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INTERNATIONAL GAS UNION
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The IGU Wholesale Gas Price Survey

A Global Review of Price Formation Mechanisms 2005 to 2016

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The Global Gas Pricing Forum

Flame – Amsterdam

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IGU Survey of Wholesale Gas Price Formation

- Objective to establish baseline survey on wholesale price formation mechanisms around the world
- IGU members provided the data for over 100 countries, and Nexant have collated and analysed them
- First undertaken for the year 2005 and was repeated for 2007 – reported at WGC in 2009 in Buenos Aires
- Surveys for 2009 and 2010 undertaken for WGC 2012 in Kuala Lumpur
- Surveys for 2012, 2013 and 2014 undertaken for WGC 2015 in Paris
- Last year the 2015 survey was undertaken
- 2016 is the second survey for the Washington triennium, culminating in the WGC in 2018
- Focus on wholesale prices (broadly defined) – hub, border, wellhead, city-gate

Different Types of Price Formation Mechanisms

Oil Price Escalation	OPE	The price is linked, usually through a base price and an escalation clause, to competing fuels, typically crude oil, gas oil and/or fuel oil. In some cases coal prices can be used as can electricity prices.
Gas-on-Gas Competition	GOG	The price is determined by the interplay of supply and demand – gas-on-gas competition – and is traded over a variety of different periods (daily, monthly, annually or other periods).
Bilateral Monopoly	BIM	The price is determined by bilateral discussions and agreements between a large seller and a large buyer, with the price being fixed for a period of time – typically this would be one year.
Netback from Final Product	NET	The price received by the gas supplier is a function of the price received by the buyer for the final product the buyer produces. This may occur where the gas is used as a feedstock in chemical plants.
Regulation Cost of Service	RCS	The price is determined, or approved, by a regulatory authority, or possibly a Ministry, but the level is set to cover the “cost of service”, including the recovery of investment and a reasonable rate of return.
Regulation Social and Political	RSP	The price is set, on an irregular basis, probably by a Ministry, on a political/social basis, in response to the need to cover increasing costs, or possibly as a revenue raising exercise.
Regulation Below Cost	RBC	The price is knowingly set below the average cost of producing and transporting the gas often as a form of state subsidy to its population.
No Price	NP	The gas produced is either flared, or provided free to the population and industry, possibly as a feedstock for chemical and fertilizer plants.
Not Known	NK	No data or evidence.



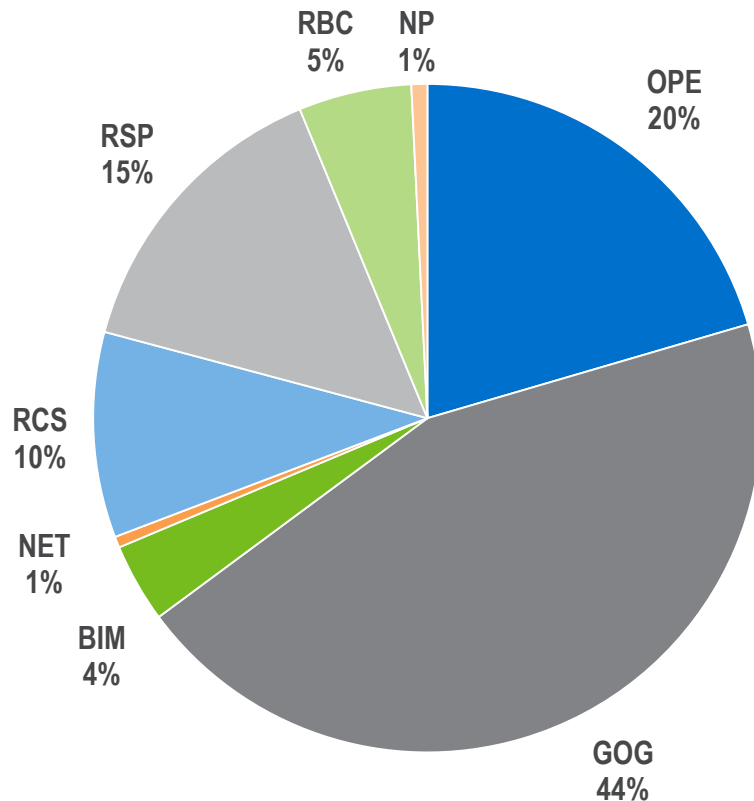
Dealing with Hybrid Contracts

- When survey started the price formation mechanisms were relatively straightforward. In Europe hybrid OPE and GOG contracts are increasing in importance
- Typically these are “notionally” linked to oil prices but move in a band with ceiling and floor set by hub prices
 - Often referred to as being “quasi oil linked”
 - But could equally be “quasi hub linked”
- The survey respondents are asked to allocate these types of contract partly to OPE and partly to GOG, with the proportions depending on how narrow the hub price band is

