



25th world gas conference
"Gas: Sustaining Future Global Growth"

Study Group 4.3 Report

Unaccounted for Gas

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Date: 7 June 2012

Venue: KL Convention Centre



Patron



Host



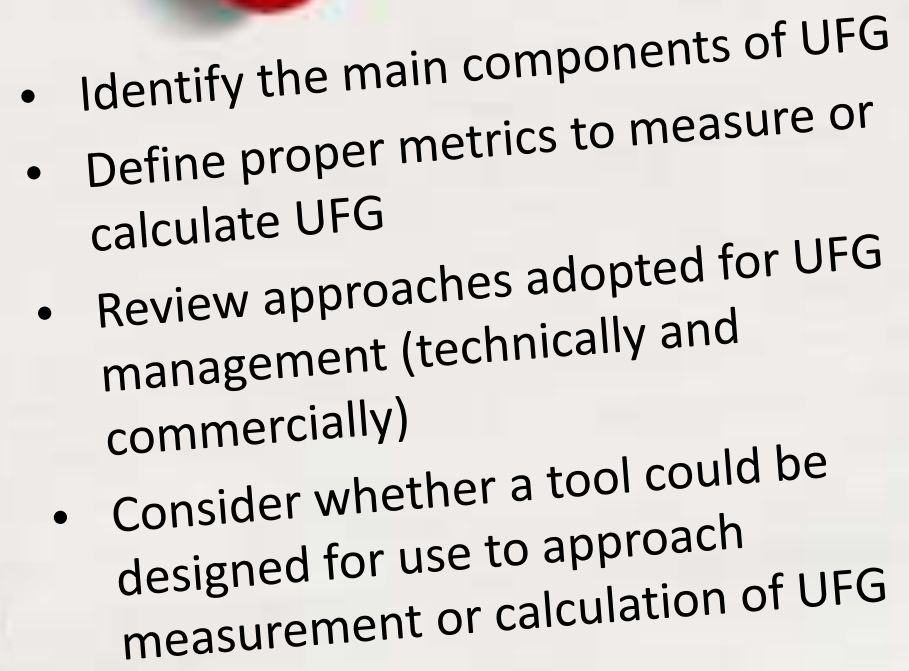
Host Sponsor




COMMERCIAL
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Third Party
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Regulator
Custody
Damage
Meter
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Leakage
Ageing
MANAGEMENT
Calculation
Unaccounted
Missing
UFG
Tool
Unsyncronised
Valve
INVOICING
UNDERSTANDING
Research
Operations
Steel
Calorific
Plastic
Technical
Pipe
iron
transfer

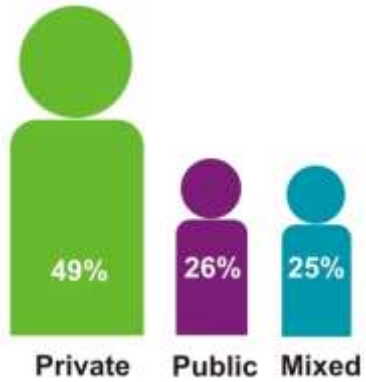
Agenda

- Session Introduction
- SG4.3 Report
 - Scope and methodology
 - Survey respondents
 - Key findings
 - Recommendations

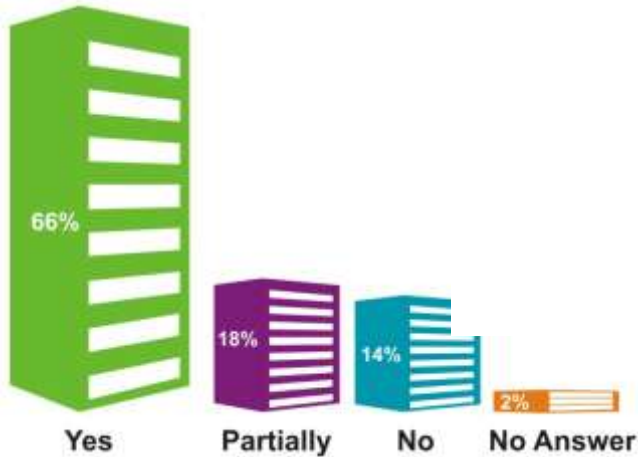
- 
- Identify the main components of UFG
 - Define proper metrics to measure or calculate UFG
 - Review approaches adopted for UFG management (technically and commercially)
 - Consider whether a tool could be designed for use to approach measurement or calculation of UFG

