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Sri Lanka:  
Strengthening the  
Regulatory  
Framework  
for Water Supply  
and Sanitation  
(2007)

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# Presentation on Proposed **TARIFF METHODOLOGY & STRUCTURE**

30 July 2007



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# EXISTING WATER SUPPLY TARIFF

## Cost Recovery Framework

> of Depreciation Exp. or Debt Service
Operation and Maint. Ex.

## Tariff Structure

<b>Basic Charge</b>
<b>Usage Charge</b>
11 consumption slabs 26 categories

Proposed Tariff Methodology and Structure



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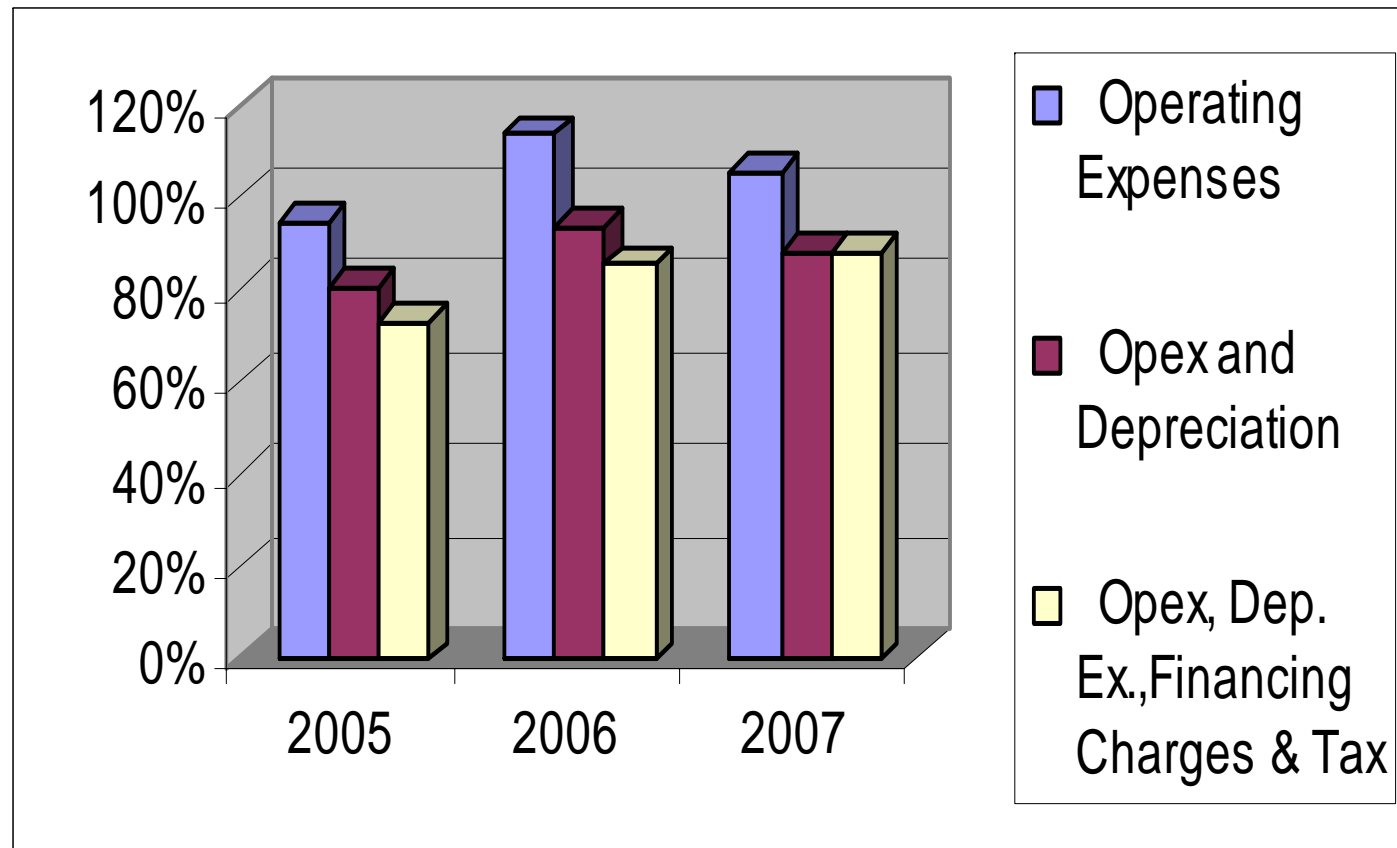
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## % of Cost Recovery Based on Existing Tariff





