



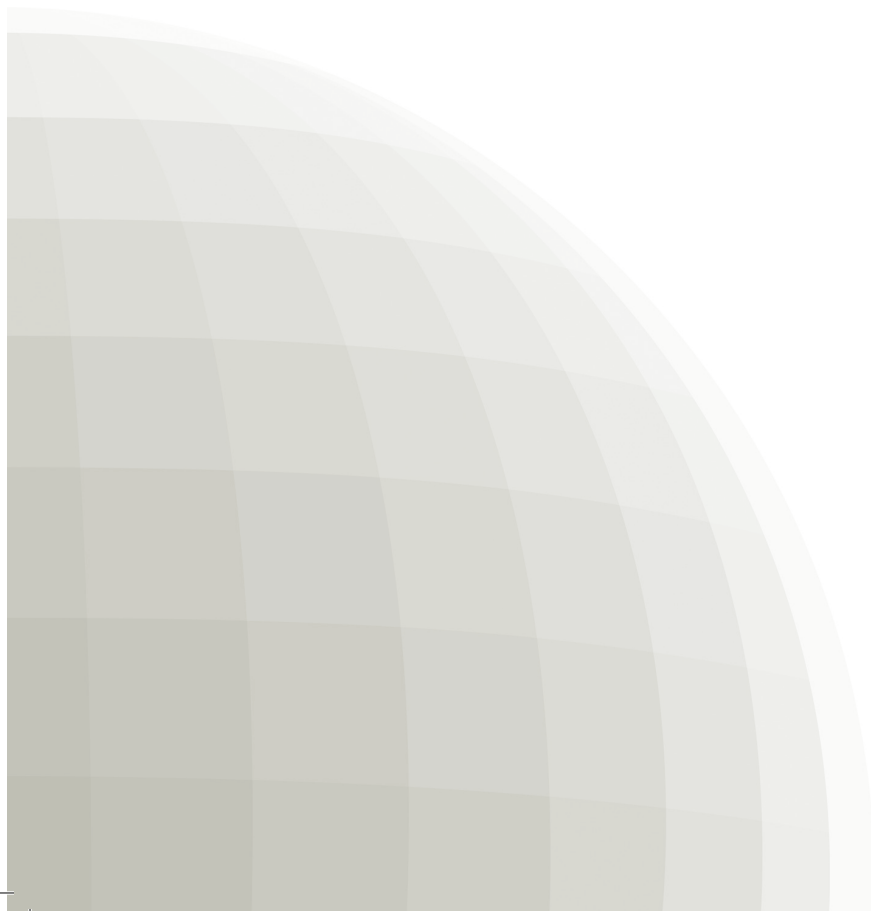
International Gas Union

News, views and knowledge on gas – worldwide



Wholesale Gas Price Survey - 2013 Edition

- A global review of price formation mechanisms 2005 -2012



Wholesale Gas Price Formation

PGCB STUDY GROUP 2



Gas: Sustaining Future Global Growth
International Gas Union

Foreword

The report on “Wholesale Gas Price Formation” first published in June 2012 for the World Gas Conference in Kuala Lumpur, has now been updated by Study Group 2 of the IGU Strategy Committee (PGCB). The first and the updated reports of the global review of wholesale gas price levels and price formation mechanisms are also available on the IGU website - www.igu.org.

Historically, gas prices have not been in the news to the same extent as oil prices. This is changing as the share of gas in global energy consumption continues to increase, volumes of internationally traded gas are greater than ever before and different price formation mechanisms have had serious commercial implications both for producing and consuming nations. The rapid growth in shale gas production in North America and fundamental shifts in LNG supply patterns across the global gas market relate to strong intercontinental linkages between supply, demand and price. At the same time this report sets out the large variations in wholesale gas prices across the world that result from the different prevailing price formation mechanisms.

Natural gas is an abundant resource, it is clean and cost-competitive, and should therefore play an important role in the mitigation of climate change in every region of the world. However, the way wholesale gas prices will be determined in the future will have a significant influence on sustainable market growth.

Promoting international understanding of natural gas pricing and wholesale gas price formation trends is important for the future success of the global gas industry by enabling participants in new and established gas regions to learn more about the different approaches that are being used. It is my hope that this publication can serve as an example of how we can all benefit when vital information is carefully gathered, analysed and shared.

Any questions on this report can be addressed to the Chair of Study Group 2, Mike Fulwood of Nexant at mfulwood@nexant.com

July 2013

Torstein Indrebø
Secretary General of IGU



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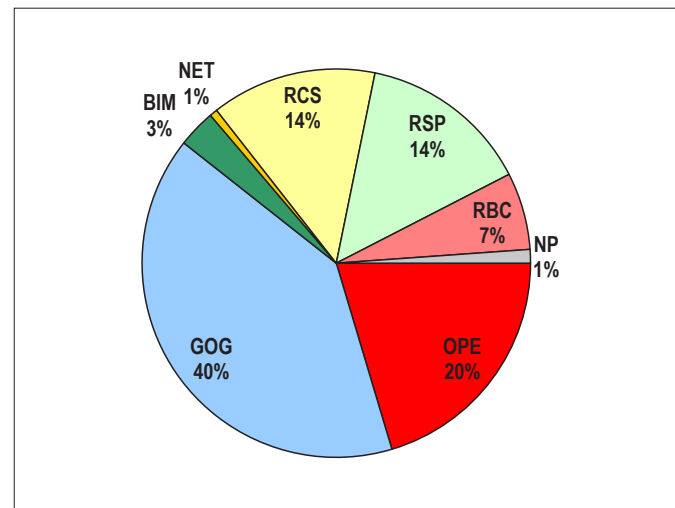
Section 1. Key Findings