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- Biannual meetings
 - Teleconferences
 - Global survey
 - Case studies

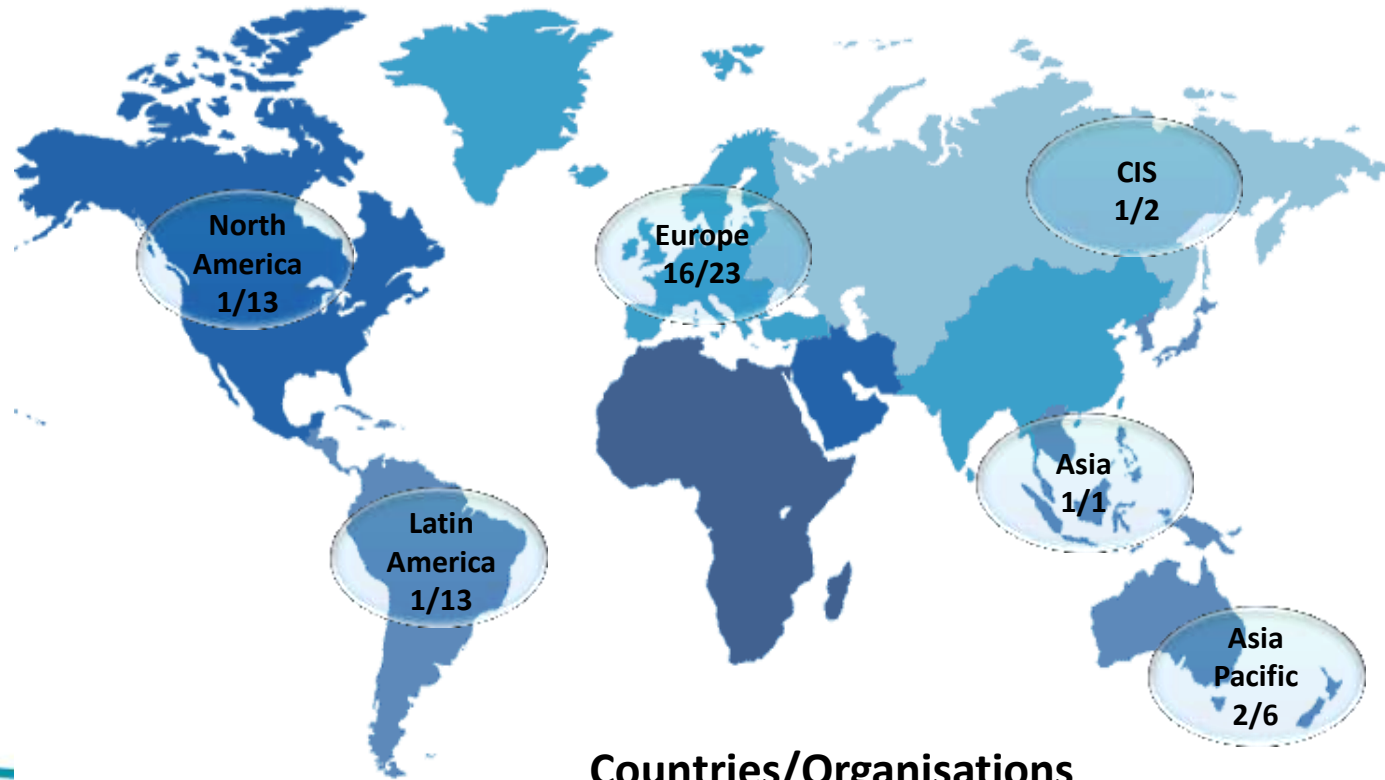
Survey respondents



Ownership



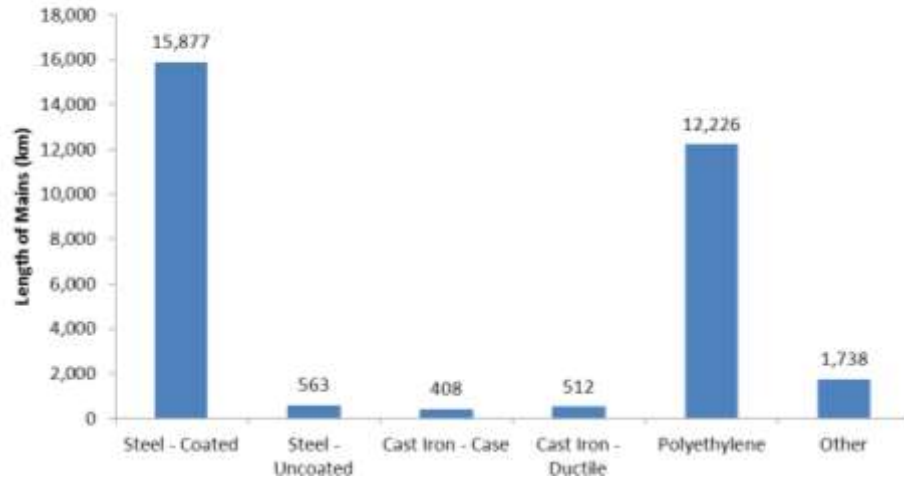
Is your company operating in a liberalised market?