Analysed by IGU Regions



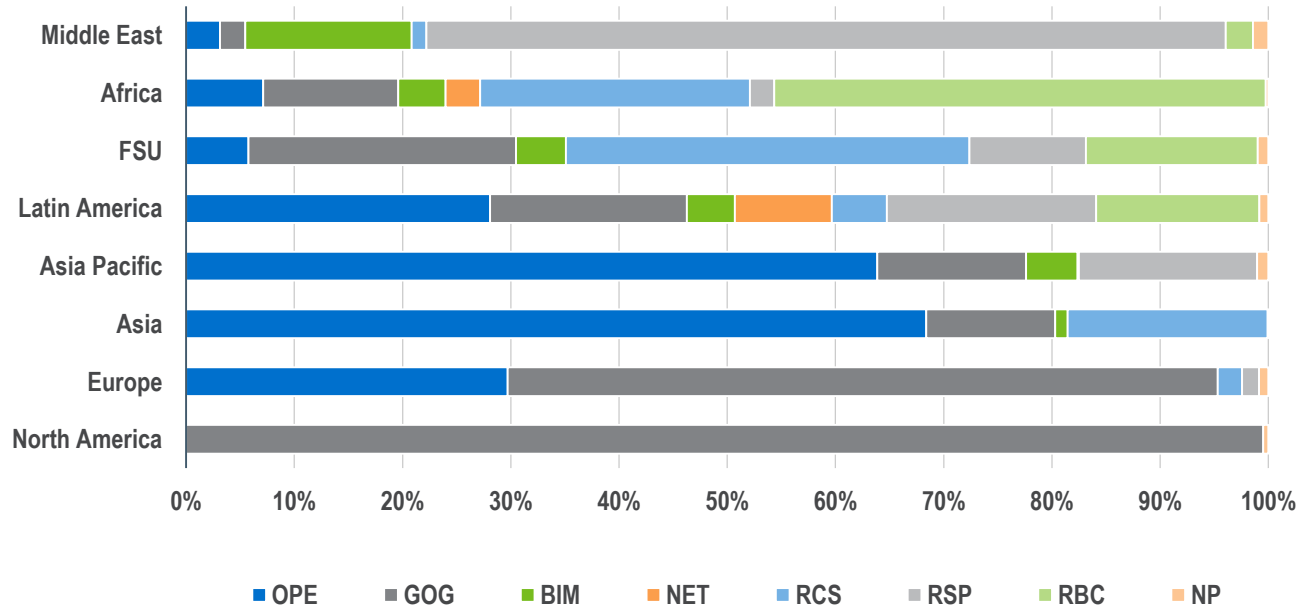
2016 Survey Results – World Price Formation



- 2016 total world consumption was 3,650 bcm – 100 bcm higher than 2015
- Third of the volume growth came in LNG trade
- GOG largest share at 44%
- OPE at 20%
- Regulated categories account for some 30%



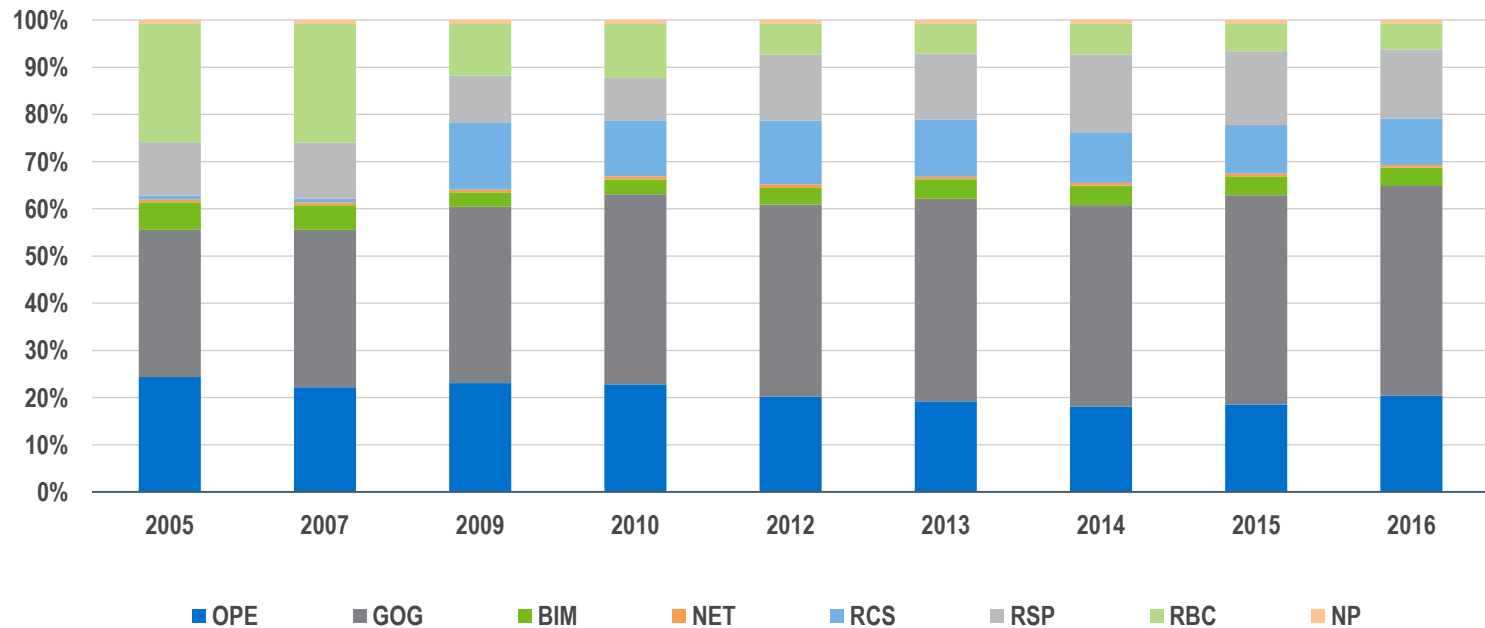
2016 Survey Results – Regional Price Formation