The 2012 IGU Wholesale Gas Price survey is the fifth to be undertaken in a series which began at the beginning of the 2006 to 2009 triennium culminating in the World Gas Conference in Buenos Aires. Prior to the 2012 survey, previous surveys were undertaken for the years 2005, 2007, 2009 and 2010. The five surveys are now indicating the changing trends in wholesale price formation mechanisms over a period of rapid and significant change in the global gas market.

Gas on gas competition continues to have the largest share in the world gas market...

The 2012 survey showed again that gas on gas competition has the largest share in the world gas market. Out of total world consumption of some 3,400 bcm, gas on gas competition has a share of 40%, totalling around 1,370 bcm, dominated by North America at 865 bcm, followed by Europe at some 240 bcm and the Former Soviet Union at around 140 bcm. In all gas on gas competition can now be found in some 39 countries, in one form or another, and in all regions except Africa.

Figure 1.1. World Price Formation 2012



The different types of price formation mechanism are described in the box on the next page:

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). Trading takes place at physical hubs (e.g. Henry Hub) or notional hubs (e.g. NBP in the UK). There are likely to be developed futures markets (NYMEX or ICE). Not all gas is bought and sold on short term fixed price basis and there will be longer term contracts but these will use gas price indices to determine the monthly price, for example, rather than competing fuel indices. Spot LNG is also included in this category.
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. There may be a written contract in place but often the arrangement is at the Government or state-owned company level.
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, such as ammonia or methanol, and is the major variable cost in producing the product.
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. The gas produced maybe associated with oil and/or liquids and treated as a by-product.
Not Known (NK)	No data or evidence.

The share of oil price escalation or oil indexation stands at some 20%, and totals around 690 bcm and is predominantly Europe (272 bcm), Asia Pacific (200 bcm) and Asia (108 bcm). Oil price escalation is widespread being found in some 63 countries, including most European countries, and in all regions except North America.

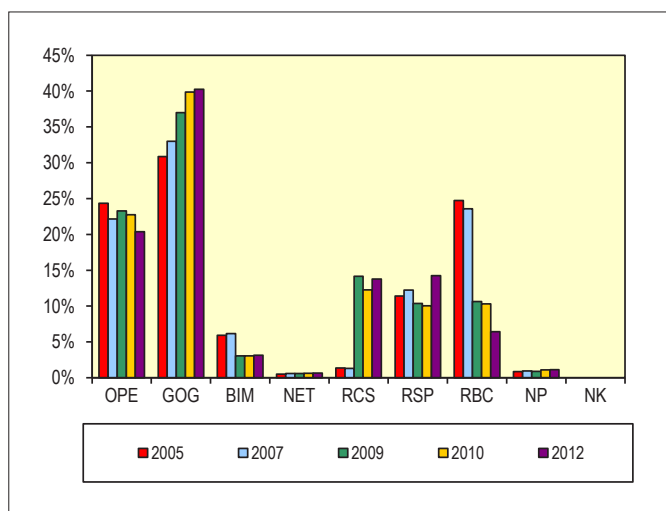
The three regulated categories – regulation cost of service, regulation social and political and regulation below cost – account in total for some 35%, or around 1,170 bcm; with regulation cost of service in 16 countries, mainly the Former Soviet Union

(Russia) and Asia (China); regulation social and political in 24 countries, with the Middle East dominating – Iran, Saudi Arabia and the UAE; and regulation below cost in 14 countries, mainly the Former Soviet Union – Kazakhstan, Turkmenistan and Uzbekistan, Africa – Egypt, Algeria and Nigeria, and the Middle East – Oman, Syria and Iraq.

...but the increase in the share of gas on gas competition has slowed

The share of gas on gas competition increased by only half a percentage point between the 2010 and 2012 surveys with the continuing increase in share in Europe away from oil price escalation, and more spot LNG imports in Asia and Asia Pacific, being partly offset by a decline in the share in Russia. This was less than the changes between previous surveys.

Figure 1.2. World Price Formation 2005 to 2012



Overall over the 2005 to 2012 period, the share of gas on gas competition has risen by 10 percentage points, while oil price escalation has declined by 4 percentage points. Bilateral monopoly has declined by almost 3 percentage points, while in the regulated categories regulation cost of service has risen by over 12 percentage points, regulation social and political has risen by almost 3 percentage points and regulation below cost has declined by over 18 percentage points.

In Europe the move to gas on gas competition has continued and is spreading to more countries.....