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# Existing Tariff Structure & Classification

ACTUAL 2006 DATA	No. of Connections										2006 Billing in cbm	2006 Billing in LKR	Average Rate/cbm
		1-10	11-15	16-20	16-25	16-30	16-40	16-50	More than 51				
Domestic	839,000	1.25	2.5	8.5	30	50	60	70	75	75	164,384,424.	3,047,935	18.54
Board Quarters	726	1.25	2.5	8.5	30	50	60	70	75	75	104,064.	1,459	14.02
Govt. Quarters	13,094	1.25	2.5	8.5	30	50	60	70	75	75	2,266,653.	48,548	21.42
Tenement Gardens	52,934	1.25	2.5	8.5	30	50	60	70	75	75	8,647,974.	109,754	12.69
NWSDB Premises	294	1.25	2.5	8.5	30	50	60	70	75	75	250,612.	12,445	49.66
Housing Authority	24	1.25	2.5	8.5	30	50	60	70	75	75	977,365.	000	-
Schools	2,176	4	4	4	4	4	4	4	4	4	3,076,385.	15,577	5.06
Asst. Schools	49	4	4	4	4	4	4	4	4	4	123,960.	601	4.85
Stand Posts	5,356	7	7	7	7	7	7	7	7	7	6,748,035.	55,782	8.27
GardenTaps	79	7	7	7	7	7	7	7	7	7	52,345.	443	8.45
Govt. Institutions	6,835	42	42	42	42	42	42	42	42	42	14,713,873.	715,605	48.63
Army	218	42	42	42	42	42	42	42	42	42	4,928,782.	238,849	48.46
Police	429	42	42	42	42	42	42	42	42	42	1,638,649.	79,953	48.79
Hospitals	390	42	42	42	42	42	42	42	42	42	7,169,508.	347,722	48.50
CMC Premises	334	42	42	42	42	42	42	42	42	42	626,859.	30,886	49.27
Industrial	974	42	42	42	42	42	42	42	42	42	1,643,488.	80,667	49.08
BOI	24	42	42	42	42	42	42	42	42	42	7,499,975.	362,468	48.33
Commercial Institution	57,152	50	50	50		50	50	50	50	50	24,049,520.	1,441,046	59.92
Tourist/Guesthouse	468	50	50	50		50	50	50	50	50	2,145,339.	124,218	57.90
Other Commercial	829	50	50	50		50	50	50	50	50	619,556.	36,396	58.75
Shipping	14	250	250	250	250	250	250	250	250	250	155,389.	44,860	288.69
Religious	4,891	4	4	4	4	4	4	4	4	12	3,392,167.	34,642	10.21
Religious 2	108	4	4	4	4	4	4	4	4	12	876,569.	10,404	11.87
Bulk to CBOs	4	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	2,584,534.	25,686	9.94
Bulk to LGUs	17	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	2,695,430.	31,970	11.86
Bowser	8										992,622.	48,825	49.19