- GOG dominates in North America and largest share in Europe
- OPE largest in Asia and Asia Pacific, still important in areas of Europe
- Regulated categories mainly FSU, Middle East and Africa, with smaller shares in Asia and Asia Pacific



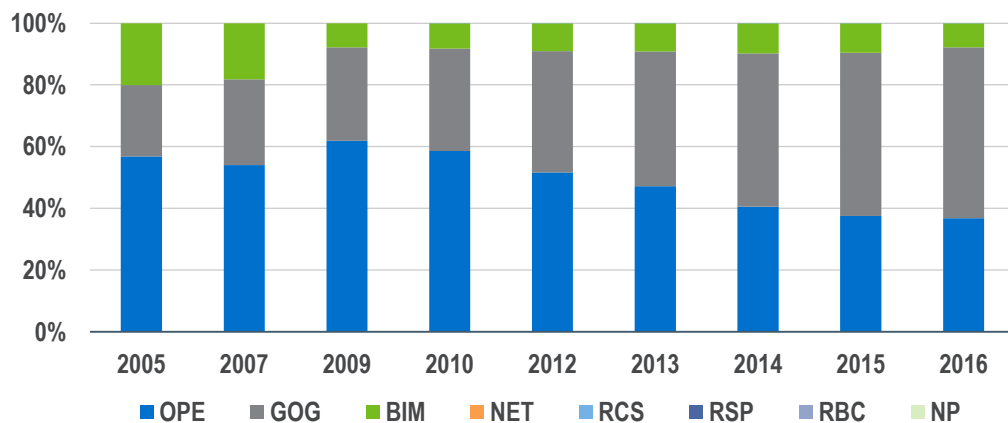
World Price Formation – 2005 to 2016



- GOG almost unchanged in 2016 from 2015, but OPE share rose in 2016 principally in China domestic production and in LNG trade with fewer spot LNG cargoes
- Regulated categories declined marginally, principally reflecting switch in China from RCS to OPE for a full year