The major overall changes, in the 2005 to 2012 period, have been the continuous move away from oil price escalation to gas on gas competition in Europe, and also in Asia Pacific as spot LNG imports have risen. Gas on gas competition has also increased in Russia as the independents and Gazprom competed for sales to large eligible customers such as power plants. This is clearly a different kind of gas on gas competition from the liquid trading markets in North America and Europe but reflects the fact that there are multiple buyers and sellers, distinguishing it from the bilateral monopoly category, where there would be a single dominant buyer and/or seller.

In Europe there has been a broadly continuous move from oil

price escalation to gas on gas competition since 2005, with the latter's share increasing from 15% in 2005 – when oil price escalation was 78% – to 45% in 2012 – when oil price escalation had declined to 50%. The changes have reflected a number of factors over the years; initially a decline in the volume of gas imported under the traditional oil indexed contracts, being replaced by imports of spot gas and increasing volumes traded at hubs, followed by the ending of contracts or the renegotiation of the terms to include a proportion of hub/spot price indexation in the pricing terms, and in some cases, a reduction in the take-or-pay levels.

The change in price formation mechanisms in Europe was not universal across the region. Northwest Europe¹ has seen the most dramatic change in price formation mechanisms, with a complete reversal from 72% oil price escalation and 27% gas on gas competition in 2005 to 28% oil price escalation and 72% gas on gas competition in 2012, as a result of increased hub trading and contract renegotiations, as noted above, most notably in the Netherlands where GOG was almost 100% in 2012. Central Europe² has also, more recently, seen significant changes. Oil price escalation has declined from 85% in 2005 to just under 50% in 2012, while gas on gas competition has increased from almost zero in 2005 to over 35% in 2012, principally reflecting increase imports of spot gas, often from Germany, with some element of contract renegotiation. There has been much less change in other areas of Europe such as the Mediterranean³, where oil price escalation has only declined from 100% in 2005 to just under 90% in 2012 and gas on gas competition rising from nothing to just over 10%, largely reflecting spot LNG imports with some spot pipeline imports into Italy. In Southeast Europe⁴ there is no gas on gas competition.

...but oil price escalation has gained ground in some regions...

While oil price escalation has lost share in Europe and, to a lesser extent, in Asia Pacific, there have been gains in share in Asia with a rise from 33% to 39% between 2005 and 2012 as China began importing more LNG and also pipeline gas from Turkmenistan, together with India's pricing for LNG from Qatar changing. In the Former Soviet Union intra-regional trade, pricing switched from bilateral monopoly – effectively annual fixed price arrangements – to oil price escalation around 2009. Finally in the Middle East there have been very small amounts of oil price escalation since 2009 when pricing under the Turkmenistan to Iran contract changed.

....while regulated pricing is moving away from subsidies in many regions

Apart from the changes concerning gas on gas competition and oil price escalation in Europe and Asia Pacific, there have also

been significant changes in the regulated pricing categories. The increases in regulated pricing and policy changes in Russia not only saw a switch towards gas on gas competition, but also a switch from the subsidised regulation below cost in 2009 to regulation cost of service as Gazprom finally stopped losing money on their domestic gas sales.

There were also significant changes in China as pricing reforms, again around the 2009 period, saw domestic production prices being more formally regulated and the price formation mechanism changing from regulation social and political to regulation cost of service. Similarly, and more recently, in Iran prices were raised significantly with the category changing from regulation below cost to regulation social and political in 2012.

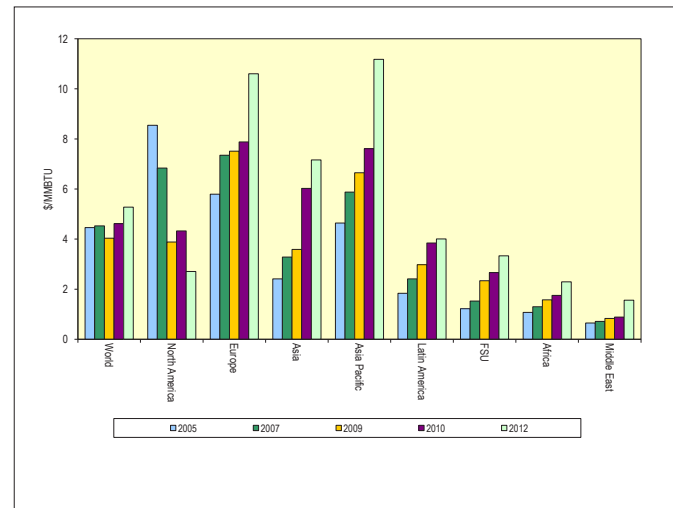
Wholesale prices have increased consistently in all regions, except North America since 2005

The rise in wholesale prices in Europe and Asia Pacific, over the last few years, and the decline in US prices, has been well documented and studied, but prices have also risen in Asia, largely due to increases in prices in China, particularly, and India, both as more gas was imported and regulated domestic prices were increased.

Less well documented, however, has been the general rise in prices in other regions, such as Latin America, where average prices have more than doubled and in the Former Soviet Union, where average prices have almost tripled, largely due to the rise in regulated prices in Russia, as they move towards the netback value from Europe. In Africa, where over 85% of prices are effectively subsidised, there have also been price increases, with

the largest consumer Egypt raising prices, although remaining with subsidies. Also in the Middle East prices have risen slowly, with a significant increase in 2012 over 2010, as a result of the regulatory changes in Iran.

