



Metric and Process Benchmarking for Utility Optimisation

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Content



- First, an overview of metric and process benchmarking
- Second, a description of regulatory benchmarking in England and Wales

The Need for Performance Measurement



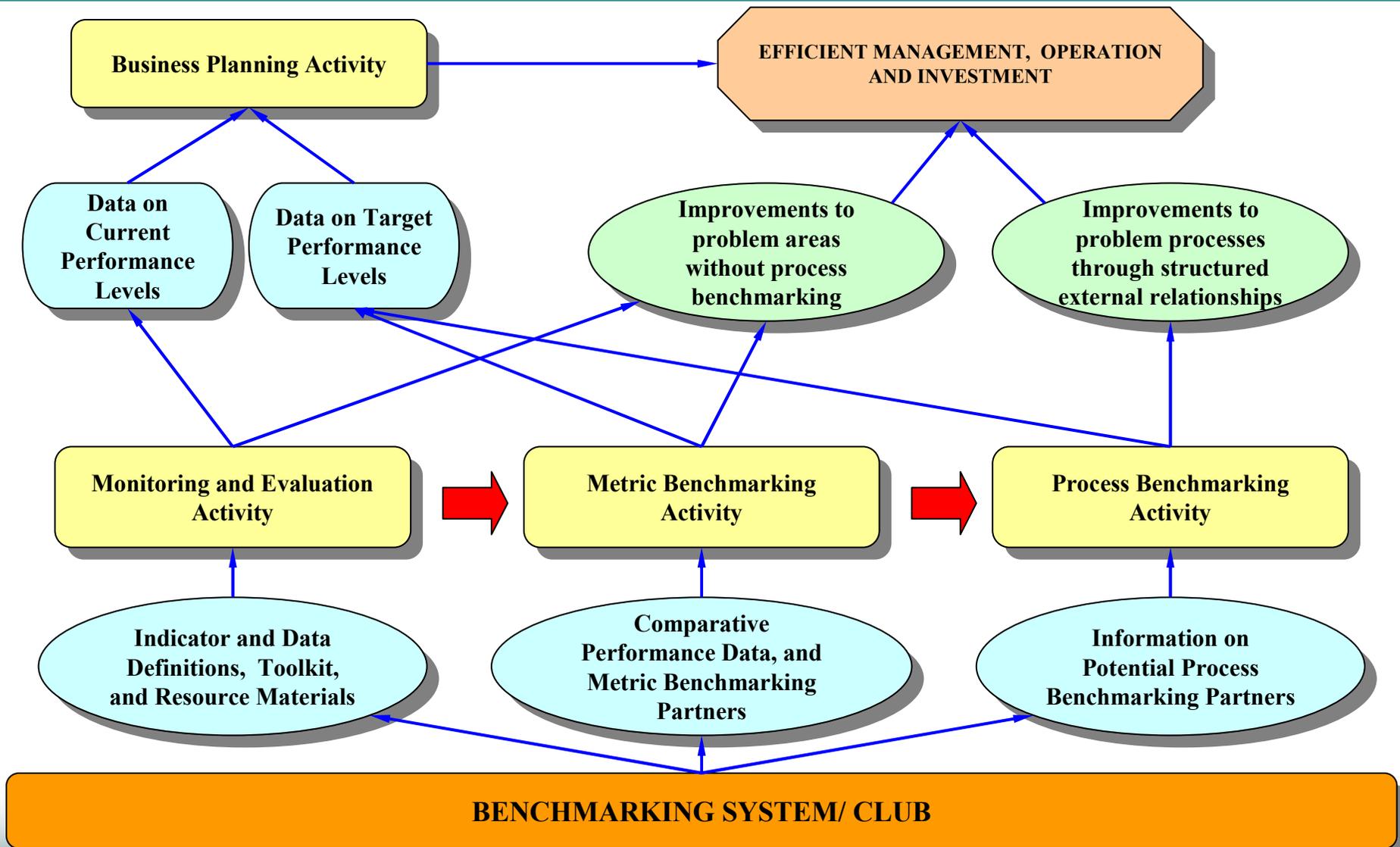
- Improved **Management** at Utility level
 - Increased efficiency
 - Communicating with customers
 - Self promotion!
- Utility **Regulation**
 - Utility efficiency assessments (by national authorities)
 - Enhancing regulatory authority (publication of results)
- Sector **Policy**
 - Resource implications of inefficiency
 - Economies of scale
 - Performance benchmarks

What Types of Benchmarking Exist?