**Proposed Tariff Methodology and Structure**



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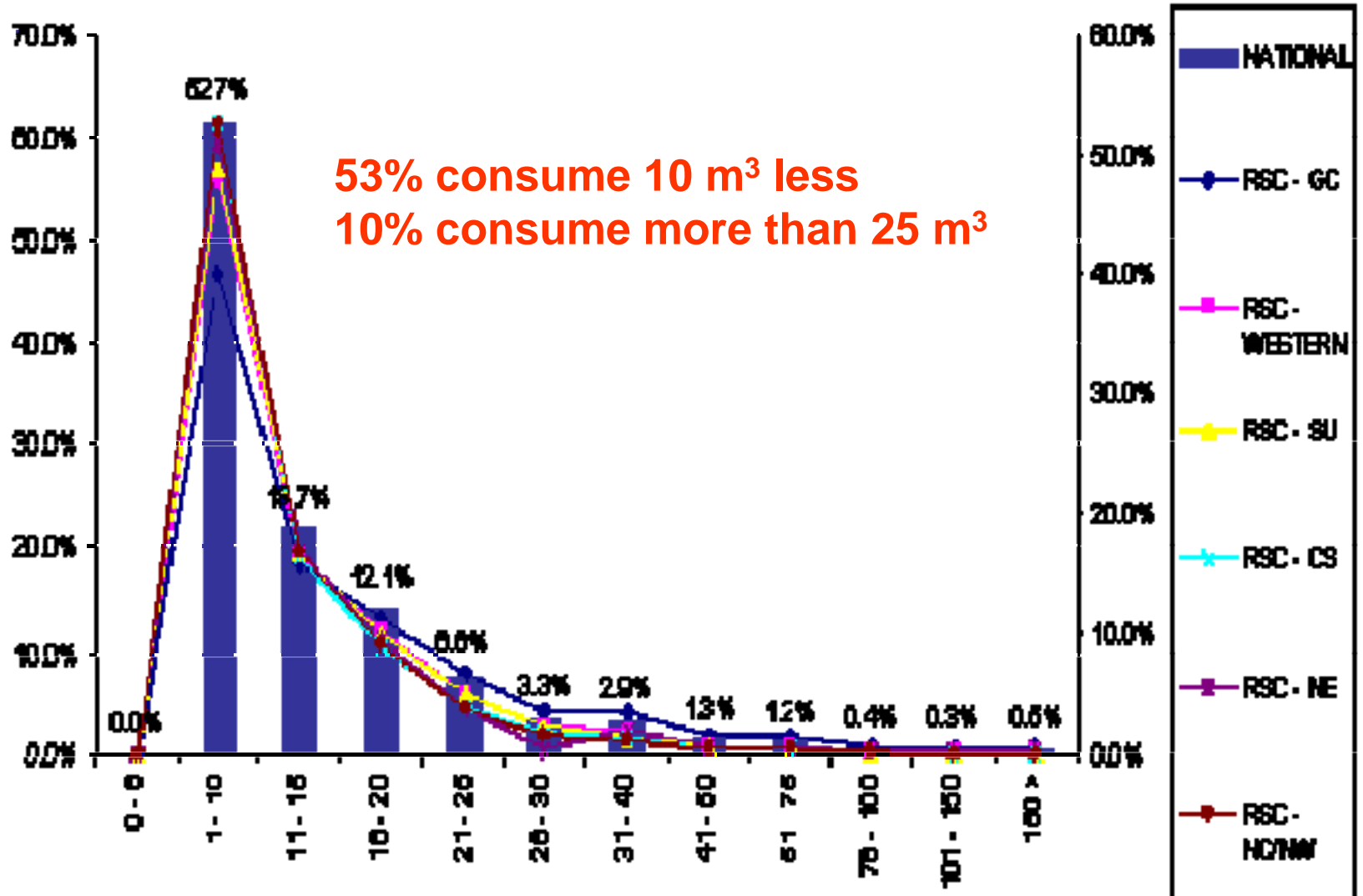
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# Existing Consumption Pattern



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# PROPOSED TARIFF METHODOLOGY AND STRUCTURE

- Tariff Goals and Considerations
- Cost Recovery Framework
- Tariff Structure
- Tariff Calculation
- Use of Tariff Model

Proposed Tariff Methodology and Structure



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## Tariff Goals

- Financial sustainability
- Good governance
- Economic Efficiency
- Distributive Justice
- Fair Pricing



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## Other Factors in achieving tariff goals

- ❑ Performance monitoring of the utility by a regulator
- ❑ Efficient and effective billing and collection system
- ❑ Assured quality of service for customers
- ❑ Periodic review of tariff, with updating as conditions change

Proposed Tariff Methodology and Structure



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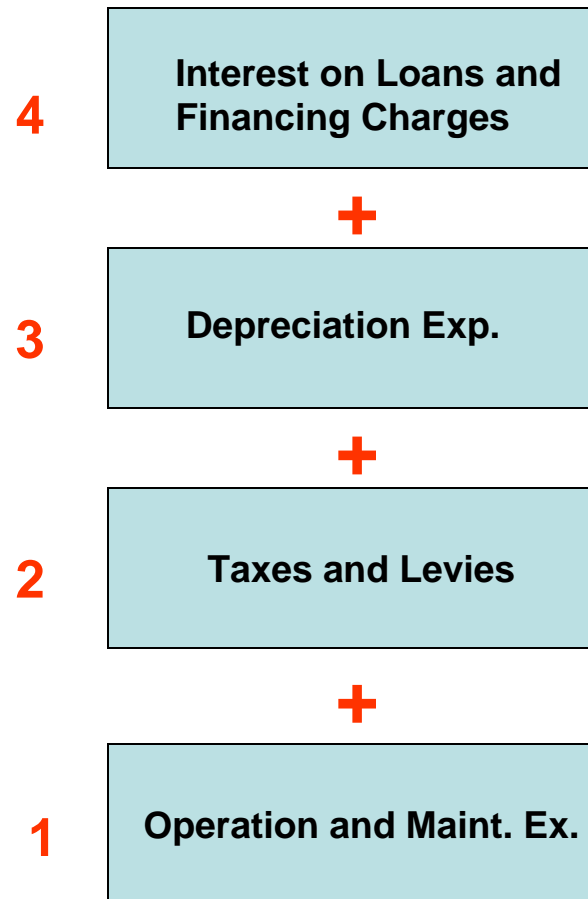
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# Cost Recovery Framework



