

Transforming the Water Sector

The Need and Suggestions for Water Management Transformation

by

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Strategy Paper 16 of the 12th Malaysia Plan: Water Sector Transformation



Transformation

- Is not just a change
- But very rapid change
- Change of form and even function
- “Awesome”; Exciting
- Better, Stronger

the A, B, C, D, E & F of Water Transformation

Accounting, auditing

Bargaining – Inter-sector & end-user

Coding – Laws, Rules, Regulation

Environment, Economics, Engineering

Delegation – responsibility assignment

Feedback, Financing – data, PPP

Elements of Transformation

At the moment there is no water accounting and auditing system. Many are based on traditional estimates.

The present **National Water Resources Study** provides periodic but static data and information. Emphasis on "Supply"

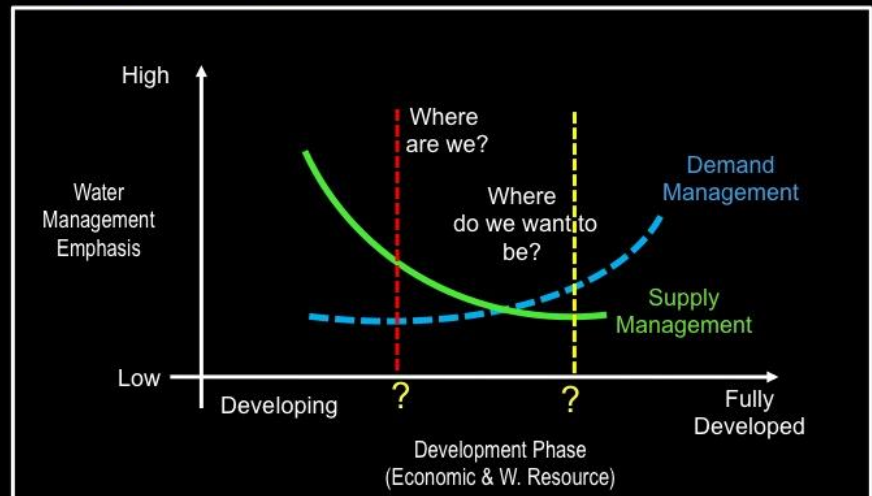
Need to revamp the the thinking and approach to "Demand Management"

Need to do a new approach to the NWRS for Water Transformation

Acounting

- Water Accounting and Auditing = Governance
- Need to change from "Supply" to "Demand" Management

