



SCIENTIFIC APPROACHES TO LINK THE TARGETS IDENTIFIED IN NATMAP AND NLTSF TO MEASURABLE AND COMPARABLE ANNUAL TARGETS APPLICABLE TO THE LOCAL MUNICIPALITY SPHERE OF GOVERNMENT

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SATC



Graphical line of instruments guiding transportation & development

WHAT should be done nationally

2006 NLTSF
Short term
(5-years)
Goals &
objectives

2012 NDP
& NIP
Goals &
objectives
2030

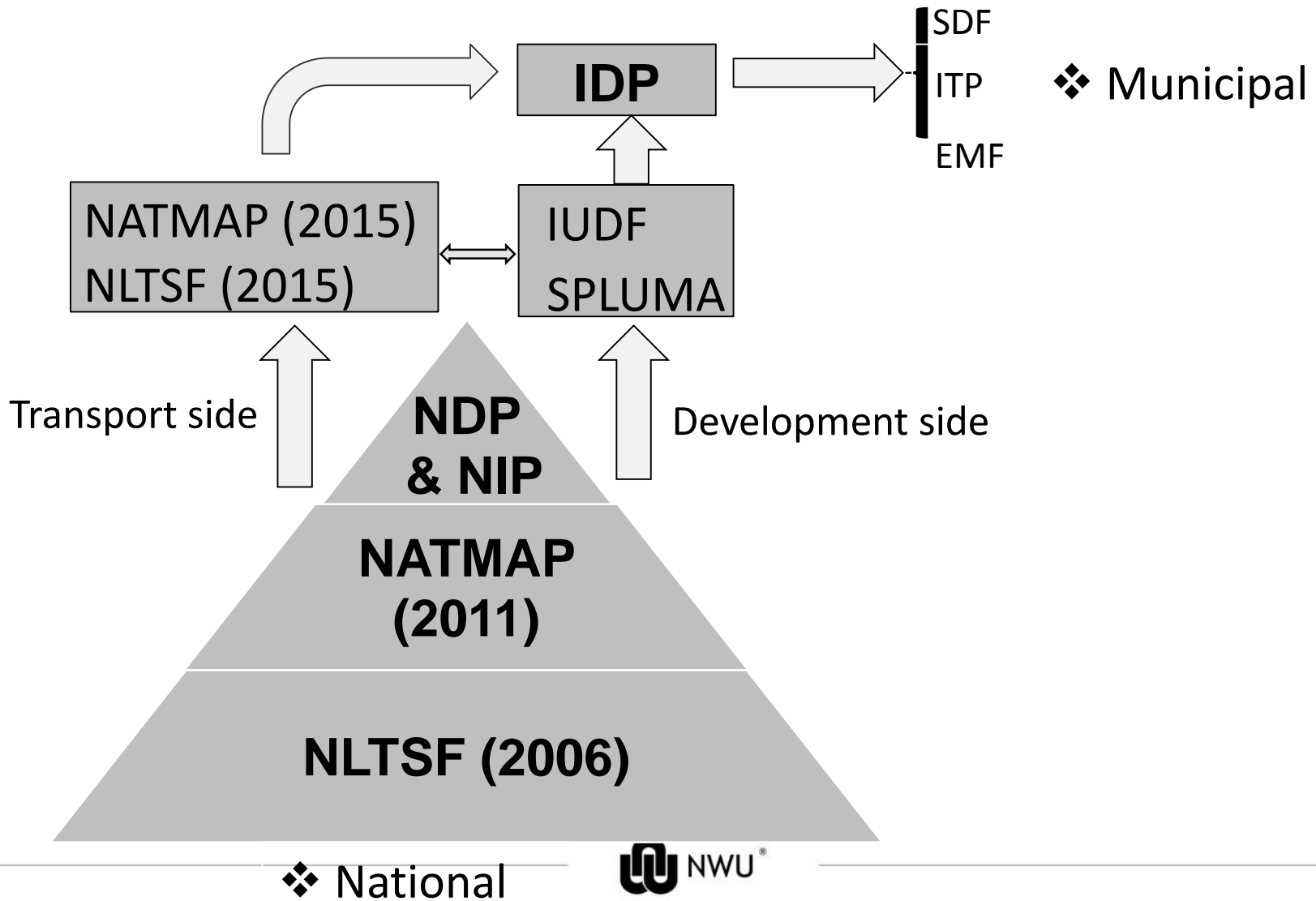
HOW & WHEN

2015 *NATMAP*
(Update);
2015
Reviewed
NLTSF

2011 *NATMAP*
Goals &
objectives
2050

2014 *IUDF*

2016 *IUDF*
Implementation
Plan



Motivation

The monitoring of municipal performance is incomplete, fragmented and unsuccessful.