- Metric Benchmarking;
 - numerical measurement of performance levels and comparison with other water undertakings to identify areas needing improvement (*e.g. staffing numbers/connection, % leakage level, % supply coverage, etc*)
- Process Benchmarking
 - identification of failing key processes and comparison with best-in-class organisations to learn best practice. Direct and open relationships with other selected partner companies. (*billing and collection process, management of mains maintenance, etc*)

Business Planning and Benchmarking



How is benchmarking organised?



- By utilities and utility associations
- By regulators
- By International Funding Agencies

- Public schemes or private benchmarking clubs
- Sub-national, national, international membership

- One-off projects or long-term arrangements

Metric Benchmarking



Metric benchmarking provides:

- Identification of those areas where there is an **apparent performance gap**
- An **understanding of explanatory factors**, such as physical characteristics, geography, weather, population, all key to understanding the apparent performance gap, and may add to or diminish that gap, generating a real performance gap.
- All metric benchmarking data should therefore be **treated with a degree of caution** and not necessarily taken at face value.

What performance indicators are used (IWA, IBNET, and bespoke)?



- Service Coverage
- Water Production and Consumption
- Non-Revenue Water
- Metering
- Network Performance
- Operating Costs and Staff
- Quality of Service
- Affordability
- Billings and Collections
- Financial Performance
- Process Indicators
- Assets

Plenty of metric benchmarking initiatives in Europe



- Baltics
- England & Wales – performance comparison part of regulatory process
- Scotland – integrated into the new regulatory regime and providing the targets for improvement
- Portugal – being integrated into regulatory regime
- EU – national schemes in Netherlands, Denmark, Sweden; specific projects in Austria, Czech Rep, France, Germany
- Lithuania – improving regulatory understanding and capacity

And plenty of benchmarking initiatives around world



- South America – ADERESA Initiatives
- Canada/USA – Water Benchmarking Initiatives
- Australia – WSSA regulatory process
- Africa – SPBNET from Water Utilities Partnership
- South Asia – WSPSA development
- Philippines – Small Towns benchmarking
- Indonesia – PERPAMSI initiative
- Vietnam – joint World Bank/VWSA initiative
- South Pacific – joint energy/water benchmarking
- SEAWUN – regional initiative
- IBNET – world-wide

Process benchmarking



- Examines identified weak processes in conjunction with process benchmarking partners, and seeks improvement.
- Partners may be outside of water industry.
- Best performance for own organisation may not be equal to best performance as determined by metric benchmarking of your peer, but rather the best that can be achieved the particular circumstances and constraints that exist for you.

Examples of Processes



- Customer service
- Revenue Collection
- Debt Management
- Capital procurement
- Sewage treatment plants
- Renovation of sewers
- Maintenance
- Laboratories
- R&D
- Information Systems
- Energy Management
- Asset management

Processes and sub-processes



Process Level 1	Sub-process Level 2	Sub-process Level 3
Supply water	Water resources	Plan
		Operate
	Water production	Monitor
		Pump
	Water distribution	Operate
		Quality control
Maintain assets	Asset information	Asset information
	Schedule maintenance	Schedule maintenance
	Undertake maintenance	Reactive maintenance