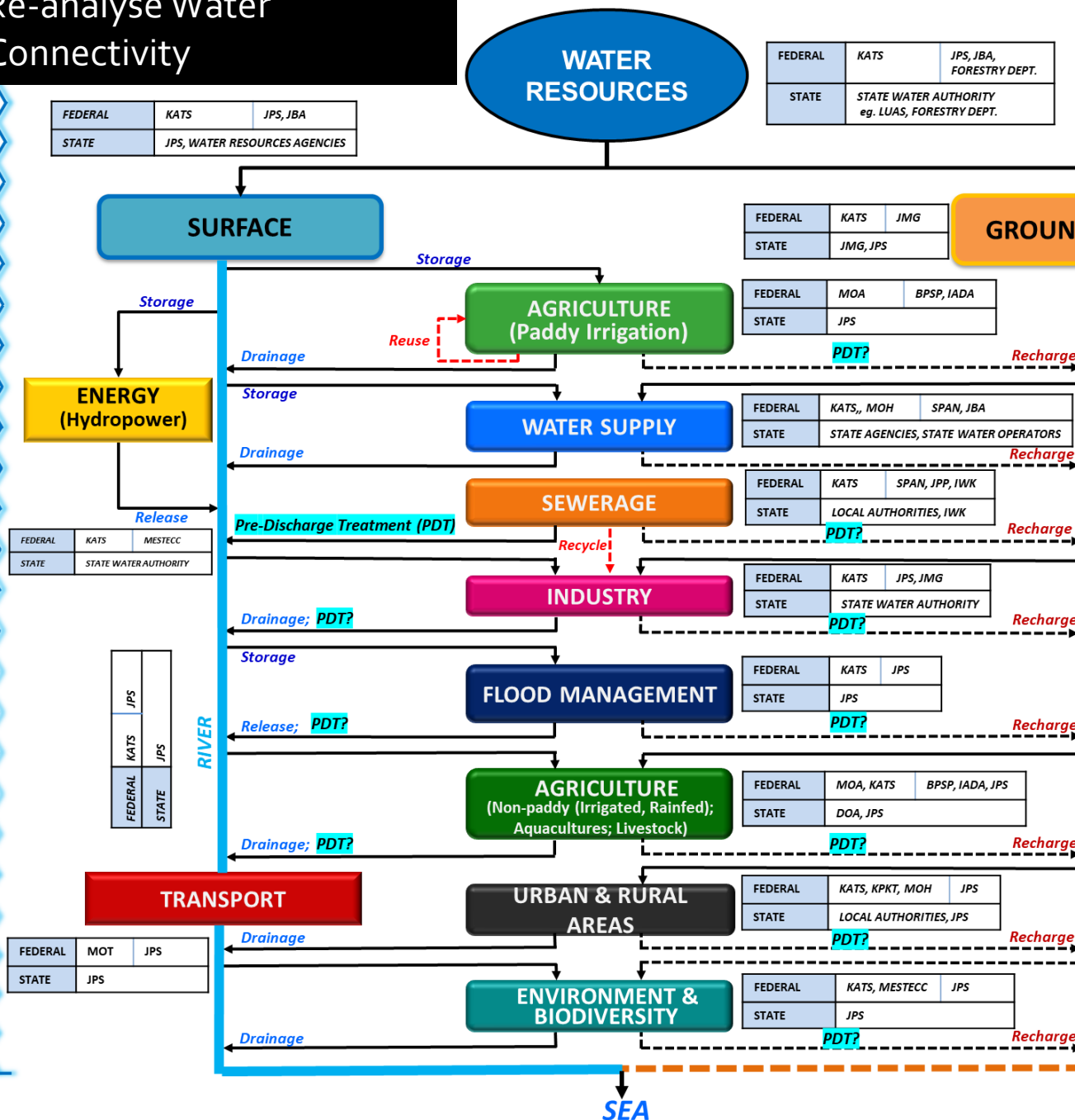
**Sectorial > IWRM =
Supply Management > WDM**