The implementation process must include:

- **Targets** that are:
 - relevant,
 - well-defined,
 - measurable and
 - annually comparablefor the realisation of long-term targets.
- **Guiding principles** i.e.
 - well-defined **measuring scales** for monitoring and implementation.
- The **comparison of entities on the same level.**

Aim: Methodology towards implementing and monitoring municipality's contribution to effective and sustainable transport

Given: KPA, KPI & Long term targets.

Problems: Some of the targets are missing, weakly defined or in conflict.

Objective:

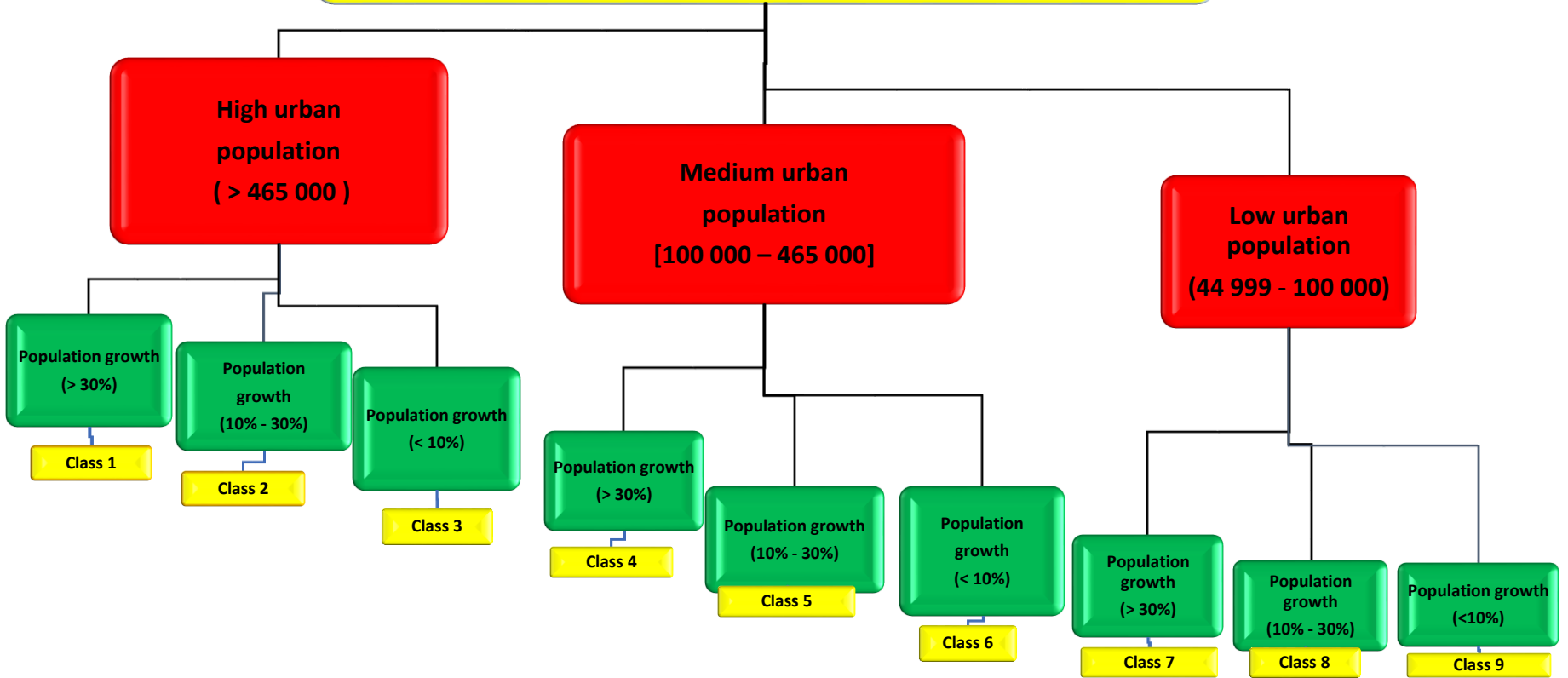
1. Scientifically determine **appropriate targets** in the case of absent or missing targets.
2. To **connect** the KPIs and long term targets to measurable and comparable **annual targets**.
3. Define applicable comparable **annual measuring scales**.