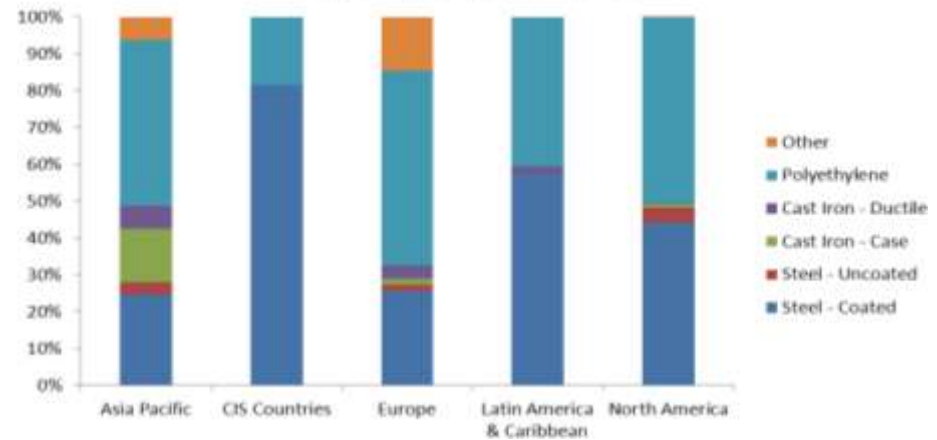
Countries/Organisations
23/47

Survey respondents

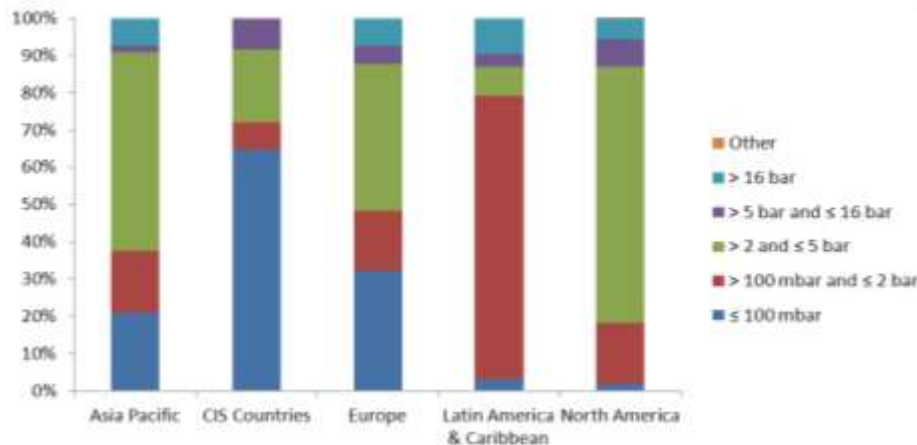
Average Mains Lengths



Average Pipe Type Breakdown



Average Pipe Pressure Breakdown



Definition of UFG

UFG is the difference between gas entering a distribution system at the point of custody