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# Cost Recovery Levels

**Existing**

**Proposed**

**Long-term  
Target**

<b>Return on Assets</b>	<b>Return on Assets</b>	<b>Return on Assets</b>
<b>Interest on Loans and Financing Charges</b>	<b>Interest on Loans and Financing Charges</b>	<b>Interest on Loans and Financing Charges</b>
<b>Taxes and Levies</b>	<b>Taxes and Levies</b>	<b>Taxes and Levies</b>
<b>&gt; of Depreciation Exp. or Debt Service</b>	<b>&gt; of Depreciation Exp. or Debt Service</b>	<b>&gt; of Depreciation Exp. or Debt Service</b>
<b>Operation and Maint. Ex.</b>	<b>Operation and Maint. Ex.</b>	<b>Operation and Maint. Ex.</b>

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# Tariff Setting and Design



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## Proposed Tariff Structure

- Use of Fixed Charge retained
- Reduction of domestic consumption slabs to 5 slabs
- Lifeline consumption to 6 m<sup>3</sup>
- Progressive increase between consumption slabs

Proposed Tariff Methodology and Structure



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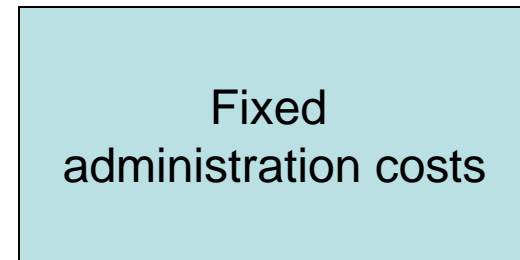


# Proposed Tariff Structure

## Two-Part Tariff:

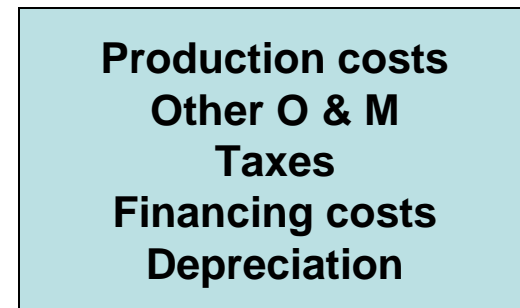
### Basic Charge:

All users pay based on customer classification and not on volume of water used



### Usage Charge

Users pay a rate for volume used  
Uniform usage Charge :  
Large Domestic  
Increasing Block: Domestic



:



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# Proposed Tariff Structure

## Progressive increase between consumption blocks

<b>DOMESTIC</b>	<b>Usage Charge Increment Factor (arbitrary)</b>
➤ 0 - 6 cu.m	0.5
➤ 6 – 15 cu.m.	1.0
➤ 7 - 25 cu.m.	2.0
➤ 26- 39 cu.m.	3.5
➤ Over 40 cu.m.	6.0



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# Proposed Tariff Structure

Reduced no of categories from 26 to 6

## CUSTOMER CLASSIFICATION

- Domestic
- Large Domestic
- Government / Construction
- Commercial / Industrial
- Shipping
- Bowser (sold)



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# Tariff Calculation

$$\text{Tariff} = \text{Basic Charge} + \text{Usage Charge}$$

$$\text{Basic Charge} = \frac{\text{Costs to be Recovered}}{\text{No. of Connections}}$$

(Fixed Administration)

based on Classification  
And meter size factor

$$\text{Average Usage Charge} = \frac{\text{Costs to be Recovered}}{\text{Total Volume}}$$

(Balance of Revenue  
Requirement)

(sum of volume sold  
per consumption  
block x increment  
factor per block)