What to compare?

IUDF Implementation Plan identify priority municipalities for immediate intervention.

HOW?

The IUDF prioritisation of municipalities/metros



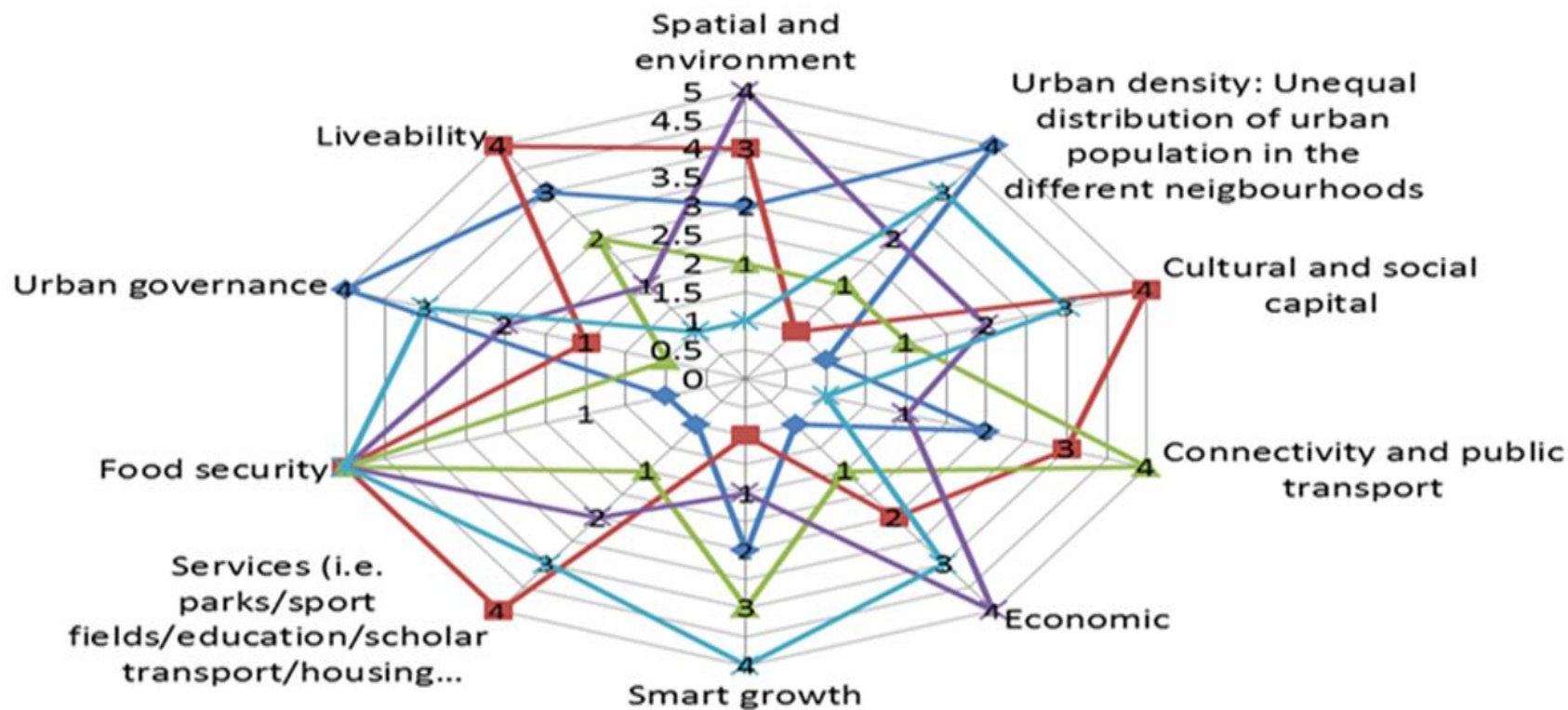
Municipalities or metros in the same class can be assessed to determine:

- strengths,
- weaknesses
- performance shortfalls and
- global performance.

