Demand Forecasting to Support Annual Budget Outcomes for Small Ports

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Traffic Forecasts

- **Situation**
  - Seaports revenue is derived from operational transaction of freight, passengers and shipping
- **Importance**
  - Forecasting of future traffic through a port is one of the most important factors in the governance of ports
  - A traffic forecast describes types and number of cargo/Pax/ships expected through a port over a set time-period
  - The forecast defines the needs and timing for infra- and superstructure scale and /or investments
  - Transparency of such information is needed in ensuring shareholders / stakeholders are appropriately informed of future port revenues and investments needs

Photo: Adrian Sammons
Lautoka, Fiji Sept 2017

Traffic Demand Elements

- Demand for port services in years:
  - Immediate next 12 months
  - Short (1-3), medium (5-10), long-term (10-20)
  - Produce 3 forecast scenarios:
  - Low (pessimistic) Mid-Point and High (optimistic)
- Include:
  - Marine – size, type, frequency and dwell time of vessels
  - Portside - cargo / passenger volumes cargo types
  - Hinterland - transport modes for volumes & types of cargo

Photo: Adrian Sammons
Port Vila, Vanuatu Apr 2018

Define Port Services included

- **Services to vessels and navigation:**
- **Channels, swinging basins, berth pockets anchoring areas, berthing facilities, aids to navigation, pilotage, tug services, mooring, vessel repairs**
- **Services to cargo: - ship-to-shore, storage, fisheries, transshipment/storage, freight handling and fuel, vehicles, breakbulk, liquid/dry bulk, etc**
- **Services to passengers: inter-island / Int'l - embarking/disembarking etc.**
- **Services to land transport either road, rail, waterway, pipeline or conveyor belt - land access and services to vehicles or transport equipment**
- **Logistics services in support of the logistic chain for specific commodities passing through the port**
- **Consider all aspects - Now and in the Future**

Photo: Adrian Sammons
Noro Port, Solomon Islands August 2015

Forecast Methodology

- **Define your forecast horizon**
- **Investigate and analyse the global / regional and national economic environment**
- **Investigate and analyse the national market – consumption / inflation**
- **Cargo traffic research and analysis**
- **PAX traffic research and analysis**
- **Fisheries traffic research and analysis**
- **Vessel traffic research and analysis**
- **Historic traffic records analysis**

Photo: Adrian Sammons
Kimbe Port, PNG Feb 2023

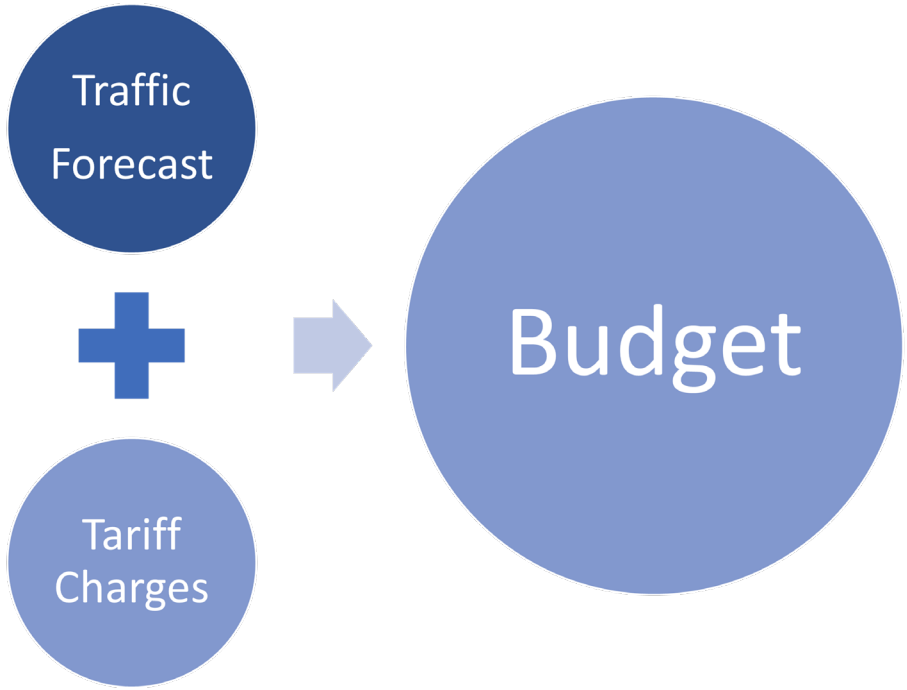
Forecast feeds the Budget

- **Important revenue drivers for ports is the capacity and utilization of its assets, channels terminals, vehicles, tugs, pilot boats, and infrastructure**
- **Main cost elements for ports are;**
  - **Financing / repayments of loans**
  - **Insurance, compliance rego costs**
  - **Dredging / capital and maintenance**
  - **Infrastructure repairs and maintenance**
  - **Marine workboats tugs, pilot boats etc.**
  - **Terminal plant equipment cranes, reach stackers, yard trucks etc.**
  - **Fuel and engineering workshop**
  - **Management, staff recruitment / retirement**
  - **Others**