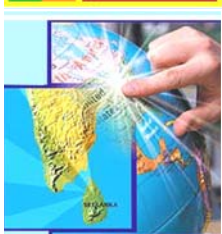
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# Tariff Model

Based on application of methodology and using current data, the resulting tariff schedule is as follows:

Fixed Charge (LKR)	Per equivalent connection	Proposed		Existing
		Multiplier	New Rate	Existing Rate
			100.88	50.00
User Charge (LKR)	Per equivalent cu.m	16.84		
	<b>Proposed slabs</b>	<b>Multiplier</b>	<b>New Rate</b>	<b>Existing Rate</b>
	<b>Domestic / Large Domestic Users</b>			
	0 - 6	0.5	8.42	1.25
	7 - 15	1.0	16.84	1.25 - 2.50
	16 - 25	2.0	33.68	30.00
	26 - 39	3.5	58.94	50.00 - 60.00
Over 40	6.0	101.04	70.00 - 75.00	
<b>Government</b>	3.5	58.94	42.00	
<b>Commercial</b>	6.0	101.04	50.00	
<b>Shipping</b>	20.0	336.80	250.00	

Proposed Tariff Methodology and Structure



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## Tariff Model

- ❑ To facilitate tariff determination
- ❑ Excel based linked worksheets that allows iteration to seek appropriate levels of tariff

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# Tariff Model

## 1. Features and Capabilities

- Defined formulae
- Enables iteration
- Quick links
- User manual
- Monitors KPIs

## 2. Outputs

- Projected Cash Flow
- Projected Income Statement
- Projected Balance Sheet

Proposed Tariff Methodology and Structure



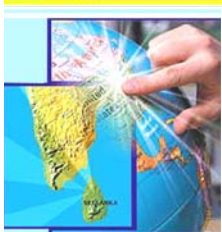
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# Comprehensibility and Flexibility

Microsoft Excel - NWSDB Model v4.1

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- Loans and Long Term Liabilities

Data outputs

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Ready

Microsoft Excel - NWSDB Model v4.1

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Period 01

1 Select the forecast period

Period 01: FY2008 - FY2012

2 Number of new connections

	Historical					5-year Average	Base year 2007	2008
	2002	2003	2004	2005	2006			
Domestic	828,873	828,873	828,873	828,873	906,072	844,313	1,015,808	1,078,247
New connections/(disconnections)		0	0	0	77,199	19,300	109,736	62,438
YoY growth		0.0%	0.0%	0.0%	9.3%	2.3%	12.1%	6.1%
Domestic connections as % to total connections	91.7%	91.7%	91.7%	91.7%	91.9%	91.7%	91.9%	91.9%
Large Domestic	12,242	12,242	12,242	12,242	12,659	12,325	14,192	15,065
New connections/(disconnections)		0	0	0	417	104	1,533	872
YoY growth		0.0%	0.0%	0.0%	3.4%	0.9%	12.1%	6.1%
Large Domestic connections as % to total connections	1.4%	1.4%	1.4%	1.4%	1.3%	1.3%	1.3%	1.3%
Government Institutions	7,959	7,959	7,959	7,959	8,206	8,008	9,200	9,765
New connections/(disconnections)		0	0	0	247	62	994	565
YoY growth		0.0%	0.0%	0.0%	3.1%	0.8%	12.1%	6.1%
Govt Institutions connections as % to total connections	0.9%	0.9%	0.9%	0.9%	0.8%	0.9%	0.8%	0.8%
Commercial and Industrial	55,137	55,137	55,137	55,137	59,447	55,999	66,647	70,743
New connections/(disconnections)		0	0	0	4,310	1,078	7,200	4,097

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# Deliverables

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Table Guides Guidance Files

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**National Water Supply and Drainage Board (MWS&DB)**  
**Forecast Financial Statements**  
**LKR 000's**