Re-analyse Water Connectivity

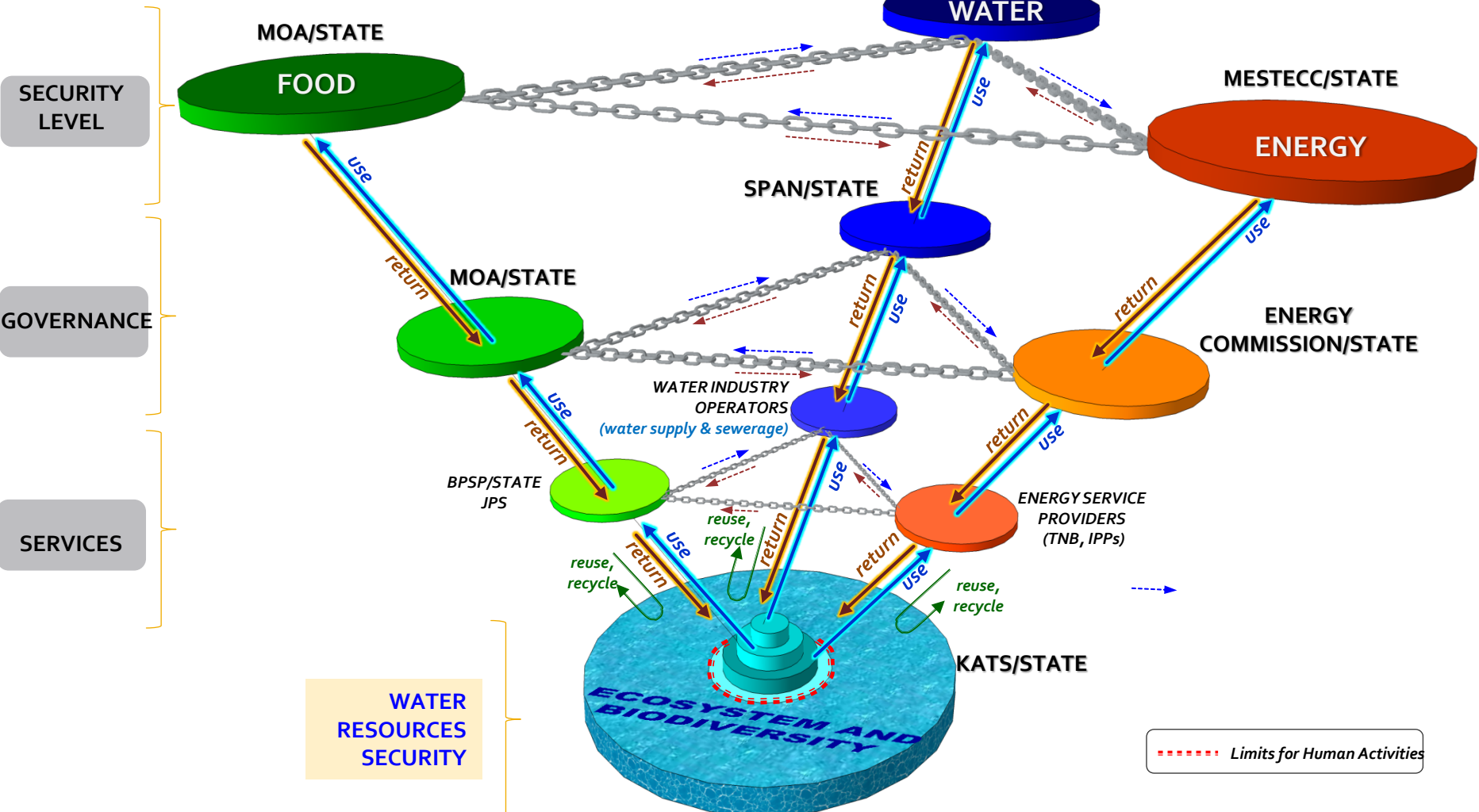
FEDERAL	KATS, MESTECC, MOH	JMM, JPS, DOE, JBA, TNB
STATE	WATER OPERATOR, DOA, JPS, PRIVATE SECTOR	

Meteorology; Hydrology; Flood & Drought Forecasting and Warning; Quantity and Quality Monitoring