Figure 1.3. Wholesale Price Levels 2005 to 2012 by Region



¹Belgium, Denmark, France, Germany, Ireland, Netherlands, UK. ²Austria, Czech Republic, Hungary, Poland, Slovakia, Switzerland. ³Greece, Italy, Portugal, Spain, Turkey. ⁴Bosnia, Bulgaria, Croatia, FYROM, Romania, Serbia, Slovenia.

Section 2. Introduction

2.1 BACKGROUND

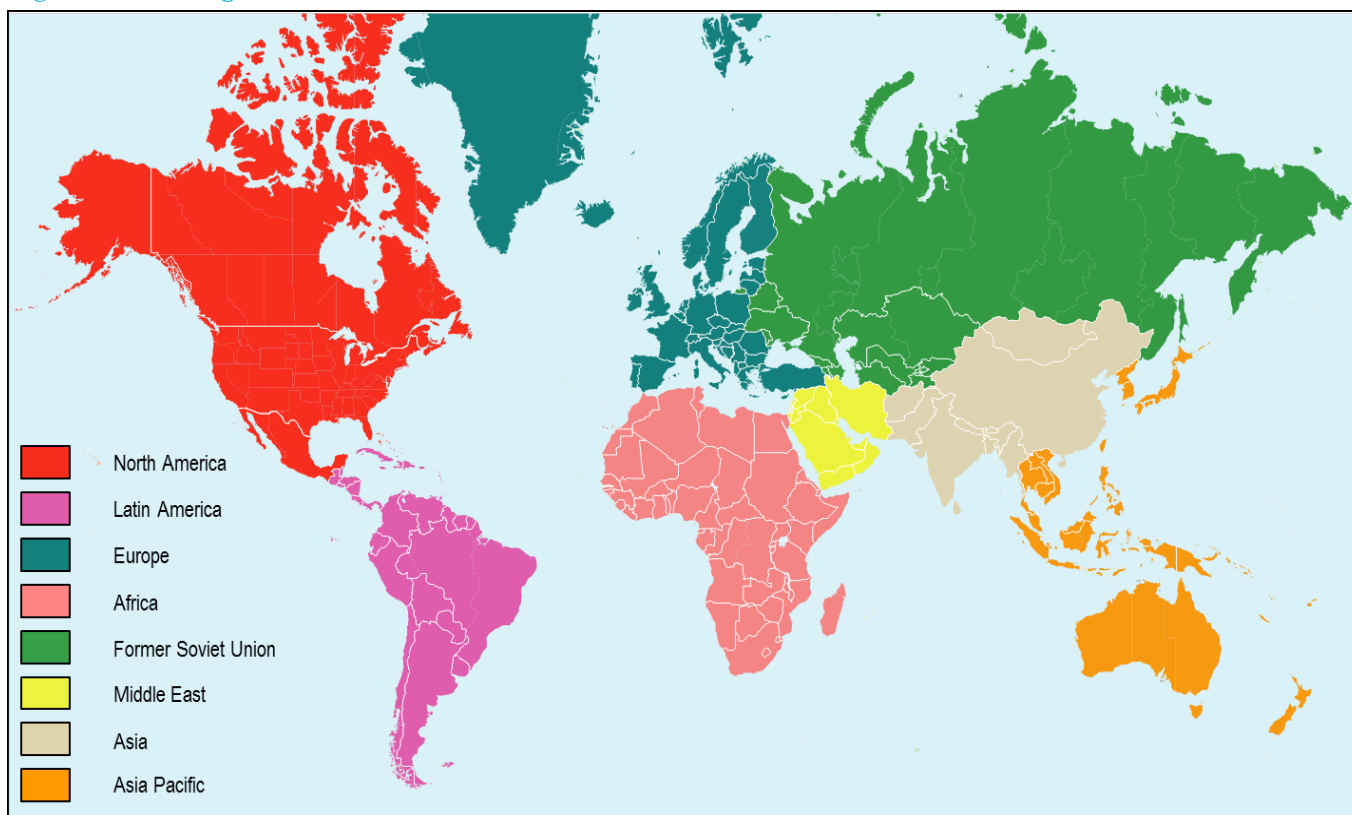
The idea for a survey of wholesale gas price formation mechanisms arose at the beginning of the triennium leading to the 2009 World Gas Conference. The Strategy, Economics and Regulation Programme Committee (PGCB) had set up a new sub-group to consider gas pricing, with a key remit to carry out a comprehensive analysis of gas price formation models. The sub-group decided to carry out a survey of current pricing mechanisms around the world, not only for gas traded internationally, but also for gas produced and consumed within countries. IGU members were surveyed and provided data for almost 100 countries, and the survey responses were collated and analysed by Nexant. The 2009 World Gas Conference in Buenos Aires presented the results of the surveys for the years 2005 and 2007. Two further surveys for the years 2009 and 2010 were undertaken and presented at the 2012 World Gas Conference in Kuala Lumpur. This 2012 survey is the first survey undertaken in preparation for the 2015 World Gas Conference in Paris⁵.