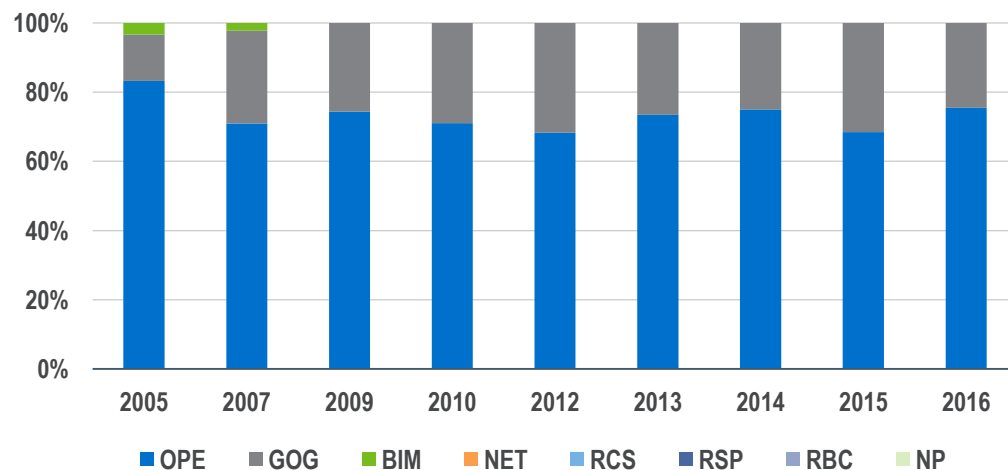


Price Formation Imports – 2005 to 2016



Pipeline Imports

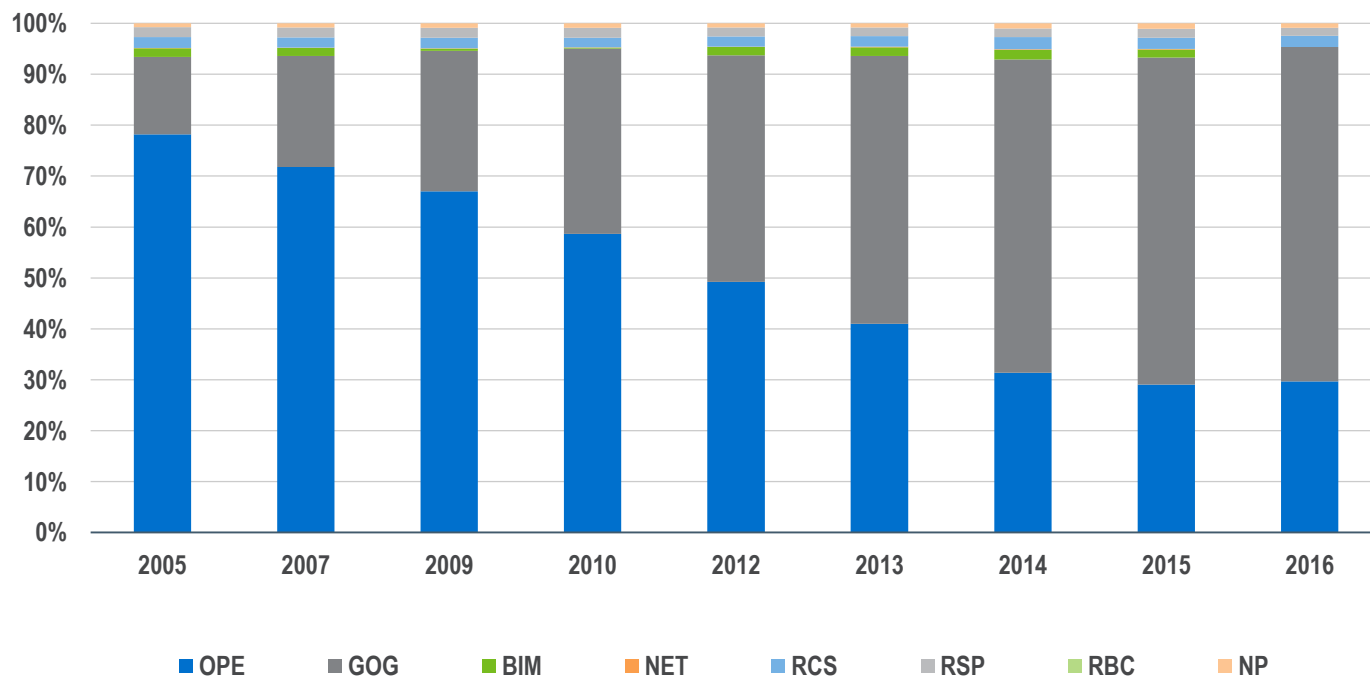
GOG increased share in 2016 to 55%, principally in Europe. Decline in OPE mitigated to some extent with switch away from BIM in Europe



LNG Imports

OPE share rose sharply in 2016 to 76% from 68% in 2015. Much lower level of pure spot LNG in 2016 and lack of growth in LNG imports to “traded” markets. A more contracted world

Europe Price Formation – 2005 to 2016



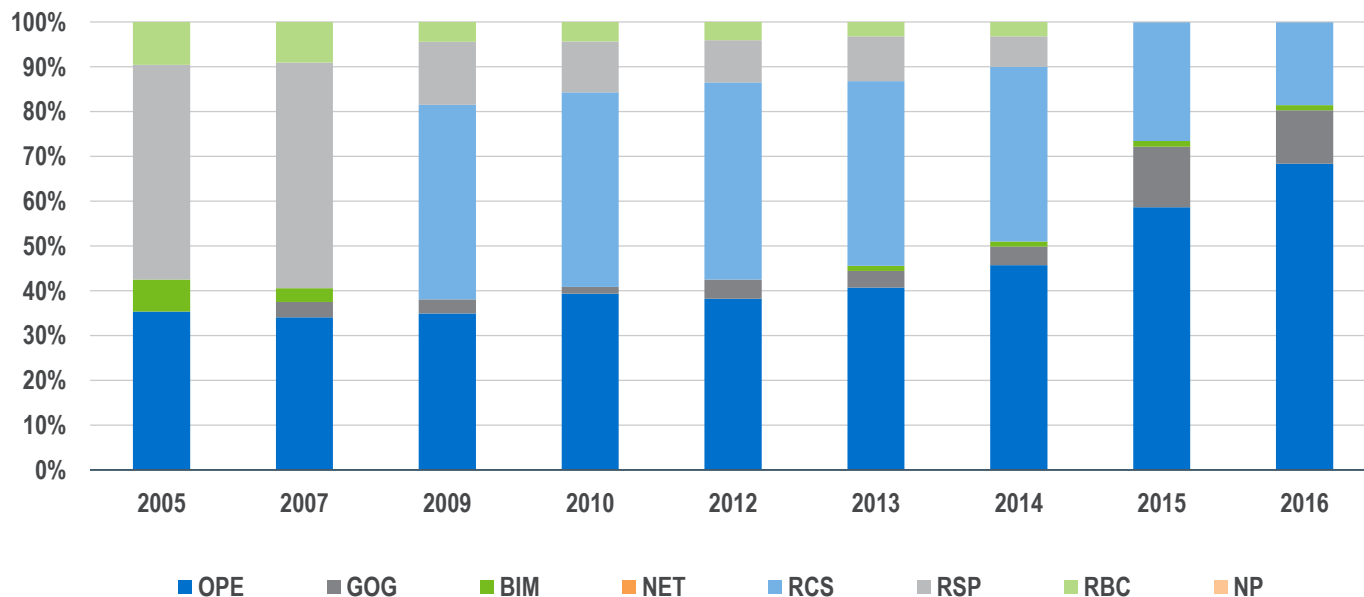
- Less change in 2016 than previous years – GOG rose marginally to 66%, with some recovery in OPE to 30% at expense of BIM