Assessment; Quantity and Quality Monitoring

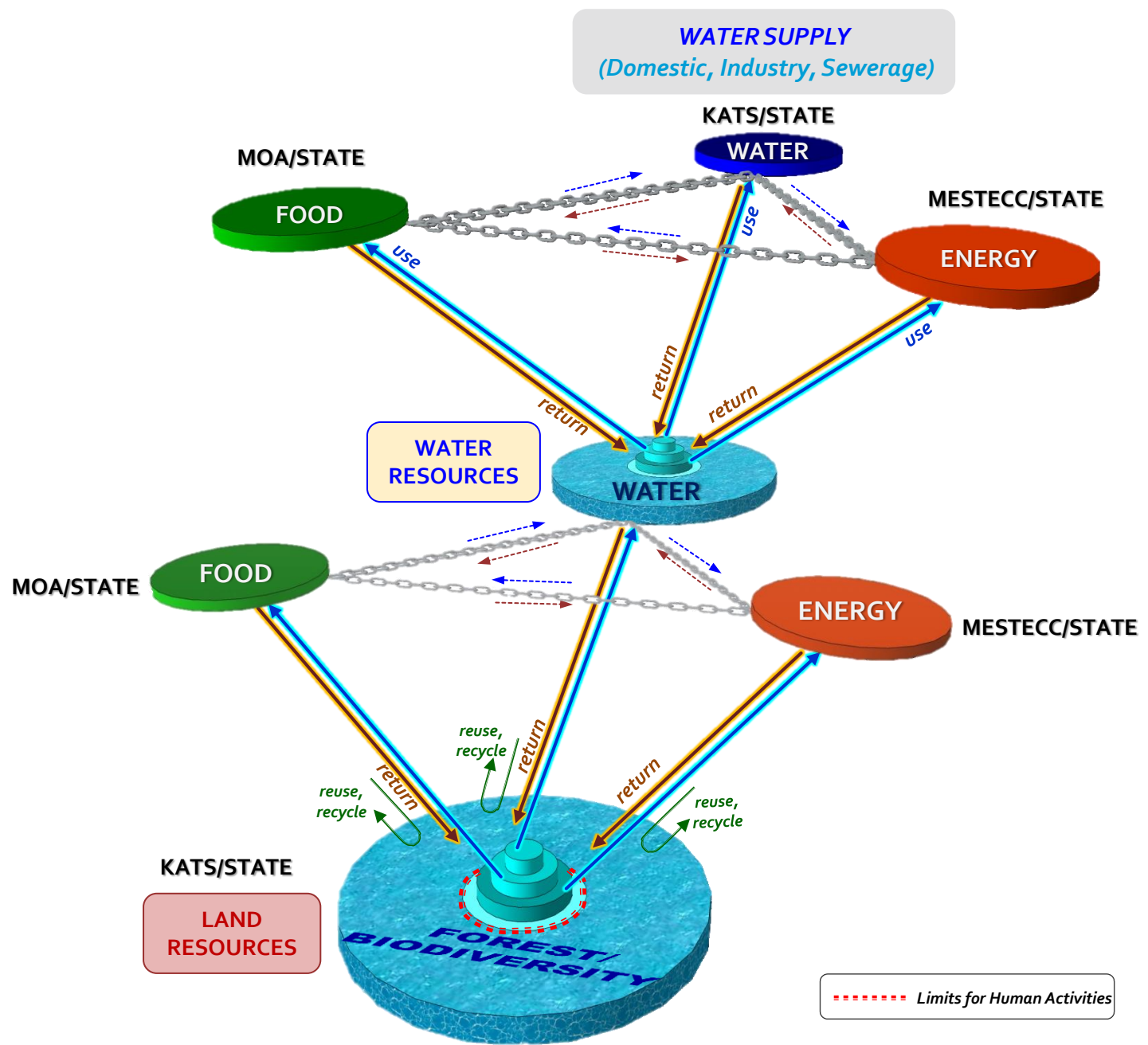
(WATER SUPPLY & SEWERAGE)