transfer and that which can be measured and billed at all delivery points over a defined period of time.

Key finding 1

UFG components

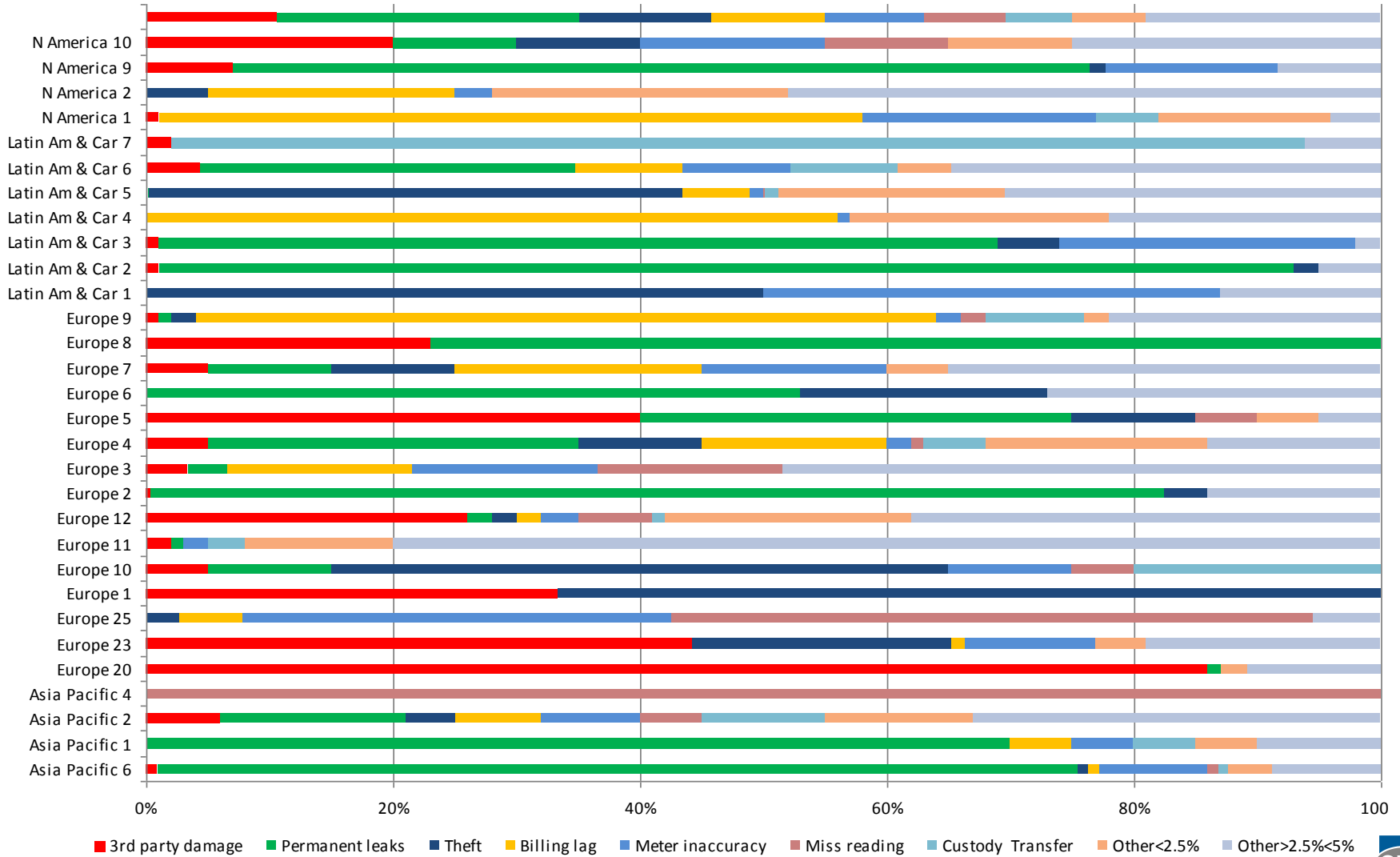
$$\left(\begin{array}{c} \text{Gas} \\ \text{Purchased} \end{array} \right) - \left(\begin{array}{c} \text{Gas} \\ \text{Sold} \end{array} \right)$$