2.2 DATA COLLECTION

The focus of the gas pricing sub-group, and the surveys, was very much on wholesale prices, which can cover a wide range. In fully liberalised traded markets, such as the USA and the UK, the wholesale price would typically be a hub price (e.g. Henry Hub or the NBP). In many other countries, where gas is imported, it could typically be a border price. The more difficult cases are countries where all gas consumed is supplied from domestic production, with no international trade (either imports or exports) and the concept of a wholesale price is not recognised. In such cases the wholesale price could be approximated by wellhead prices or city-gate prices. Generally the wholesale price is likely to be determined somewhere between the entry to the main high pressure transmission system and the exit points to local distribution companies or very large end users.

The initial data collection was done on a country basis. The data were then collated to a regional level using the standard IGU regions shown in the figure below. Most of the regions are defined along the usual geographic lines, although the IGU includes Mexico in North America, and divides Asia into a region including the Indian sub-continent plus China, called Asia, and another region including the rest of Asia plus Australasia which is called Asia Pacific.

Figure 2.1. IGU Regions



⁵It is the intention to carry out further surveys covering the years 2013 and 2014 prior to the 2015 conference.

Data for each country were collected in a standard format. As an example, a data collection form for the UK is shown in the figure below. Individual country gas demand may be supplied from a combination of three sources – domestic production, pipeline imports and LNG imports (storage is ignored for the purpose of this analysis). For each of these three sources data was collected separately on what percentage of the wholesale price for that category is determined by each mechanism. In some countries, one single mechanism was found to cover all transactions and that mechanism, therefore, was allocated 100%. In many cases, however, several mechanisms were found to be operating, in which cases estimates were made of the percentages for each price mechanism. The only constraint is that the total for each source of gas – domestic production, pipeline imports and LNG imports – must add up to 100%.

Information was also collected on wholesale price levels. This covered the annual average price and the highest monthly average price and lowest monthly average price. All prices were converted to \$ per MMBTU. A comments section was included to identify and acknowledge the source of the information and any other useful information.

All data in the IGU study on gas volumes for consumption, production, imports and exports is taken from the IEA database, supplemented where necessary by the US Energy Information Administration and any specific country and/or regional knowledge. It should be noted that 2012 volume data is still preliminary and may be adjusted once the final estimates are published later this year by the IEA. In addition previous years may also be revised. These revisions may lead to small changes in the percentages for each price category when country data is aggregated at both the regional and world level.

Figure 2.2. Data Collection Form

Country	United Kingdom					
Region	Europe					
Volumes 2012: BCM	Consumption	Production	Imports		Exports	
			Pipeline	LNG	Pipeline	LNG
	78.0	38.0	38.0	14.3	10.4	0.0
Wholesale Price Formation	Domestic Production		Imports			
			Pipeline	LNG		
Oil Price Escalation	13.0%					
Gas-on-Gas Competition	87.0%		100.0%		100.0%	
Bilateral Monopoly						
Netback from Final Product						
Regulation: Cost of Service						
Regulation: Social and Political						
Regulation: Below Cost						
No Price						
Not Known						
Total	100.0%		100.0%		100.0%	
Estimated 2012 Wholesale Price Range (\$/MMBTU)	Average		High		Low	
	\$9.25		\$10.67		\$8.47	

2.3 TYPES OF PRICE FORMATION MECHANISMS

In preparation for the initial survey in 2005, a series of discussions were held at the PGCB meetings⁶ on the definition of different types of price formation. It was decided to use for categorisation purposes the wholesale pricing mechanisms described in the Box below.

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). Trading takes place at physical hubs (e.g. Henry Hub) or notional hubs (e.g. NBP in the UK). There are likely to be developed futures markets (NYMEX or ICE). Not all gas is bought and sold on short term fixed price basis and there will be longer term contracts but these will use gas price indices to determine the monthly price, for example, rather than competing fuel indices. Spot LNG is also included in this category.
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. There may be a written contract in place but often the arrangement is at the Government or state-owned company level.
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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. The gas produced maybe associated with oil and/or liquids and treated as a by-product.
Not Known (NK)	No data or evidence.

⁶Wholesale Gas Pricing Group is Sub Group 2 of PGCB and was chaired in the period leading up to the 2009 World Gas Conference by Runar Tjersland of Statoil and since 2009 by Mike Fulwood of Nexant.

2.4 ANALYSING THE RESULTS

In looking at the different price formation mechanisms, the results have generally been analysed from the perspective of the consuming country. Within each country gas consumption can come from one of three sources, ignoring withdrawals from (and injections into) storage – domestic production, imported by pipeline and imported by LNG. In many instances, as will be shown below, domestic production, which is not exported, is priced differently from gas available for export and also from imported gas whether by pipeline or LNG. Information was collected for these three categories separately for each country and, in addition, pipeline and LNG imports were aggregated to give total imports and adding total imports to domestic production gives total consumption. For each country, therefore, price formation could be considered in 5 different categories:

- Domestic production (consumed within the country, i.e. not exported)
- Pipeline imports
- LNG imports
- Total imports (pipeline plus LNG)
- Total consumption (domestic production plus total imports)

Each country was then considered to be part of one of the IGU regions, as described above, and the 5 categories reviewed for each region. Finally the IGU regions were aggregated to give the results for the World as a whole.