**Income Statement (IS)**

**FULL COST RECOVERY & 4 BLOCKS METHOD**

	Historical					Five-Year Average (Historical)	BASE YEAR	
	2002	2003	2004	2005	2006		2007	2008
<b>Operating revenues</b>								
Water Sales	3,856,217	4,161,121	4,290,123	5,484,114	5,917,950	4,741,905	9,219,265	6,514,110
YoY growth	-	7.9%	3.1%	27.8%	7.9%	11.7%	55.8%	-29.3%
Rebates	-21,062	-25,221	-26,292	-37,850	-48,502	-31,785	-67,518	-47,706
Direct Operating Expenses	-2,860,376	-2,834,131	-3,454,132	-3,604,024	-4,080,525	-3,366,638	-4,131,412	-4,752,907
<b>Operating Profit on Sale of Water</b>	<b>974,779</b>	<b>1,301,769</b>	<b>809,699</b>	<b>1,842,239</b>	<b>1,788,923</b>	<b>1,343,482</b>	<b>5,155,371</b>	<b>1,808,909</b>
YoY growth	-	33.5%	-37.8%	127.5%	-2.9%	30.1%	188.2%	-64.9%
Margin	25.3%	31.3%	18.9%	33.6%	30.2%	28.3%	55.9%	27.8%
Other Operating Income	768,382	727,867	645,046	814,458	1,217,031	834,557	1,403,898	895,146
Administration Overheads	-559,113	-784,536	-962,239	-999,274	-1,354,149	-931,862	-1,429,521	-1,616,661
Other Operating Expenses	-337,054	-222,553	-123,243	-177,411	-126,495	-197,351	-180,228	-197,834
<b>Profit(Loss) before Depreciation</b>	<b>846,994</b>	<b>1,022,547</b>	<b>369,264</b>	<b>1,480,012</b>	<b>1,525,310</b>	<b>1,048,825</b>	<b>4,949,520</b>	<b>889,561</b>
YoY growth	-	20.7%	-63.9%	300.8%	3.1%	65.2%	224.5%	-82.0%
Margin	22.0%	24.6%	8.6%	27.0%	25.8%	22.1%	53.7%	13.7%
Depreciation Expense	-734,923	-743,653	-752,749	-1,043,414	-1,100,007	-874,949	-1,587,809	-2,150,893
<b>Net Profit(Loss) from Operating Activities</b>	<b>112,070</b>	<b>278,894</b>	<b>-383,485</b>	<b>436,599</b>	<b>425,303</b>	<b>173,876</b>	<b>3,361,711</b>	<b>-1,261,332</b>
Margin	2.9%	6.7%	-8.9%	8.0%	7.2%	3.7%	36.5%	-19.4%

Home Inputs Fixed assets Loans Financial statements Controls

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# Tariff Model

<b>Financial Model Sheets</b>	
<b>“Inputs” and “Workings” Sheets</b>	Production capacity Non-revenue water Collection efficiency ratios Inflation rates Balance Sheet account movements and other data
<b>Data Input and Projection Sheets</b>	Loans schedule (disbursements, debt service, project loans) Fixed Assets. Supply and Demand Cost Recovery
<b>Output Sheets</b>	Tariff Structure Projected Income Statement Projected Balance Sheet Financial Indicators