Process benchmarking methodology 1

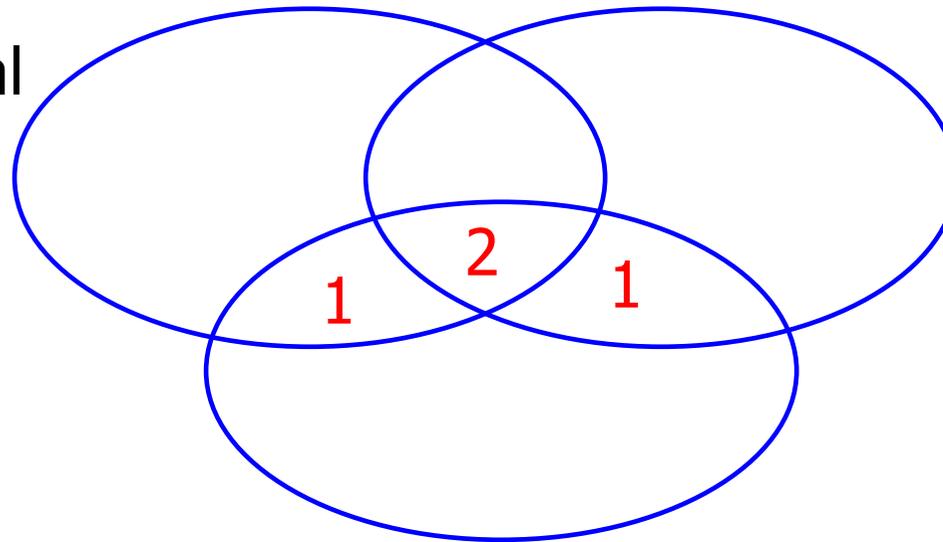


- Identify all your processes, and sub-processes
- Analyse key aspects of processes
 - High financial impact (leverage on costs, revenue collection, - activity based costing)
 - Importance to stakeholders (customers, regulators, employees, community, media)
 - Ability to be changed (can or cannot be changed)

Prioritising processes



High
Financial
Impact



Importance
to
Stakeholders

Can be
Changed

Sewerage Processes – sub-process ranking against stakeholder importance



Stakeholder needs	Weight	Operate system	Inspect sewer	Clean sewer	Prev. maint.	Reactive maint.	Custmr service
Safe / healthy system	8	9 72	9 72	3 24	9 72	3 24	1 8
Environment	7	9 63	1 7	1 7	9 63	1 7	1 7
Reliable	6	9 54	3 18	3 18	9 54	9 54	3 18
No odours	5	9 45	3 15	9 45	3 15	3 15	1 5
Good customer service	2	1 2	3 6	1 2	1 2	3 6	9 18
Appropriate pricing	3	3 9	1 3	1 3	3 9	1 3	1 3
Timely, clear bill	1	1 1	1 1	1 1	1 1	1 1	9 9
Rapid response time	4	3 12	1 4	1 4	3 12	3 12	3 12
Weighted total		258	126	104	228	122	80
Weighted rank		1	3	5	2	4	6