Unaccounted for Gas (UFG)

1	2	3	4	5	6
Leakage Estimate	Network Operations	Unauthorised consumption	Metering	Billing	Calorific value measurements
<ul style="list-style-type: none"> - Third party damage - Ageing infrastructure (cast iron, valves) - Client-owned piping 	<ul style="list-style-type: none"> - Purging - Heating before or after press ↓ station - Electricity production - Own gas use - Actuator fuel - Stock variation 	<ul style="list-style-type: none"> - Theft: physical bypass or meter manipulation/violation - Consumption without contract 	<ul style="list-style-type: none"> - Inaccuracy - Calibrate freq - Malfunction - Sizing - Uncomp meter (temp, press) - Custody transfer 	<ul style="list-style-type: none"> - Unsynchronised billing/time lag - Meter read frequency - Missed incorrect meter read - Cyclic/seasonal effects 	<ul style="list-style-type: none"> - Type and frequency of network points where calorific value measured - Calorific value calculation

Key finding 2 UFG components



Other<2.5% = Stock Variation + Client pipe leaks + Energy calculation + Incorrect reading
 Other >2.5%; <5% = Purging + Other Operational loss + Own gas use + Uncompensated meter + Meter malfunction + Estimation method

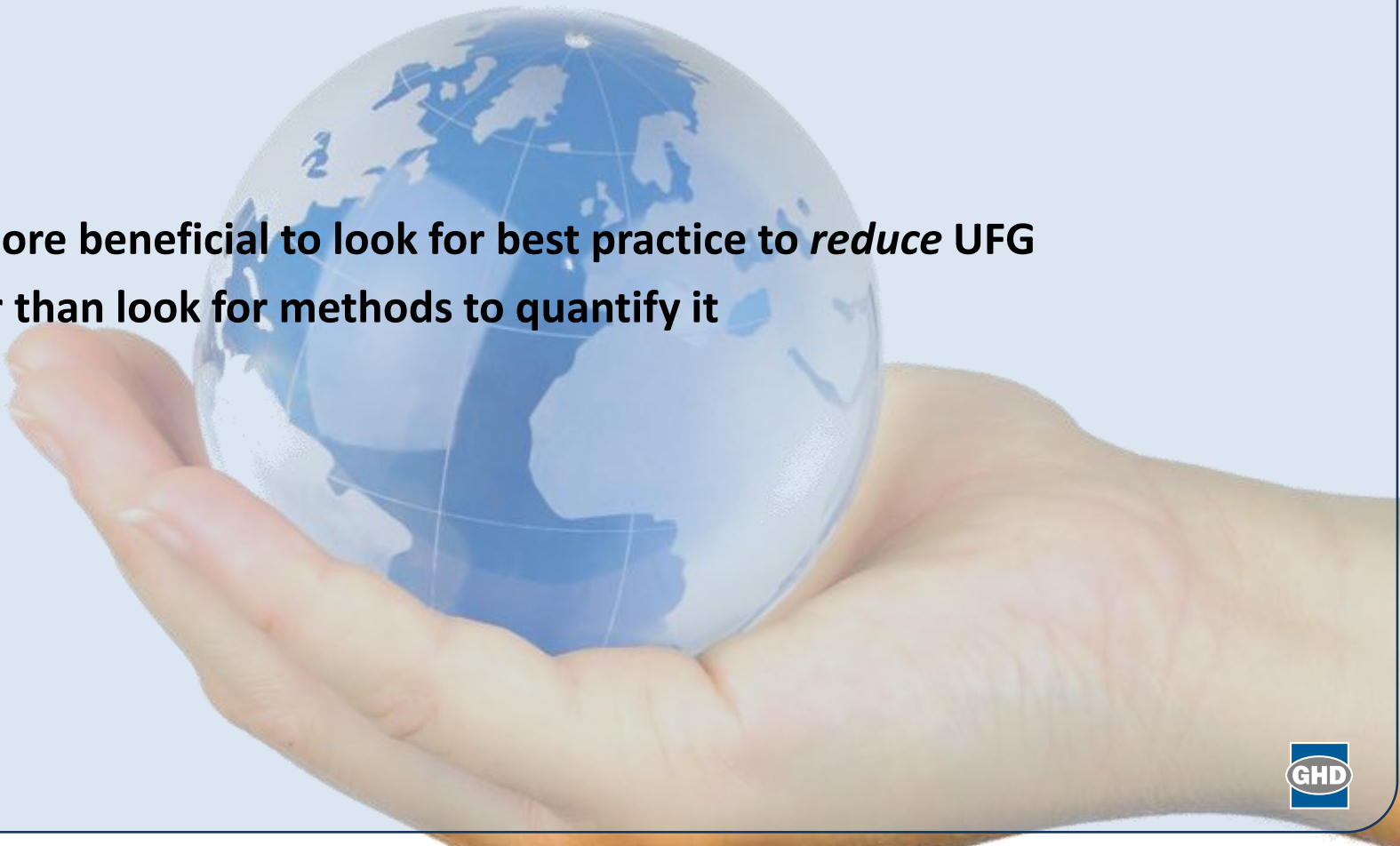
Key finding 3 UFG drivers

Driver or UFG Component	Rank			
	Most common UFG factor being addressed	Most important driver	Largest single UFG component	UFG topic being researched
Meter accuracy	1	2		1
Leakage reduction	2	1	1 (cast iron) 97%	2
Cost and efficiency		3		
3 rd party damage	1			
Illegal consumption	3		3 (67%)	3
Accuracy of CT meter			2 (90%)	

Recommendations



Recommendations



It is more beneficial to look for best practice to *reduce* UFG rather than look for methods to quantify it

Recommendations



UFG workshops should be held between DSOs to disseminate knowledge and look for methods to manage UFG

