	0.97	2.31	0.01	1.42	47.99						0.01										
	Sc	Scrub	38.65	0.66	0.10	0.16	0.13		36.89	0.00			0.03					0.01			0.01	0.00			0.66
	G	Grassland and Herbland																							
	Ga	Grassland (Alpine)																							
	Gi	Grassland (Subalpine)																							
	Z	Bare areas																							
	U	Larger Urban Centres																							
	E	Lake & Larger Rivers																							
	0	Cropland/Agriculture land																							
	Qf	Forest Plantation																							
	Qa	Plantation other than Qf																							
		SUM	12,156.25	764.39	1.39	595.82	401.75	1267.42	2525.85	663.79	725.87	1092.84	1195.00	104.67	160.45	132.47	364.96	204.22	40.91	71.97	705.13	453.71	72.78	304.77	306.11
	_	Biomass(above & below ground living)	(Mt)																						
		Forest	11,539.38	723.72	0.14	563.82	399.63	1,242.94	2,175.39	655.15	709.59	978.75	1,183.87	104.67	160.43	132.47	362.57	204.14	40.91	71.97	699.49	453.33	72.78	301.40	302.22
		Forest&Woodland	12,053.73	752.56	0.32	593.35	401.61	1,266.00	2,440.97	663.78	725.87	1,092.84	1,194.97	104.67	160.43	132.47	364.96	204.21	40.91	71.97	705.12	453.71	72.78	304.77	305.45
*		Forest&Woodland&Scrub&Savanna	12.156.25	764.39	1.39	595.82	401.75	1.267.42	2.525.85	663.79	725.87	1.092.84	1.195.00	104.67	160.45	132.47	364.96	204.22	40.91	71.97	705.13	453.71	72.78	304.77	306.11

						.,											
Forest&Woodland&Scrub&Savanna	12,156.25	764.39	1.39	595.82	401.75	1,267.42	2,525.85	663.79	725.87	1,092.84	1,195.00	104.67	160.45	132.47	364.96	204.22	

Above and Below Ground Living Carbon Stock

	Fores	t BaseMap(ver.1: Landcover + Draft Cropl	and/Agriculture	e landuse): C	arbon Stock	(above & bel	ow ground liv	ving) x Provin	се																
	VEG	VEGNAME	SUM	CEN	NCD	ORO	MIL	GUL	WES	MOR	MAD	ESK	WSK	SIM	ENG	EHY	SHY	HLA	WHY	JWK	WNB	ENB	MAN	NIR	ARB
	Р	Low Altitude Forest on Plains & Fans	1,701.39	56.74	0.02	70.73	42.73	207.78	622.01	17.74	94.07	136.72	199.57	1.61	0.53	0.41	29.73	4.33	1.83	1.79	101.06	26.18	13.11	27.31	45.38
	Н	Low Altitude Forest on Uplands	2,396.13	212.49	0.01	140.58	126.10	234.72	121.58	163.00	177.72	198.13	276.81	22.59	13.44	10.88	84.33	28.03	4.23	13.65	211.70	160.21	20.61	102.33	72.98
	L	Lower Montane Forest	687.07	56.81		40.58	11.33	12.90	24.24	118.74	40.27	19.25	51.06	23.66	52.16	49.86	52.35	61.91	11.80	16.82	5.71	22.52		8.61	6.49
	Мо	Montane Forest	29.92	3.27		2.52	0.05		0.22	3.28	1.82	0.05	1.51	1.33	9.21	1.11	1.01	1.63	1.35	1.56					
	D	Dry Seasonal Forest	100.43						100.43																
	В	Littoral Forest	7.34	1.26		0.07	0.45	0.11	3.93	0.11	0.11	0.21	0.23								0.12	0.26			0.48
	Fri	Seral Forest	30.67	1.30		5.10	0.22	0.07	1.90	0.71	1.12	4.70	0.57								4.08	3.53		1.32	6.05
	Fsw	Swamp Forest	400.02	1.75		3.52	0.22	96.23	132.29	3.95	18.37	98.55	26.57		0.07		2.98	0.05	0.02	0.01	4.98	0.01		0.12	10.32
	М	Mangrove Forest	67.68	6.26	0.04	1.81	6.45	31.07	15.18	0.38	0.02	2.30	0.08								1.07	0.33	0.47	1.89	0.34
	W	Woodland	241.74	13.56	0.09	13.88	0.93	10.84	124.82	4.06	7.65	53.62	5.22				1.12	0.03			2.64	0.18		1.58	1.52
	Sa	Savanna	30.02	5.25	0.46	1.09	0.00	0.67	22.56						0.01										
	Sc	Scrub	18.16	0.31	0.05	0.07	0.06		17.34	0.00			0.01					0.01			0.01	0.00			0.31
	G	Grassland and Herbland																							
	Ga	Grassland (Alpine)																							
	Gi	Grassland (Subalpine)																							
	Z	Bare areas																							
	U	Larger Urban Centres																							
	E	Lake & Larger Rivers																							
	0	Cropland/Agriculture land																							
	Qf	Forest Plantation																							
	Qa	Plantation other than Qf																							
		SUM	5,710.59	359.00	0.65	279.96	188.55	594.38	1186.51	311.96	341.16	513.54	561.65	49.19	75.41	62.26	171.53	95.98	19.23	33.83	331.36	213.23	34.19	143.16	143.86
		Carbon (above & below ground living)	(Mt)																						
		Forest	5,420.66	339.88	0.07	264.92	187.55	582.87	1,021.79	307.90	333.50	459.92	556.42	49.19	75.40	62.26	170.41	95.95	19.23	33.83	328.72	213.05	34.19	141.58	142.03
		Forest&Woodland	5,662.40	353.44	0.15	278.80	188.49	593.71	1,146.62	311.96	341.16	513.54	561.63	49.19	75.40	62.26	171.53	95.98	19.23	33.83	331.36	213.23	34.19	143.16	143.55
*		Forest&Woodland&Scrub&Savanna	5,710.59	359.00	0.65	279.96	188.55	594.38	1,186.51	311.96	341.16	513.54	561.65	49.19	75.41	62.26	171.53	95.98	19.23	33.83	331.36	213.23	34.19	143.16	143.86