INDICATORS	TLM Ranking			MATLOSANA Ranking		
	2010	2012	2014	2010	2012	2014
I ₁ Percentage of households with access to water	0.05	0.06	0.06	0.03	0.06	0.06
I ₂ Percentage of households with access to sanitation	0.03	0.05	0.06	0.06	0.06	0.06
I ₃ Percentage of households with access to refuse removal services	0.04	0.05	0.05	0.05	0.06	0.06
I ₄ Percentage of households with access to electricity	0.05	0.05	0.06	0.06	0.05	0.06
I ₅ Blue drop percentage compliance	0.04	0.04	0.04	0.03	0.04	0.04
I ₆ Green drop percentage compliance						
		2010	2012	2014		
Highest Ranking order		TLM	MATLOSANA	TLM		

Weighted sum method (5=Best, 1=Worst)

Ala Jou Kan Khu Tig



Scientifically determined annual targets:

NLTSF Target (Capacity to deliver):

of professionally registered personnel in Civil Engineering, Traffic Engineering, Transport Economics, Town Planning, Urban Design, and Transport Planning.

Human Capacity to Deliver:

- **Vacancies** applicable to registered professional Eng. and Technologists;
- Technical Director(s) held a **degree(s)** in a technical field;
- **Vacancies** applicable to registered Traffic Engineer or Transport Planner(s) or Transport Economic(s);
- **Vacancies** applicable to registered Town Planner(s);
- Municipal manager and Technical Director years of **relevant work experience** ≥ 10 years.

Structure Capacity to Deliver (determined by considering Legoabe(2017)):

- Municipal engineers must be protected from **political interference**.
- No **late approval of projects and budgets** by council officials;
- Adequate infrastructure **maintenance strategies** and the whole **budget** for maintenance must be spend in the last financial year;
- **Transparent processes for awarding** of all contracts and projects.
- The **municipality poverty headcount level** must be consider.

Weakly defined target:

NATMAP Target (Road Safety):

- ***50% reduction in the number of people killed or seriously injured in road accidents by 2025.***
- ***10% reduction in fatalities year on year.***

Road Safety (RS):

- **Measured by considering the number of fatalities (due to road accident) per 1000 inhabitants in the municipality area per annum.**

From the work of Laych et al. it follows that:

- **South African per annum road fatalities for 2009 was 0.22 fatalities per 1000 inhabitants and**
- **Australia's per annum road fatalities for the same year was 0,036 fatalities per 1000 inhabitants.**

From RTMS webpage follows:

- **The ratio in South Africa has increase to 0.24 fatalities per 1000 inhabitants in 2015.**
- **These values and its growth rate between 2009 and 2015 were used to determine the applicable classes to measure the road safety in South Africa.**

1	if	fatalities per 1000 inhabitants < 0.05 ;
0.75	if	fatalities per 1000 inhabitants $\in [0.05; 0.11)$;
0.5	if	fatalities per 1000 inhabitants $\in [0.11; 0.17)$;
0.25	if	fatalities per 1000 inhabitants $\in [0.17; 0.23]$;
0.1	if	fatalities per 1000 inhabitants > 0.23 .