As well as collecting information on price formation mechanisms by country, information was also collected on wholesale price levels in each country. Comparisons of wholesale price levels, however, need to be treated with caution. As noted above, the wholesale price can cover different points in the gas chain – wellhead price, border price, hub price, city-gate price – so the comparison of price levels is not always a like for like comparison.

2.5 REPORT LAYOUT

Section 2 of the report covers the results of the 2012 survey and looks at the World level for the different categories – domestic production, pipeline imports, LNG imports, total imports and total consumption. Results at the individual regional level are then analysed followed by a discussion and analysis of wholesale price levels by region, price formation mechanism and country. Section 3 of the report provides a comparison of the results across all five surveys to identify key trends and, similar to Section 2, covers the World level for the different categories, the individual regional level and finally changes in wholesale price levels.

Section 3. 2012 Survey Results

3.1 INTRODUCTION

This section covers the results of the 2012 survey and comprises three parts:

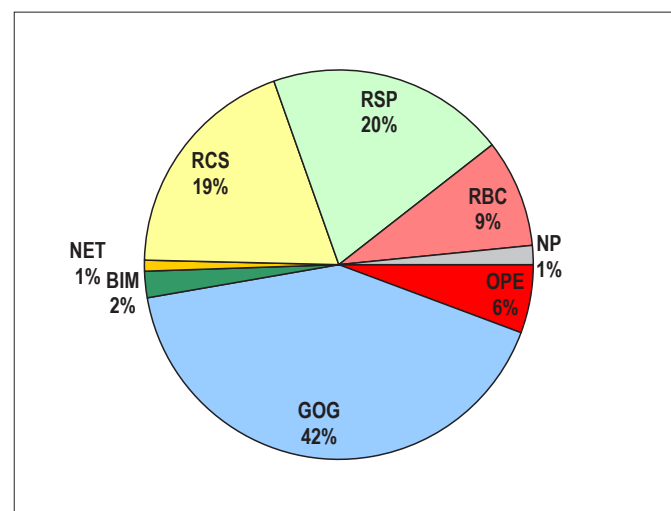
- Results at the World level for the different categories – domestic production, pipeline imports, LNG imports, total imports and total consumption;
- Results for each individual region for total consumption; and
- An analysis of wholesale price levels by region, price formation mechanism and country.

3.2 WORLD LEVEL RESULTS

3.2.1 Domestic Production

Domestic production in 2012 accounted for some 72% of total world consumption – around 2,440 bcm.

Figure 3.1. World Price Formation 2012 - Domestic Production



GOG has the largest share in domestic production at 42%, totalling some 1,012 bcm, with North America accounting for 745 bcm – almost three quarters of the total. The next largest share is in the Former Soviet Union, where the sales of gas in Russia to the large eligible customers by either Gazprom or the independent producers is classified as GOG (see the section on Former Soviet Union in the regional analysis for further discussion), accounting for some 141 bcm. The balance is in Europe at 74 bcm – principally the Netherlands and UK, Asia Pacific at 34 bcm – Australia and New Zealand, and Latin America at 18 bcm – mainly Argentina.

OPE has a relatively small share in domestic production at 6%, totalling some 138 bcm, with 60 bcm in Asia – Pakistan and India, 20 bcm in Latin America – Brazil and Colombia, 20 bcm

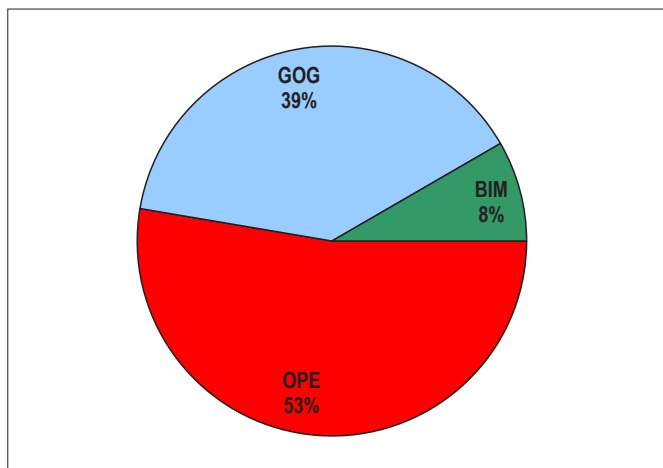
in Europe – mainly Germany, Italy and some residual contracts in the UK, and under 4 bcm in Africa, mainly Tunisia.

The regulated categories – RCS, RSP and RBC – in total account for almost half of domestic production, with RCS principally in Asia and the Former Soviet Union, RSP principally in the Middle East, Asia Pacific and Latin America and RBC in the Former Soviet Union, Africa and the Middle East. A more detailed breakdown of the regulated categories is contained in the regional analysis sections.

3.2.2 Pipeline Imports

Pipeline imports in 2012 accounted for some 19% of total world consumption – around 644 bcm.