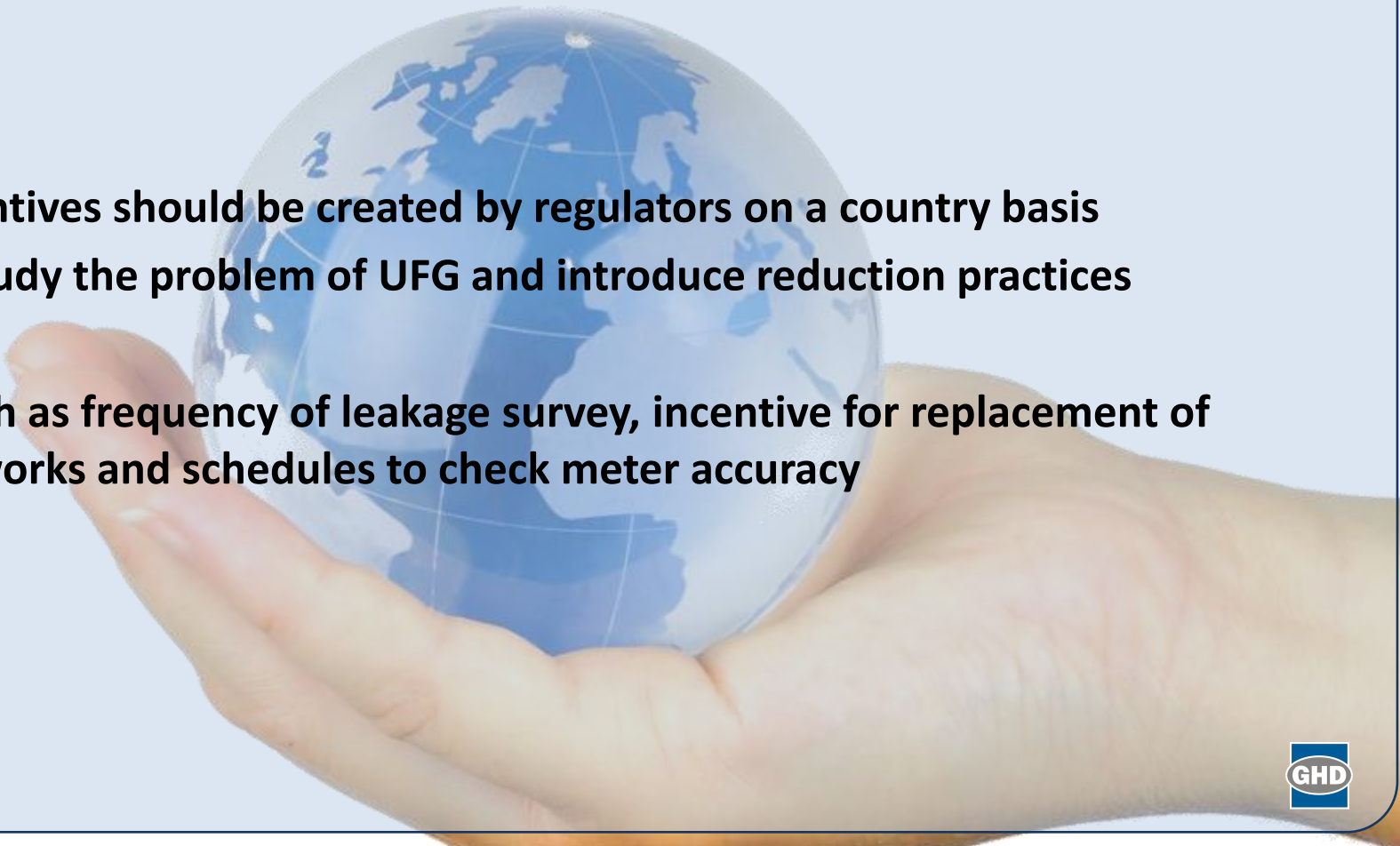
Recommendations



DSO senior management should consider UFG as an integrated strategic issue across all parts of the business

- including a *tailored* plan to identify UFG sources and management

Recommendations



Incentives should be created by regulators on a country basis to study the problem of UFG and introduce reduction practices

- such as frequency of leakage survey, incentive for replacement of networks and schedules to check meter accuracy

Recommendations



DSOs should seek funding for innovation and research under the heading of UFG

- as an important commercial, safety, social and environmental concern

CONCLUSION



**If you seek to understand UFG
- to be able to measure it and therefore reduce it –
YOU WILL HAVE A MORE SUCCESSFUL BUSINESS**



Thank you
Tarimah kasih

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