Multi-criteria analysis – process prioritisation



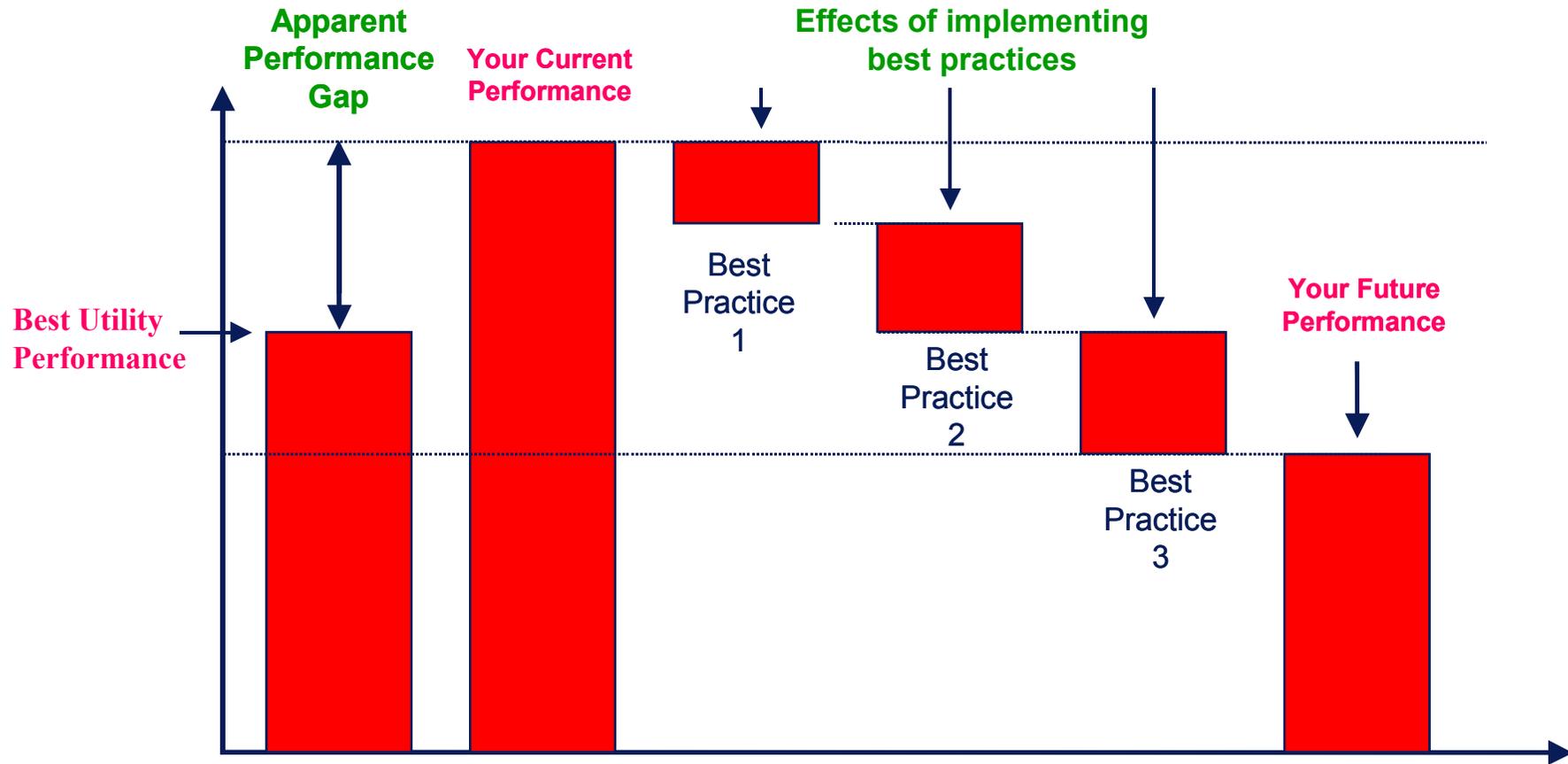
Process	Ability to change	Financial impact (score out of 100)	Stakeholder importance (score out of 50)	Total score	Rank
ProcessName	Y	71	41	112	1
ProcessName	Y	67	43	110	2
ProcessName	Y	99	10	109	3
ProcessName	Y	90	4	94	4
ProcessName	Y	59	28	87	5
ProcessName	Y	44	38	82	6
ProcessName	Y	34	24	58	7
ProcessName	Y	22	27	49	8
ProcessName	Y	44	4	48	9
ProcessName	Y	33	14	47	10
ProcessName	Y	9	37	46	11
ProcessName	Y	2	33	35	12
ProcessName	Y	6	11	17	13
ProcessName	Y	10	5	15	14
ProcessName	N	90	13	103	15
ProcessName	N	96	5	101	16
ProcessName	N	92	2	94	17
ProcessName	N	93	0	93	18
ProcessName	N	42	17	59	19
ProcessName	N	39	4	43	20

Process benchmarking methodology 2



- Prioritise and identify processes for comparison
 - Multi-criteria decision analysis
- Collect data on selected processes
 - Process analysis (process mapping)
 - Detailed activity based costing
 - Identify the performance gap (regression analysis, data envelopment analysis, balanced scorecard)
- Identify partners (a creative exercise)
 - Top rank performer
 - Previous exposure to process benchmarking
 - Inclination to provide relevant information
 - Other specific criteria (public /private, size, process industry or utility, product value, etc)
- Adopt a code of practice – and begin

Closing the performance gap



Example – A US Water Utility



Problem Area:

- To improve the process used to track the status of customer complaints relating to non-emergency water leaks.