Figure 3.2. World Price Formation 2012 - Pipeline Imports



Pipeline imports are split between just three categories – OPE, GOG and BIM.

OPE has just over half of all pipeline imports, totalling some 339 bcm, mostly in Europe with some 212 bcm – Turkey, Germany, France and Italy being the main contributors. The Former Soviet Union accounts for some 53 bcm – principally Ukraine and Russia, with 23 bcm in Asia – China, and 21 bcm in Asia Pacific – Singapore and Thailand. There are also small quantities in all other regions, apart from North America, including countries such as Iran, Brazil and Argentina.

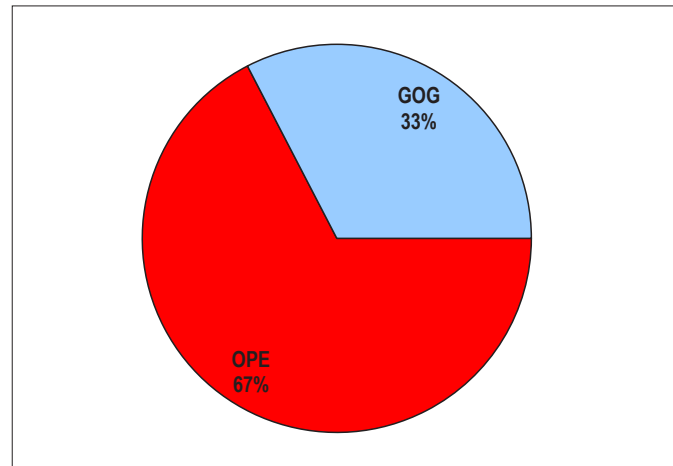
GOG has a 39% share, totalling some 251 bcm, with Europe at 140 bcm and North America the rest. Most of the gas importing countries in Europe, have some element of GOG pipeline imports with the top four countries being Germany, UK, France and Italy.

BIM has the balance of 8%, totalling some 54 bcm. This is almost all in the Former Soviet Union and the Middle East and is largely just two routes – Russia to Belarus and Qatar to the UAE.

3.2.3 LNG Imports

LNG imports in 2012 accounted for some 9.5% of total world consumption – around 320 bcm.

Figure 3.3. World Price Formation 2012 – LNG Imports



LNG imports are split two thirds OPE and one third GOG.

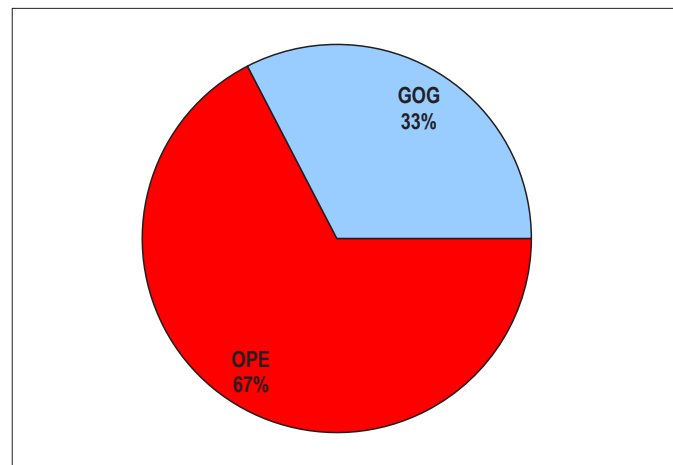
OPE at some 215 bcm is mostly Asia Pacific – Japan, Korea and Taiwan, followed by Europe – mainly Spain, France and Italy, and Asia – China and India.

GOG total some 104 bcm and can be divided into imports into countries such as the UK, USA, Canada and Mexico, where the domestic market pricing mechanism is GOG, and all other countries which are importing spot and short term priced LNG cargoes, which is almost every other LNG importing country – Japan and Korea taking the largest shares.

3.2.4 Total Imports

Total imports in 2012 accounted for some 28% of total world consumption – around 963 bcm.

Figure 3.4. World Price Formation 2012 – Total Imports



Total imports are the sum of pipeline and LNG imports and comprise the three categories of OPE (57%), GOG (37%) and BIM (6%). The table below shows the regional and category breakdown.

Table 3.1. World Price Formation 2012 – Total Imports

Region	Total Imports			
	OPE	GOG	BIM	TOT
North America	0.0	120.1	0.0	120.1
Europe	252.1	165.1	0.0	417.3
Asia	48.2	12.0	0.0	60.2
Asia Pacific	164.7	44.7	4.4	213.8
Latin America	17.8	10.6	0.9	29.2
FSU	52.6	0.0	27.7	80.3
Africa	2.8	0.0	3.5	6.6
Middle East	15.8	2.4	17.2	35.4
Total	554.0	355.0	53.7	962.9

3.2.5 Total Consumption

Total consumption in 2012 was almost 3,400 bcm.

GOG has the largest share at 40%, totalling around 1,370 bcm, dominated by North America at 865 bcm, followed by Europe at some 240 bcm and the Former Soviet Union at around 140 bcm. In all GOG can now be found in some 39 countries, in one form or another, and in all regions except Africa.