WATER-ENERGY-FOOD NEXUS

SECURITY LEVEL

SECURITY LEVEL

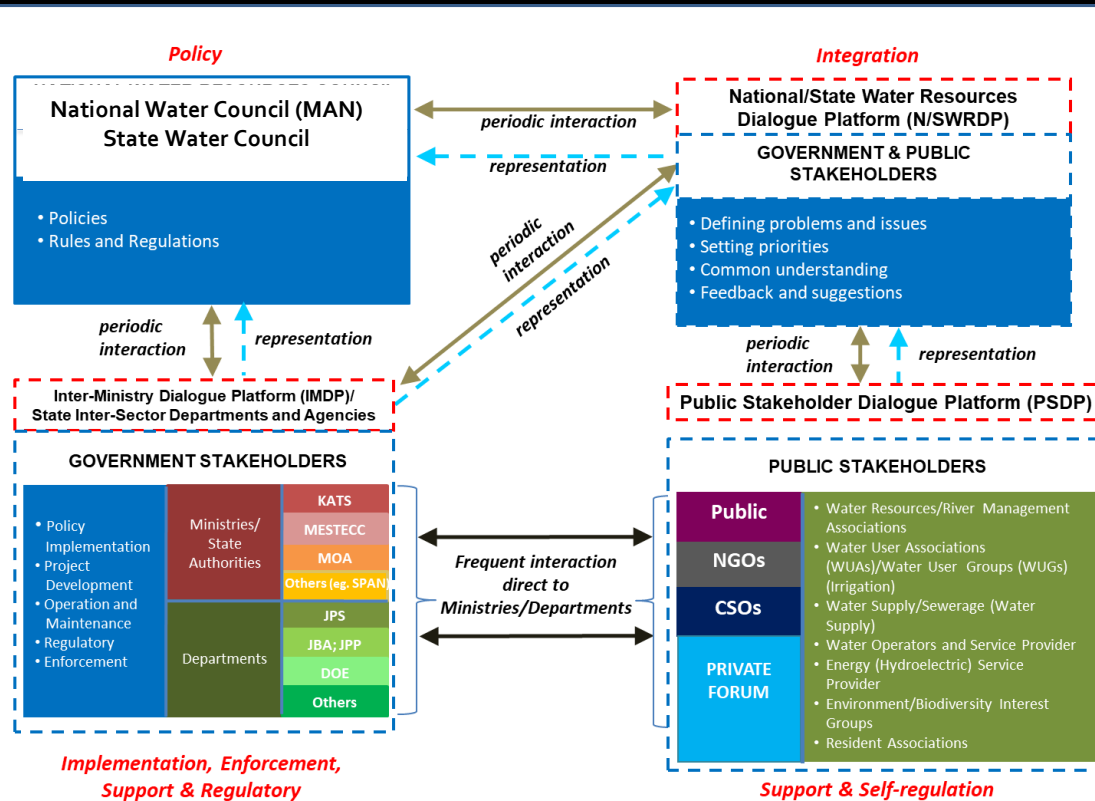


WATER-ENERGY-FOOD NEXUS (Water and Land

Elements of Transformation

Bargaining

- We need to install a formal Government-Public Participation Platforms
 - To discuss and get consensus on water tariffs, water savings, new laws, rules, regulations, policies



Proposed Institutional Linkages for Public Participation and Communication

Source: RPM Engineers Sdn Bhd

tor in RMK12

Elements of Transformation

The “Water Bankers”

- **States:** Terengganu, Pahang, Sarawak
- **Sectors:**
- Energy: 79,000 MCM; 5,648 MCM/dam average
- Irrigation: 2,148 MCM; 200 MCM/dam

Time to share; Time to Trade?

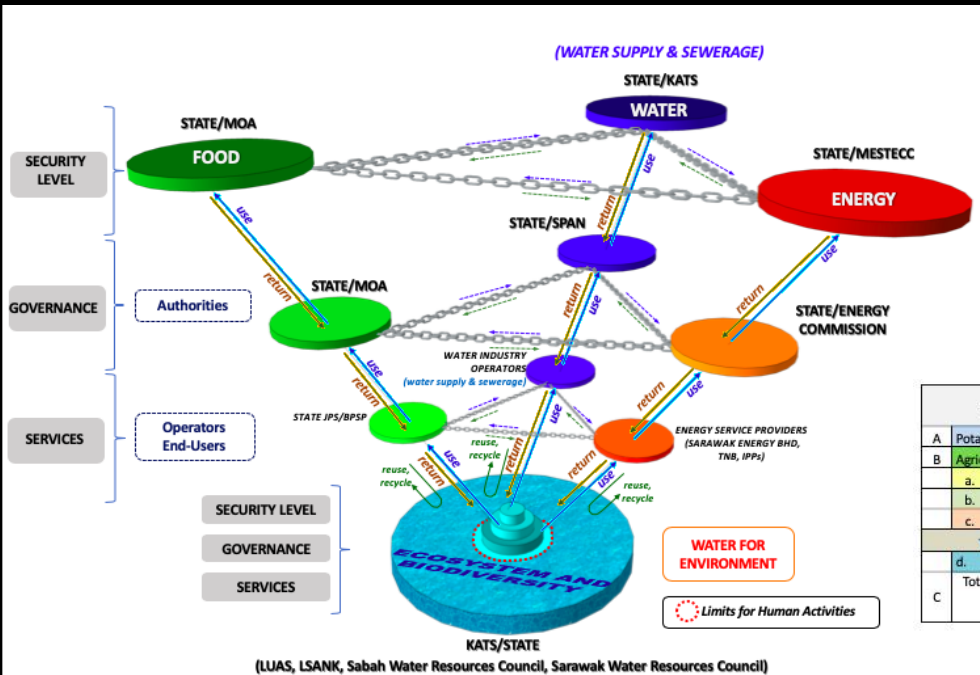
Coding

- Model Law (RUU SA)
- But need to incorporate:
 - Water Accounting
 - Water Auditing
 - Data and Information Sharing
 - Water Sharing