Photo: Adrian Sammons
Funafuti port, Tuvalu June 2024

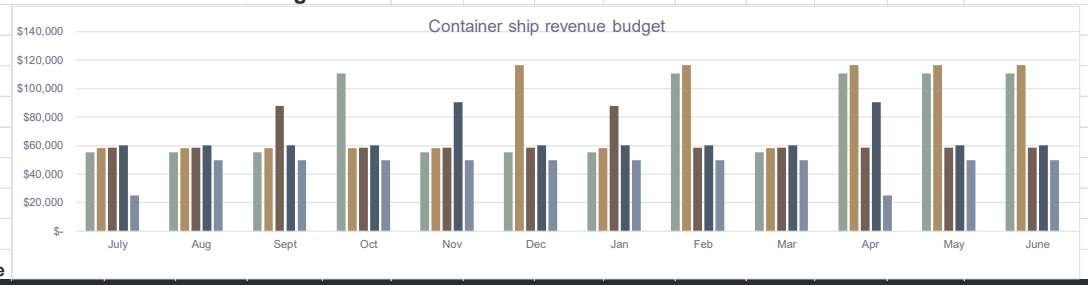
Forecast + Tariff = Budget

- Once the Traffic forecast is completed linked to Port Tariff Charges
- Allocate traffic volume / operational activity matched to tariff charges



Forecast + Tariff = Budget

Ports Authority of XX Pacific Revenue Budget



Berthage Reveneue

Category	Budget	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Trends	Total
Container Line 1	$ 941,207	$ 55,365	$ 55,365	$ 55,365	$ 110,730	$ 55,365	$ 55,365	$ 55,365	$ 110,730	$ 55,365	$ 110,730	$ 110,730	$ 110,730		$941,207
Container Line 2	$ 990,012	$ 58,236	$ 58,236	$ 58,236	$ 58,236	$ 58,236	$ 116,472	$ 58,236	$ 116,472	$ 58,236	$ 116,472	$ 116,472	$ 116,472		$990,012
Container Line 3	$ 761,961	$ 58,612	$ 58,612	$ 87,919	$ 58,612	$ 58,612	$ 58,612	$ 87,919	$ 58,612	$ 58,612	$ 58,612	$ 58,612	$ 58,612		$761,961
Container Line 4	$ 783,149	$ 60,242	$ 60,242	$ 60,242	$ 60,242	$ 90,363	$ 60,242	$ 60,242	$ 60,242	$ 60,242	$ 90,363	$ 60,242	$ 60,242		$783,149
Container Line 5	$ 547,430	$ 24,883	$ 49,766	$ 49,766	$ 49,766	$ 49,766	$ 49,766	$ 49,766	$ 49,766	$ 49,766	$ 24,883	$ 49,766	$ 49,766		$547,430
Other container ships		$ -													$0
Total	$ 4,023,760	$ 257,339	$ 282,222	$ 311,528	$ 337,587	$ 312,343	$ 340,458	$ 311,528	$ 395,823	$ 282,222	$ 401,061	$ 395,823	$ 395,823		

	Full TEU imports	Full 20' Imports	Full 40' Imports	Full 20' RFR imports	Full 40' RFR imports	**Empty TEU Imports**	Empty 20' Imports	Empty 40' Imports	**Full TEU exports**	Full 20' exports	Full 40' exports	Full 20' RFR exports	Full 40' RFR exports	**Empty TEU Exports**	Empty 2
Jul-13	1059	756	171	28	52	10	10	0	148	110	9	20	0	918	723
Aug-13	946	681	135	34	48	14	14	0	135	98	9	19	0	810	637
Sep-13	1106	811	155	32	54	20	16	2	137	105	10	12	0	733	610
Oct-13	950	665	146	35	52	2	2	0	121	95	6	14	0	610	481
Nov-13	1396	1028	216	42	55	8	2	3	164	130	9	16	0	1117	922
Dec-13	1135	813	176	50	48	3	3	0	129	95	13	8	0	926	759
Jan-14	830	608	99	35	44	5	3	1	86	54	12	8	0	699	699
Feb-14	851	609	141	33	34	0	0	0	92	71	7	7	0	649	586
Mar-14	857	610	117	34	48	12	12	0	111	88	7	9	0	734	636
Apr-14	753	468	154	31	50	2	2	0	89	63	8	8	1	590	439
May-14	886	604	135	63	42	139	53	43	134	97	14	9	0	765	613
Jun-14	769	581	117	27	22	0	0	0	160	91	25	19	0	668	522
Total (12 months)	**11538**	**8234**	**1762**	**444**	**549**	**215**	**117**	**49**	**1506**	**1097**	**129**	**149**	**1**	**9219**	**7627**

Photo: Adrian Sammons
Nuku'alofa Port, Tonga August 2019

Demand Forecast Updates

- Periodic updating of traffic forecasts
- Repeat annually / long-range every 2 years
- Identify economic changes for immediate review of cargo & vessel traffic, as well as for inland traffic
- Consistency of methodology is critical
- Compare actual traffic throughput against your original forecasts
- Variances analysed, forecasts updated / budget expectations reported

Photo: Adrian Sammons
Betio port, Tarawa, Kiribati April 2023

Demand Forecast Summary

- Traffic forecasts assume no constraints or obstacles are derived from the port facilities and infrastructure (or lack thereof)
- The port must adapt / grow capacity to meet requirements in terms of increases in flows which it identified in its long-term forecast
- Produce realistic conclusive forecasts using consistent year-on-year methods
- Conclusions taken from the previous years' historic traffic data and port productivity
- Results from the local / regional economic environment and geopolitical conditions
- Disclose impacts on the hinterland and associated inland transport routes
- Undertake port user market studies, identify trade route changes, opportunities and risks

Photo: Adrian Sammons
Apia port, Samoa Sept 2016