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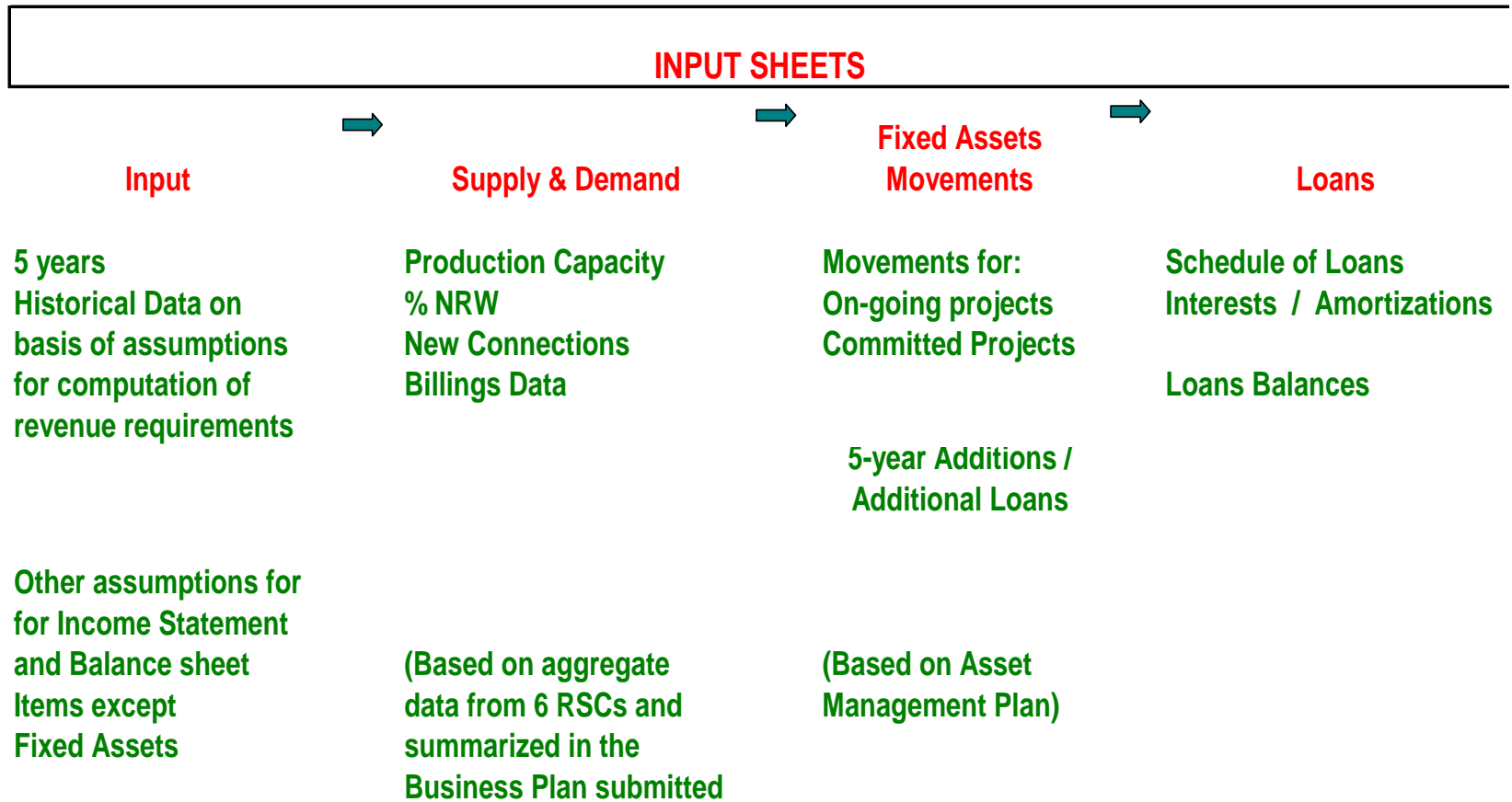
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# Tariff Model Flow



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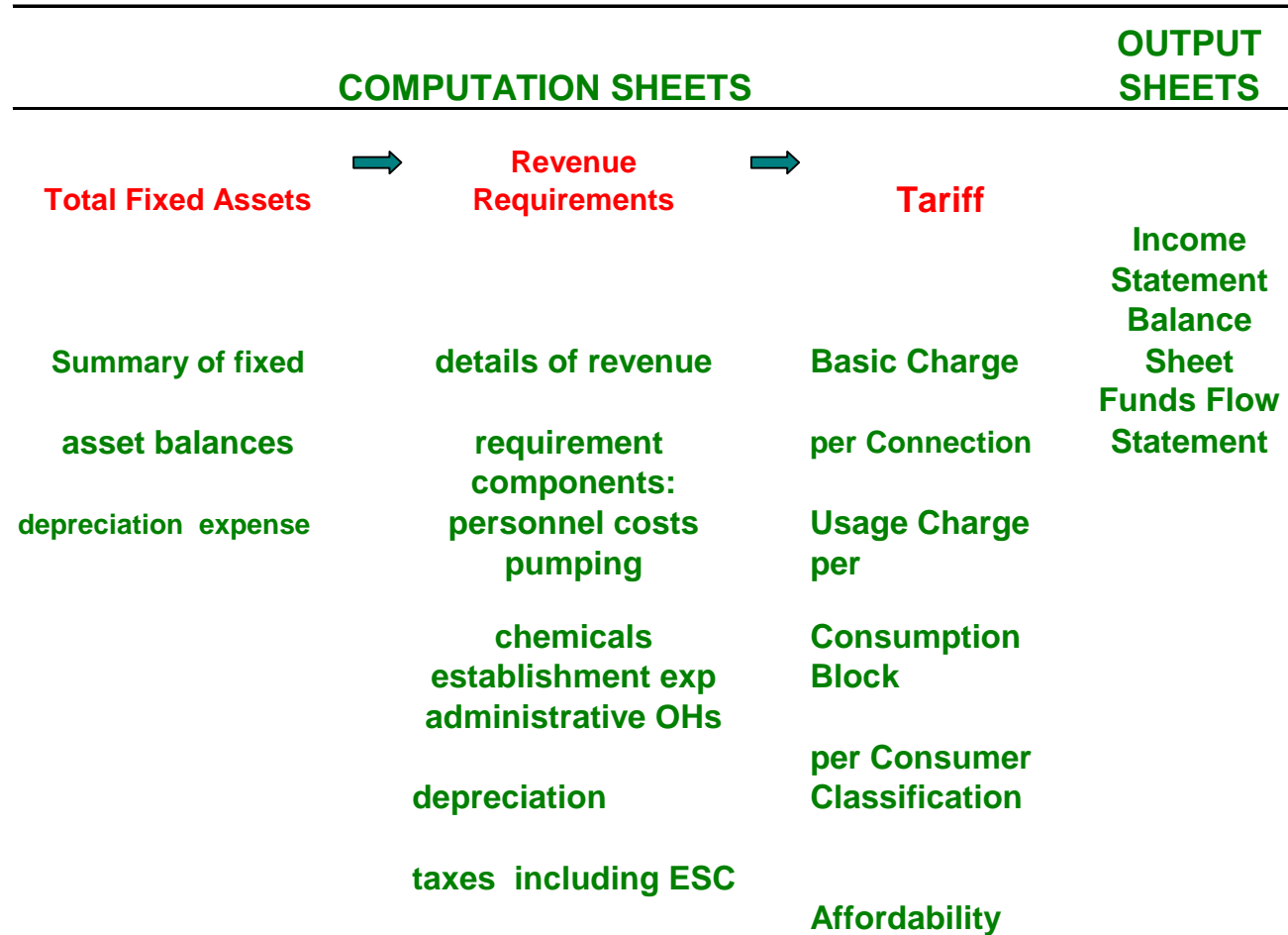
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# Tariff Model Flow



