Introduction to the Integrated Transport Planning Model (ITPM) - linking the inland transport systems with container ports

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Mr. Sooyeob KIM  
Transport Facilitation and Logistics Section  
Transport Division

United Nations ESCAP
Economic and Social Commission for Asia and the Pacific
MPPM Model Structure

Input

CIY Port Data
O-D Data
Port share

Trade Module

Routes
Service details
Vessel description

Liner Shipping Network Module

Port class
TEU/ship-hour

Output

Port-to-port cargo flows

Fleet required

Vessel calls at ports

Port throughputs

Port capacity required

Port strategic planning module
Trade Module

- Historical data of export/import containerized cargo for individual countries
- Regression analysis
  - GDP vs. container export and imports
- Estimate country-to-country container flow matrix
  - Matrix algorithm
- Estimate port-to-port matrix
  - Port share
**Liner Shipping Network Module**

- Details of shipping services
  - Vessel type, frequency, ports of calls
- Estimate future shipping network
- Load port-to-port flow of containers to the LSNM
  - Cargo allocation process

**Outputs**
- Vessel calls at ports
- Fleet required on each of routes
- Port throughputs
Port Strategic Planning Modules

- Capacity and investment requirement
- Extra work needed: input from national experts
The MPPM suite deals only with the movement from port to port.

This is no longer adequate because:
- The global shipping system is becoming increasingly intermodal.
- Port hinterlands are being redefined, as new inland transport systems are developed.
- There are many landlocked countries that need to use intermodal services to gain access to seaports.
- Many ports are interested in attracting trade originating in or going to landlocked countries or regions.

Major investments are being made in response to these forces.

A better understanding of future intermodal movements is needed to ensure that these investments are made wisely.
ITPM Network

PRIMARY INTERMODAL NETWORK

LEGEND
A  Port  F  Intermodal Terminal  I  Zone  Shipping Services  Rail Services  Access Links
**Trade Module (ITPM)**

- **Define**: Country, Ex/Import, Zone Variables (GDP)
  - Regression, Forecasting CNTR Volume
  - Region to Region (country to Country matrix)

- **Macro Eco. Var.**
  - GDP
  - Trade Volume

- **CNTR Trade**
  - Historical data
  - Forecasting data
  - Cntr Flow matrix

- **Zone Traffic**
  - Full & Empty
  - Ex/Im

- **Containers**
  - Full & Empty CNTR

**Zone Shares**
- Zone to Zone Matrix
Transport Network Module

Define Scenario & Data

Run Assign

Result

Util
Scenario
Data
Run
Result
Diagnostics

Parameter
T/S, Time Cost
Scenario
Data
Cargo allocate
Route & Port/inland terminal
CNTR at each
Route & Port/inland terminal
Cost, Frequency, T/S CNTR
Ports Inland Terminal Route
(Fleet, capacity, frequency, distance, cost)
O–D Capacity Fleet Info
Future working plan

❖ Update DB
  ❖ To make more reliable output, ESCAP/KMI will collect trade and transport related data & update DB
  ❖ Carefully look for SIDC, archipelagic countries & other Land-lock countries

❖ Model run and Joint Study
  ❖ Development scenarios : 2020, 2025
  ❖ Joint study : ESCAP/KMI and regional experts

❖ Advisory services for countries
  ❖ Application of ITPM to transport planning and policy formulation
  ❖ Subregional/Regional meetings(including EGM)
For any further questions: kim105@un.org