Europe Regional Price Formation 2005 to 2016

- Fewer changes than in previous years
- Almost no change in Northwest Europe – GOG at 91%
- Small rise in GOG in Central Europe to 58%
- In Mediterranean OPE increased by 4 percentage points on changes in Turkey contracts – the switch in the Algeria-Italy contract to hub indexation came too late in 2016
- Small increase in GOG in Southeast Europe

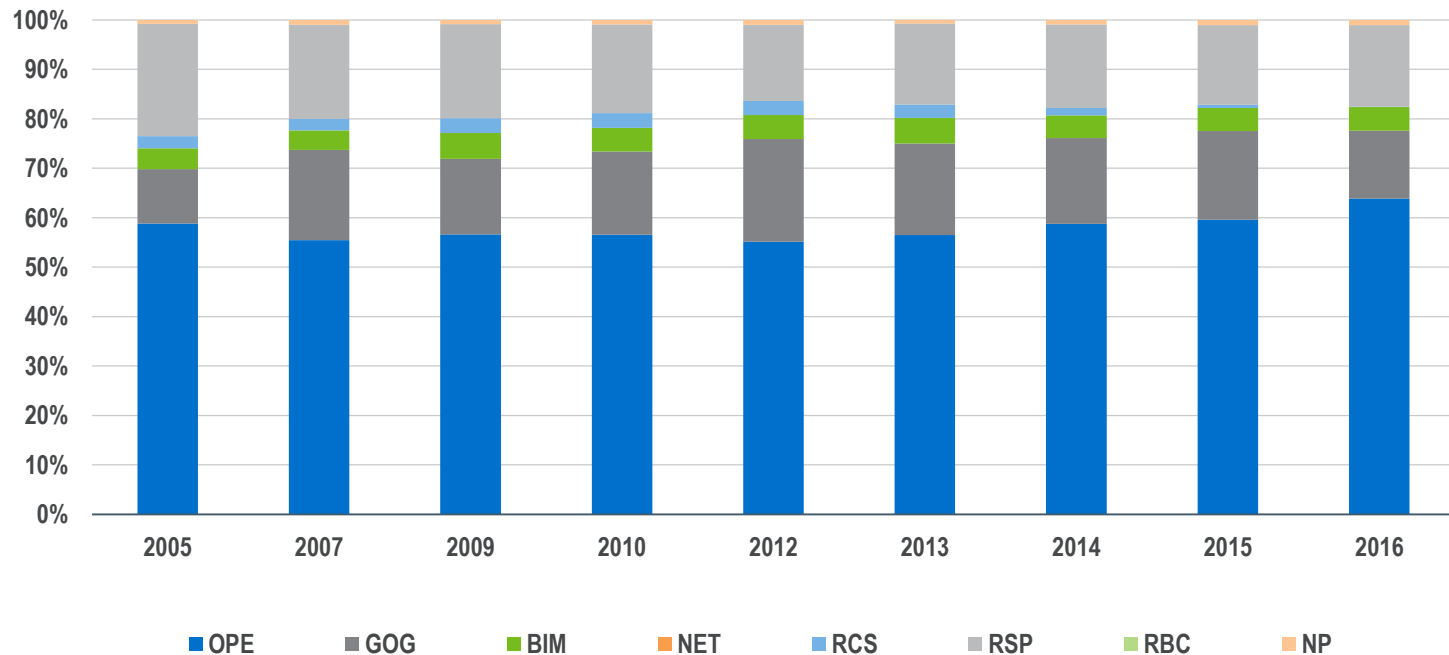
Asia Price Formation – 2005 to 2016



- OPE rose 10 %age points in 2016 – principally in China domestic production – on full year effect of city gate price changes and the rise in contracted LNG imports into China, India and Pakistan.
- The GOG share declined marginally reflecting the lack of growth in Indian production and fewer spot LNG imports.