Difficulties with:

- Multiple work orders relating to the same complaint.
- Work orders getting misplaced or misdirected during the hand-over from one unit to another.

Partners



- A Hospital - system and procedures utilised to track and maintain up-to-date patient records.
- A Cable TV Company – management of customer calls related to service failures.
- A Sanitary Commission - combined customer call centre/crew dispatch/work order tracking system.

Outcome



- Improvement of procedures at the customer call centre.
- Development of a centralised customer database system and work-order tracking system.
- Re-engineering of distribution to facilitate a district-specific case management programme.
- Reduced the number of duplicate work-orders.
- Reduced costs associated with unnecessary inspections.

Example – A UK Water Utility



Problem Area:

- Overall asset maintenance methodologies

The Partners



- Two petrol retail companies
- An engineering contractor
- An oil & gas company
- Two UK water supply companies

Outcome



Scope for improvement was identified in:

- Maintenance strategy development
- Pump maintenance
- Reliability improvement
- Asset life extension
- Proactive maintenance
- Life cycle supply and service contracts

Regulatory Benchmarking in England and Wales



- Current structure introduced in England & Wales in 1989 with privatisation
- 22 Water Companies (10 water and sewerage companies - service pops 1.2 to 7.4 million, 14 water only companies - service pops 92k to 2.4 million)
- Licensed companies – 25 years
- They own and operate assets
- Make profit and pay dividends to shareholders
- Regulated by three regulators (economic (Ofwat), environment (EA) and water quality (DWI))
- Price setting - price cap, incentive based
- A 5 year tariff setting cycle

Comparative Competition



- “Normal” market competitor pressure helps to keep prices as low as possible
- “Monopoly” market for water:
 - competition is developing (slowly and not effectively)
 - shareholder pressure is to reduce costs
- Ofwat developed indicators to assess:
 - unit operating & capital costs/regional/company-specific factors
 - standards of service achieved (technical and customer)

Ofwat Performance Measures - Customer Service



- DG2 Properties at risk of low pressure
- DG3 Properties subject to unplanned supply interruption of 12 hours or more
- DG4 Population subject to hose-pipe bans
- DG5 Properties at risk of flooding
- DG6 Billing contacts not responded to within 5 working days
- DG7 Written complaints not responded to within 10 working days
- DG8 Bills not based on meter readings
- DG9 Received telephone calls not answered within 30 seconds

Overall performance assessment (OPA)



- Covers water supply, sewerage, customer service and environmental performance
- Informs stakeholders about overall company performance
- Will be used for future price reviews
- Allows weighting of the various performance areas to produce the OPA.

Ofwat performance assessment



- Water Supply (weight 3)
 - DG2 - Risk of low pressure
 - DG3 - Unplanned interruptions
 - DG4 - Water restrictions
 - Potable water quality
- Sewerage Service (weight 1.5)
 - DG5 - Sewer flooding incidents (capacity)
 - DG5 - Sewer flooding incidents (other causes)
 - DG5 - Properties at risk of flooding more than once in 10 years
- Customer service (weight 1.5)
 - DGs 6/7/8/9 - Company contact
 - Other customer service
- Environmental performance (weight 2.75)
 - Category 1, 2, and 3 pollution incidents (sewage)
 - Sludge disposal
 - Population served by STWs in breach of their consent
 - Category 1 and 2 pollution incidents (water)
 - Leakage

Use of Benchmarking Information



- Cost and performance information used by OFWAT in Periodic Reviews (price setting)
- Cost and performance information publicly available to provide indirect pressure:
 - inform shareholders/analysts
 - apply peer pressure
 - inform customers
- “naming and shaming” - strong incentive

Benchmarking Trends



- Countries/new regulators are introducing metric benchmarking for the first time
- Increasing public utility interest
- Ongoing formation of syndicates
- Out-of-industry process benchmarking mainly undertaken by individual companies
- International bodies are starting to promote global/regional benchmarking activity