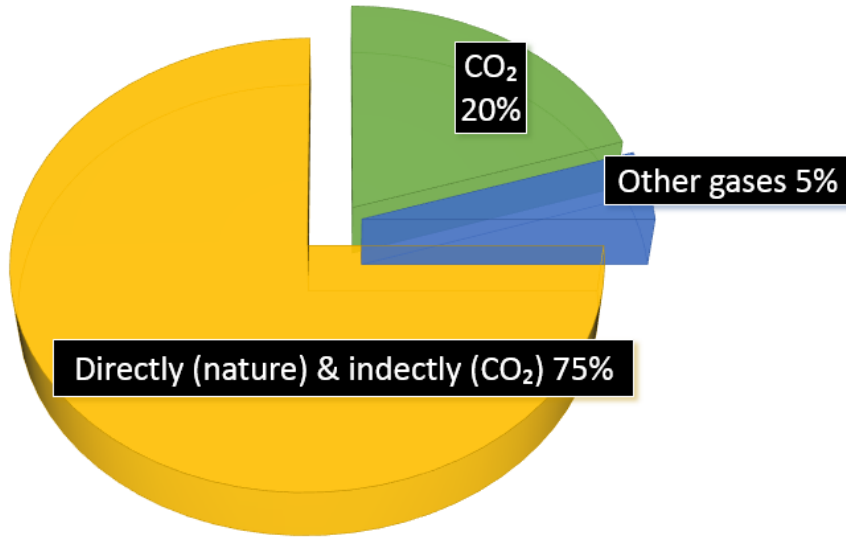
Conflict in the target given by NLTSF & NATMAP:

NLTSF Target (GHG emission): Reduce by 10% from current levels by 2020.

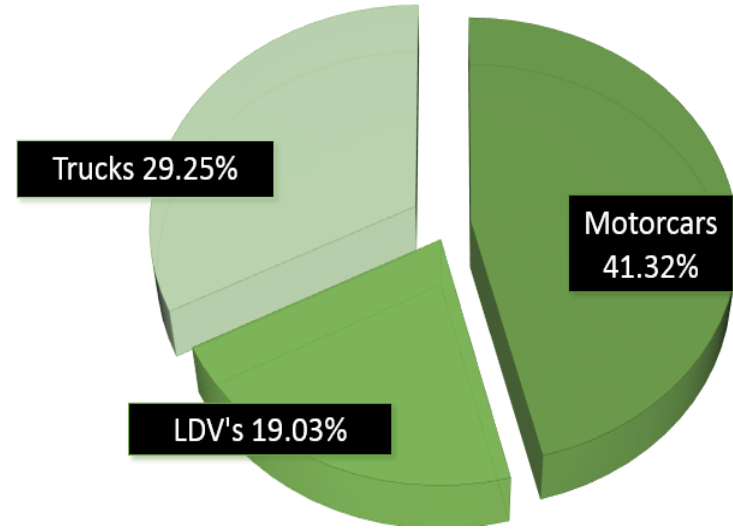
NATMAP Target (GHG emission): Reduce by 5% from current levels by 2020.

SA committed at UNFCCC to reduce the GHG by 34% from the base year 2009 to 2020.

GREENHOUSE EFFECT:



ROAD TRANSPORT CONTRIBUTE 12% TO THE TOTAL CO₂ EMISSIONS IN SA IN 2013



To reduce the GHG in SA due to road transport emissions require:

- **Public transport (services and usage);**
- **Modal shift from freight by road to freight by rail.**

Reduce the GHG indirectly

Let X_1 be the year-to-year growth rate in freight transported by rail. Measure the increase in the % of **freight transported by rail**

1	if	$X_1 > 5\%$;
0.75	if	$X_1 \in (2.5\%, 5\%]$;
0.5	if	$X_1 \in (0\%, 2.5\%]$;
0.25	if	$X_1 \in (-2.5\%, 0\%]$;
0.1	if	$X_1 \leq -2.5\%$;

Put X = to the year-to-year growth rate in the **modal share of motorcars**. Measure the decline in the % contribution by motorcars

1	if	$X \leq -5\%$;
0.75	if	$X \in (-5\%, -2.5\%]$;
0.5	if	$X \in (-2.5\%, 0\%]$;
0.25	if	$X \in (0\%, 2.5\%]$;
0.1	if	$X > 2.5\%$;

Future research

- Determine the **scores**;
- **Define weights** for the different KPA and KPI;
- **Normalize** the weights and scores;
- Combine the **normalized scores** and **weights**;
- Results.