Proposed Tariff Methodology and Structure

**Ministry of Water Supply and Drainage and the Asian Development Bank**  
**ADB TA:4049 SRI: Strengthening the Regulatory Framework for Water Supply and Sanitation**

**“Local Workshop on Economic Regulation and Proposed Amendments to the NWSDB Act”**  
**PROGRAM**  
**Mattara, Sri Lanka**  
**26 July 2007**

<b>Time</b>	<b>Session</b>	<b>Topic/Content Highlights</b>	<b>Facilitator/Subject Expert</b>
10:00 to 10:30 am	OPENING PROGRAM	Registration Distribution of Training Kits Coffee Singing of the National Anthem	
10:30 to 10:45	<b>Session 1:</b> INTRODUCTION TO THE WORKSHOP	WELCOME MESSAGE  Background and Status of ADB TA 4049	DGM RSC  EVELYN ORDA (Financial/Institutional Specialist)
10:45 to 11:00	<b>Session 2:</b> FUNDAMENTALS OF ECONOMIC REGULATION	Introduction to Economic Regulation Institutional and Legal aspects	EVELYN ORDA
11:00 to 11:30		Technical and Customer Service Aspects	SANATH FERNANDO (Technical Regulation Specialist)
11:30 to 12:00		Tariff Setting and Financial Aspects	CHARITH AMARASEKARA (Financial Specialist)
12:00 to 12:15	<b>Session 3:</b> PROPOSED AMENDMENTS TO THE	Highlights of the Proposed Amendments	EVELYN ORDA

<b>Time</b>	<b>Session</b>	<b>Topic/Content Highlights</b>	<b>Facilitator/Subject Expert</b>
12:15 to 12:30	NWSDB ACT	Institutional/Legal Aspects	EVELYN ORDA
12:30 to 1:30	LUNCH BREAK		
1:30 to 2:00	<b>Session 3:</b> PROPOSED AMENDMENTS TO THE NWSDB ACT	Technical/Customer Service Aspects	SANATH FERNANDO
2:00 to 2:15		Tariff Setting and Financial Aspects	CHARITH AMARASEKARA
2:15 to 2:45		Regulatory Guidelines	SANATH FERNANDO
2:45 to 4:00		<b>Break-out Session</b> (concerns/issues re: institutional, financial, technical and customer service aspects of regulation)	
4:00 to 4:30	<b>Session 4</b> SYNTHESIS AND NEXT STEPS	Summary Next Steps Program Closing	EVELYN ORDA