Asia Pacific Price Formation – 2005 to 2016

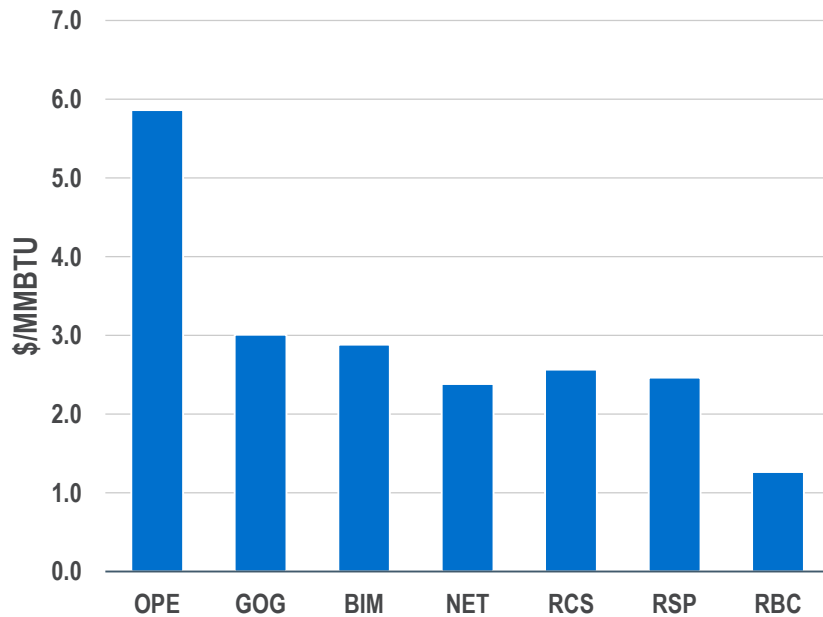


- OPE share rose 4 %age points, principally reflecting the rise in contracted LNG imports, in part displacing spot LNG imports
- GOG remains mainly Australia and spot LNG imports