Elements of Transformation

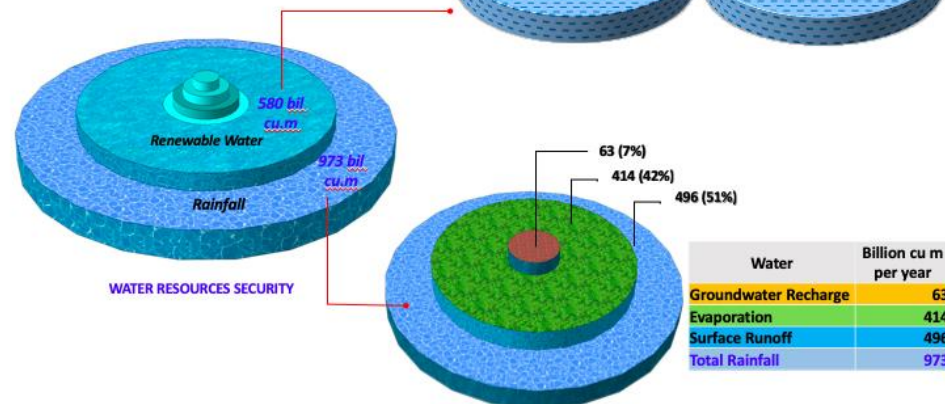
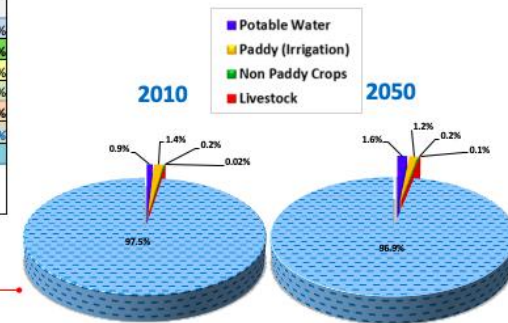
Delegation

- Who is responsible for Water for Environment?
- Water for Energy?
- Water for Agriculture?
- Industrial Waste Discharge Management?



Water-Energy-Food Nexus with respect to Water Resources

Water Demand		MCM/year		%	
		2010	2050	2010	2050
A	Potable Water	5,277	9,291	0.91%	1.60%
B	Agriculture (a+b+c)	9,512	8,959	1.64%	1.54%
a.	Paddy (Irrigation)	8,266	7,205	1.43%	1.24%
b.	Non Paddy Crops	1,117	1,176	0.19%	0.20%
c.	Livestock	129	578	0.02%	0.10%
	Total Water Demand (A+B)	14,789	18,250	2.55%	3.15%
d.	Fisheries*	1,287	2,898		
C	Total Actual Renewable Water Resources (FAO, Aquastat 2016)	580,000	580,000		



Elements of Transformation

The Water Industry is fragmented due to traditional categorisation –
Manufacturing, Construction, Services

US estimated USD 120 billion worth (2009); 6-7% Growth (Water Supply).
More with Environment, Irrigation, Flood Mitigation

Australia, France, Netherlands, UK, US are big water services exporters to Asia Pacific

Korea K-Water (SMART Water) and Asia Water Forum and Singapore coming in very strong; aiming for 6% GDP; Singapore Water Week, Membrane Technology

Environment, Economics, Engineering

- **Need to care for Water for the Environment**
- **Designs for Climate Change Proofing**
- **Need to view water in terms of GDP, GNI, high value jobs**
- **The transformation will require engineering, science, technology and innovation (STI) development and investments**
- **Also a tremendous business opportunity for the Water Sector Industry – We must strive for technology ownership; less “Plug and Play”**

Elements of Transformation

Engineering

- The Grid System should be considered seriously for the future
- Also climate change impacts and disaster preparedness