Dashboard

Orders

Filter Order Status: **Backordered**

Customer	Order Status	Order Date
Testa Inc.	Backordered	May 10, 2016
Weldon	Backordered	May 9, 2016
Johnny's	Backordered	May 5, 2016
Testa Inc.	Backordered	May 4, 2016
Weldon	Backordered	May 3, 2016
Testa Inc.	Backordered	May 3, 2016
Welltown Inc.	Backordered	May 2, 2016
Richards Brothers	Backordered	May 1, 2016

Volume Today

Orders to Ship: **106** | Overdue Shipments: **20** | Open POs: **198** | Late Vendor Shipments: **12**

Inventory

Category	Product	SKU	In Stock
Electronics	Sony Bravia KDL-42V4100	789451	106
Electronics	LG 42PQ60	874842	12
Electronics	Sharp LC460D5U	874301	8
Electronics	Samsung LM46A750	711238	87
Electronics	Apple iPod Classic 120 GB	611235	

Global Financial Performance

KPIs - Monthly

Metric	This Month	Past Month	Change	Past 30 Days
Inventory	\$826,905	\$754,638	10%	📈
Shipping Costs	\$23,092	\$25,748	-10%	📉
Perfect Order	94.3%	94.1%	0%	📊
Back Order Ra.	12.3%	12.5%	-3%	📉
Warehouse Ca.	98.0%	95.4%	3%	📈

All teams - quarter-to-quarter

+14% (QTD) Monthly Trend (last 3 months)

Last updated 4 days ago

Product team - year-over-year

-6% (QTD) Yearly Trend (last 3 years)

Last updated 3 days ago

Top and bottom 3 teams - percentage of goals (YTD)

Front-end	91%	Product	65%
UX design	84%	Big Data	53%
QA	72%	Analytics	47%

Last updated 4 days ago

Quarterly team performance - last 2 years (percentage of goal)

Monthly

Year	Q1	Q2	Q3	Q4	Q1	Q2	Q3	QTD
2015	43	31	29	68	78	47	63	54

Last updated 2 days ago

Meetings attended by team (QTD)

73% Attended

Last updated 1 day ago

Engineering performance (QTD)

85% On target

Last updated 2 days ago

Customer Class

Sales By Ord_date-Year, Customer Class

Region lookup

Sales By Ord_date-Year, Affiliate

Ship Priority

Sales By Warehouse, Ord_date-Year

Profit By Affiliate

Profit By Ord_date-Mth_name, Warehouse

Profit By Affiliate

Profit By Ord_date-Mth_name, Warehouse

WEATHER STATION (CASA TEAM)

STATION	WIND SPEED	WIND GUSTS	DIRECTION	TEMPERATURE	HUMIDITY	RAIN TODAY	PRESSURE	FORECAST
CASA Office: Bloomsbury W1	10.0 mph	39.0 mph	NE	10.7 °C	67%	0.0 mm	1024.52 mbar	Heavy Rain
SJG Weather: Pinner HA5	1.8 mph	3.6 mph	W	10.2 °C	72%	0.0 mm	1024.9 mbar	Sunny

WEATHER (METAR)

London City Airport

SW at 14 mph 10 C

FORECAST (YAHOO! Wth)

Day	Temp	Condition
Sat	19 C	Sunny
Sun	14 C	Mostly Cloudy

TUBE LINE STATUS (TFL)

Bankfoot	Good Service
Central	Good Service
Croft	Good Service
District	Part Closure 2028
H & C	Good Service
Jubilee	Part Closure 2028
Metropolitan	Part Closure 2028
Northern	Good Service
Piccadilly	Part Suspended 2028
Victoria	Good Service
W & C	Good Service
Overground	Part Closure 2028
DLR	Good Service

LONDON CYCLE HIRE (TFL)

3% Stations Full | 3% Stations Empty

9602 Bikes Available | 433 Bikes or Docks Faulty

Available Bikes (last 24h)

IN SERVICE (TFL)

5455 London buses

301 Underground trains

AIR POLLUTION (DEFRA)

pollut	Ozone	NO ₂	SO ₂	PM _{2.5}	PM ₁₀
Bloomsbury	33	45	4	19	28
Marylebone Rd	22	90	9	22	?
N Kensington	55	33	2	14	?

BICYCLES (LBH)

Goldsmiths' Row

3240 yesterday

RIVER LEVEL (PLA)

Thames (Tower Pier)

0.29 metres

STOCKS (YAHOO)

FTSE 100 Index

6911.80 (-0.71%)

Thank you.