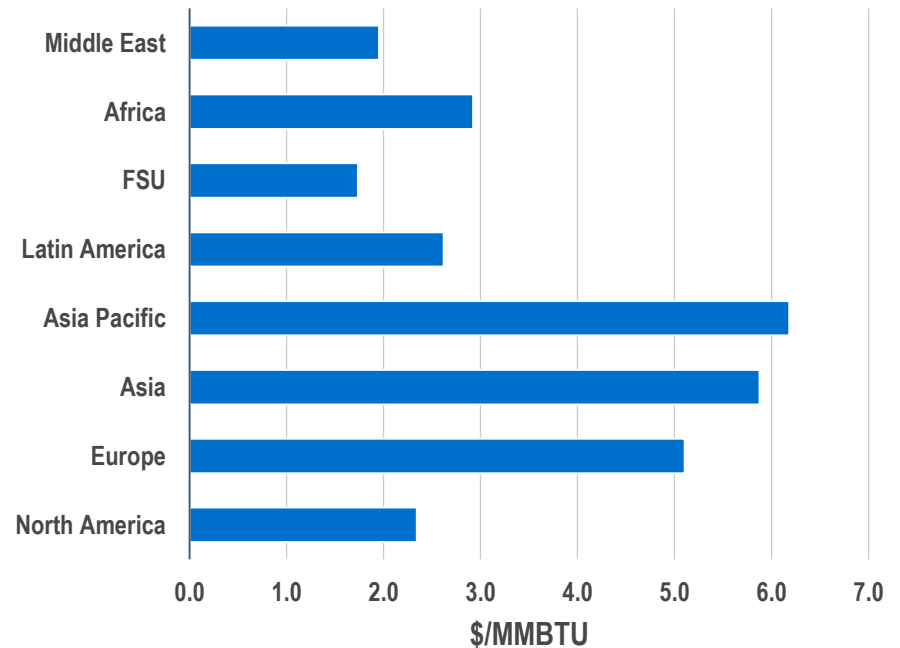


Wholesale Price Levels – 2016

By Mechanism

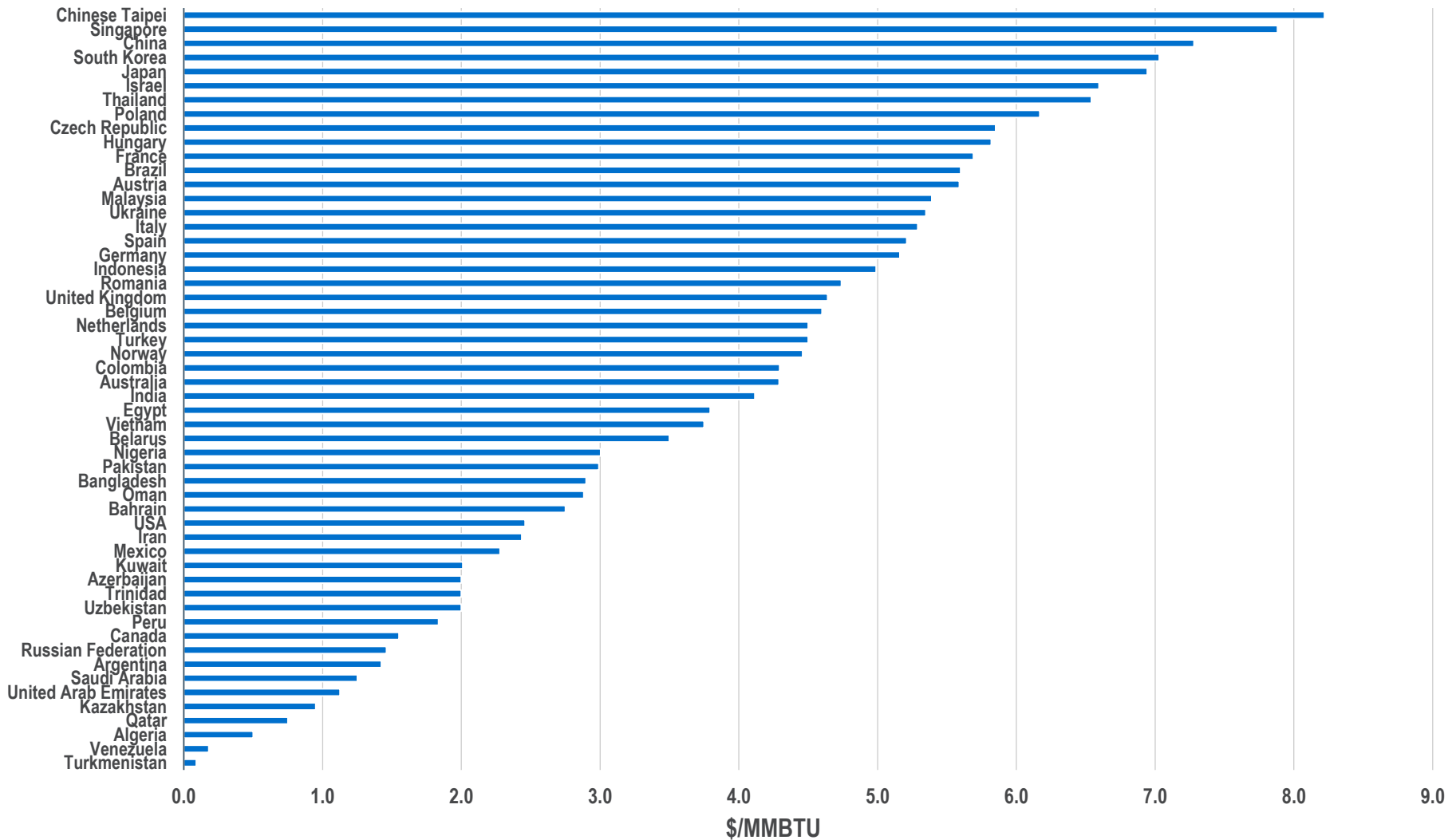


By Region

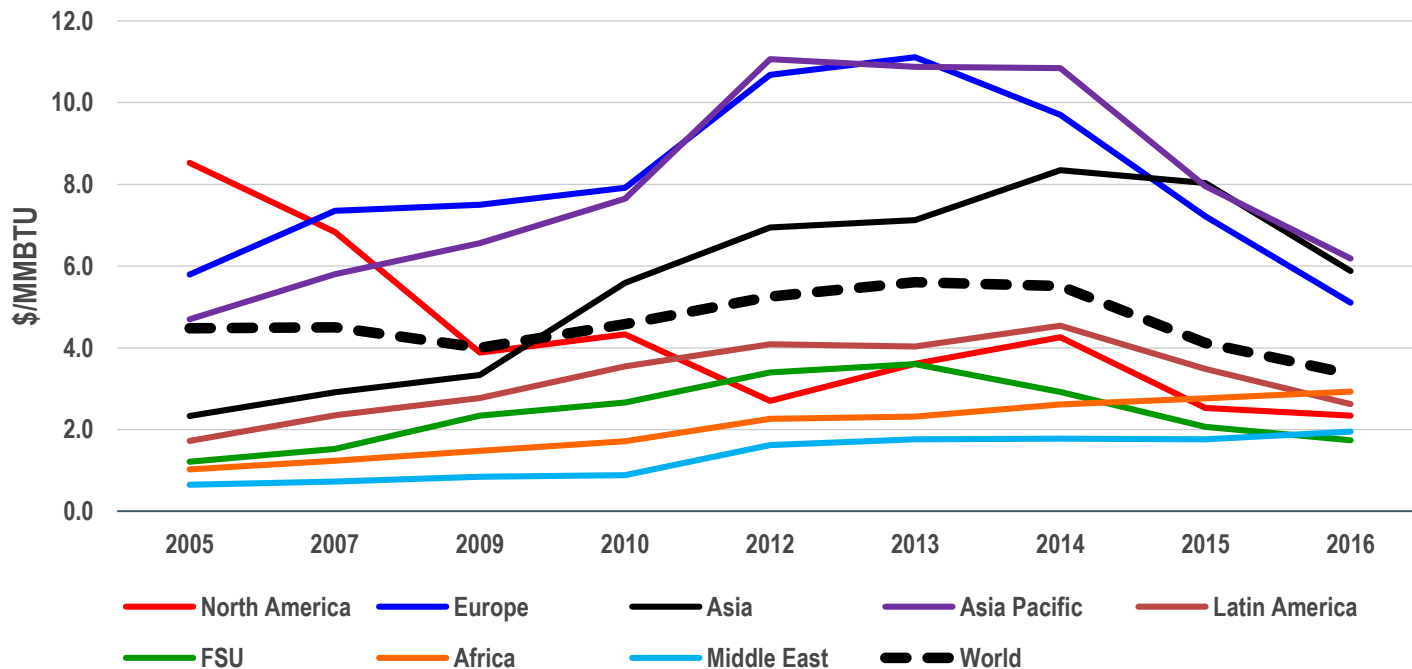


- OPE prices higher than GOG but the latter reflects the much lower North America prices. Excluding North America, GOG and OPE prices much closer together