The MADA Grid Model:

- Inter-Dam Connectivity (Muda-Petu)
- Inter-Basin Connectivity (Muda, Kedah, Perai (Mengkuang Dam))
- Inter-Sector Distribution Service
- Inter-State Distribution (Perlis, Kedah, Penang)
- Flood Management service
- Telemetric Network & DSS

Elements of Transformation

Feedback

- One strategy to breach sectorial boundaries
 - A dedicated organization for integrated data collection system for water managers and end-users

NO	AGENCY	HYDROLOGICAL STATIONS	NOTES
1.	Department of Irrigation and Drainage (DID)		
i.	Rainfall	1,349	
ii.	Streamflow	224	
iii.	Water Level	515	
	<i>Subtotal</i>	2,088	
2.	Department of Environment (DOE)		
i.	Clean Rivers	480	
ii.	Slightly Polluted Rivers	312	
iii.	Polluted Rivers	44	
iv.	Water Intake	55	
	<i>Subtotal</i>	891	
3.	Malaysian Meteorological Department (MET Malaysia)	341	METEOROLOGICAL ELEMENTS OBSERVED: Daily and Hourly Rainfall, Hourly Air Temperature, Hourly Relative Humidity, Maximum Temperature, Minimum Temperature, Hourly Wind, Sunshine Hour, Solar Radiation, Evaporation, Atmospheric Pressure.
	TOTAL	3,320	

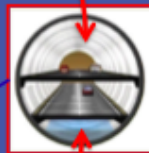
Also systems operated by MADA and KADA and Water Operators

Elements of Transformation



The SMART Tunnel Model

Private Funding



Public Funding

Private Funding PPP

- For Income Generating Components
 - Water Supply Component
 - Energy Generation Component

Public (Government) Funding

- For Social Components
 - Irrigation
 - Flood Management

Term Contracts

- For Transfer Scheme Operations and Maintenance

Financing

- Need to promote
 - PPP – Funding & Service Levels
 - Inter-sector; cross-financing e.g. Water Savings in Irrigation reliefs available water for water supply
 - Multi-purpose dams and storages e.g. flood mitigation ponds + ORS



Public-Private Partnerships (PPP) and Participative management in Irrigation

The BRL Group, twofold experience :

- a concession holder and operator of large irrigation schemes in France and abroad,
- an engineering consultancy in charge of project structuring

BRL Group:
irrigation scheme concession holder and operator

- In France, BRL's own experience is based on a PPP agreement. BRL designed and still manages (until 2051) all the infrastructure and facilities in the Languedoc-Roussillon Regional Water System in the frame of a concession agreement: 105 km of canals, 3 dams, 125 pumping stations and 5000 km of buried pressure pipes. The system is now being extended with the Aqua Domitia project (KM200). BRL has already equipped some 120 000 ha for irrigation and has just created 4000 ha of new schemes.
- In Morocco, BRL is a shareholder in AMENSOUSS, the concession grantees in charge of the construction, operation and maintenance (for 30 years) of the Guerdane citrus farming scheme (10 000 ha).
- In Ethiopia, BRL and BRLE have an engineering services management contract placing them in charge of the design, construction supervision and organisation of operation and maintenance and operation (for 6 years) of Megech and Ribb Irrigation Schemes (18 000 ha).



Transformation Exciting

- Change will occur, but in its own time, no excitement
- Excitement is from the rate of change = acceleration
- E.g. Roller Coaster
 - Speed only 60-90 km/hr
 - But exciting because of acceleration; rate of change of speed



Transformation

- Must be inclusive, motivating, inspiring



When President Kennedy declared that the US will land a man on the moon and return safely to earth by the end of the decade...

- It inspired his country; its people and the World
- Whole spectrum of profession and people involved
- Inspired innovations

Is objective important?

- To send one man and bring him back
- One driver
- One Assistant

It is the process and outcome. e.g. The National Car?

We need: **“A Project to the Moon”!!**

Sustainable Development Goals



The SDGs - Water Transformation “*Project to the Moon*”?