Wholesale Price Levels by Country– 2016

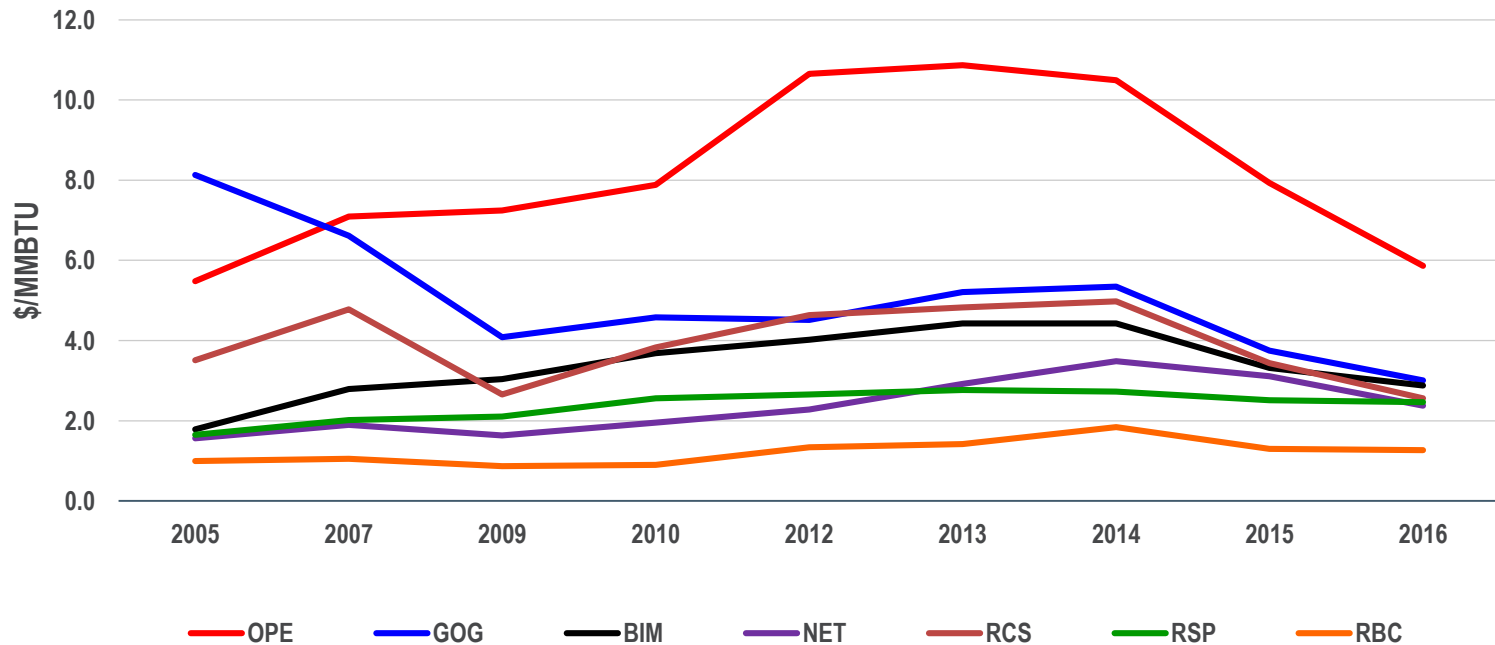


Wholesale Price Levels by Region – 2005 to 2016



- Average world wholesale prices in 2016 at \$3.35 were the lowest recorded in the surveys
- Prices fell in all regions, except for Africa and Middle East
- FSU prices in dollar terms lower on weaker currencies

Wholesale Price Levels by Mechanism – 2005 to 2016



- OPE prices declined in 2016 as full effect of oil prices came through – excluding North America from GOG would result in OPE and GOG prices at similar levels in 2016
- Decline in regulated prices impacted by fall in FSU – outside FSU still evidence of regulated prices rising
- Price convergence much greater in 2016 than in previous surveys

Key Messages

- Much less change in price formation mechanisms in 2016 compared to year earlier than in previous surveys, especially in Europe
- GOG share unchanged at World level, while OPE rose 2 %age points primarily as a result of
 - Full year of city-gate prices in China linked to oil products; and
 - Increase in contracted LNG imports linked to oil, fewer pure spot LNG imports and slower growth in LNG imports to “traded” markets
- World wholesale prices were on average lower in 2016 than in any previous survey
- Greater price convergence between regions and countries in 2016 than in any previous survey
- Decline and convergence primarily driven by falls in “market” prices (OPE and GOG); regulated prices in Africa and Middle East continued to rise slowly, partly offset in \$ terms in FSU by currency weakness

Report Publication

Will be available, later in May, to download from

<http://www.igu.org/publications>

OR

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