The OPE share at 20%, totals around 690 bcm and is predominantly Europe (272 bcm), Asia Pacific (200 bcm) and Asia (108 bcm). OPE is widespread being found in some 63 countries, including virtually every country in Europe, and in all regions except North America.

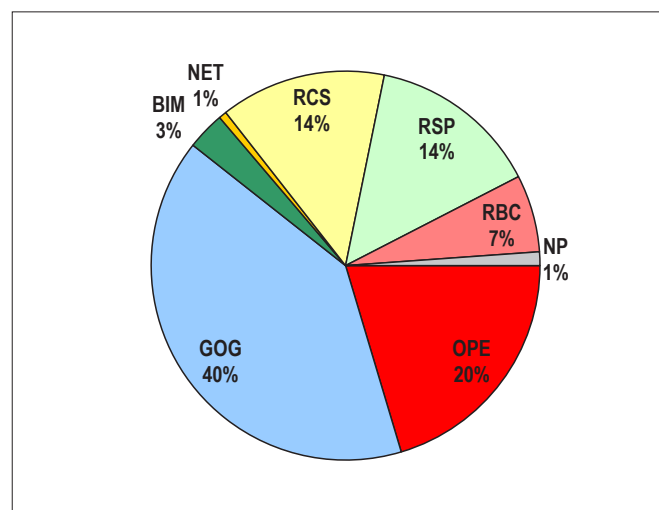
The regulated categories – RCS, RSP and RBC – account in total for some 35%, around 1,170 bcm:

- RCS totals some 468 bcm and is in 16 countries, mainly the Former Soviet Union (Russia) and Asia (China);

Table 3.2. World Price Formation 2012 – Total Consumption

Region	Total Consumption									
	OPE	GOG	BIM	NET	RCS	RSP	RBC	NP	NK	TOT
North America	0.0	865.3	0.0	0.0	0.0	0.0	0.0	17.9	0.0	883.2
Europe	271.8	239.5	0.0	1.0	10.8	11.0	0.0	4.5	0.0	538.7
Asia	108.1	12.0	0.0	0.0	124.8	29.0	1.5	0.0	0.0	275.3
Asia Pacific	199.8	78.3	16.8	0.0	9.7	64.2	0.0	3.4	0.0	372.2
Latin America	37.9	28.8	7.2	17.2	6.8	62.9	0.0	1.1	0.0	161.7
FSU	52.6	141.3	27.7	0.0	315.1	17.8	91.3	3.5	0.0	649.3
Africa	6.3	0.0	4.6	0.8	0.9	1.2	89.6	1.0	0.0	104.4
Middle East	15.8	2.4	50.8	3.2	0.0	297.7	36.0	7.0	0.0	412.8
Total	692.3	1 367.6	107.0	22.1	467.9	483.8	218.3	38.5	0.0	3 397.6

Figure 3.5. World Price Formation 2012 – Total Consumption



- RSP totals some 484 bcm and is in 24 countries, with the Middle East dominating – Iran, Saudi Arabia and the UAE;
- RBC totals some 218 bcm and is in 14 countries, mainly the Former Soviet Union – Kazakhstan, Turkmenistan and Uzbekistan, Africa – Egypt, Algeria and Nigeria, and the Middle East – Oman, Syria and Iraq.

The BIM share at 3% totals some 107 bcm and is in 21 countries, predominantly Middle East – Qatar, UAE and Israel, Former Soviet Union – Belarus, and Asia Pacific – Indonesia and Malaysia.

The NET share at 1% totals some 22 bcm in 4 countries – Trinidad, Qatar, Norway and Equatorial Guinea.

The NP share at 1% totals some 39 bcm in 9 countries, largely Mexico, Norway and Kuwait, where it is used in the energy industry in refining processes or enhanced oil recovery.

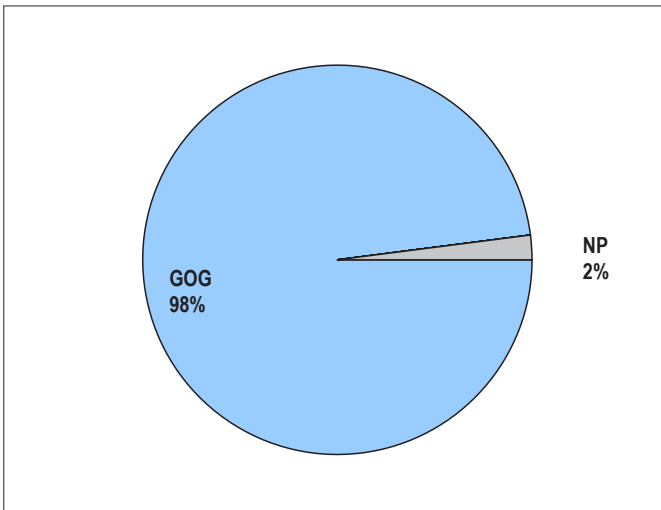
The table below shows the regional and category breakdown for total world consumption.

3.3 REGIONAL LEVEL RESULTS

3.3.1 North America

North America consumption in 2012 was some 26% of total world consumption – around 883 bcm.

Figure 3.6. North America Price Formation 2012

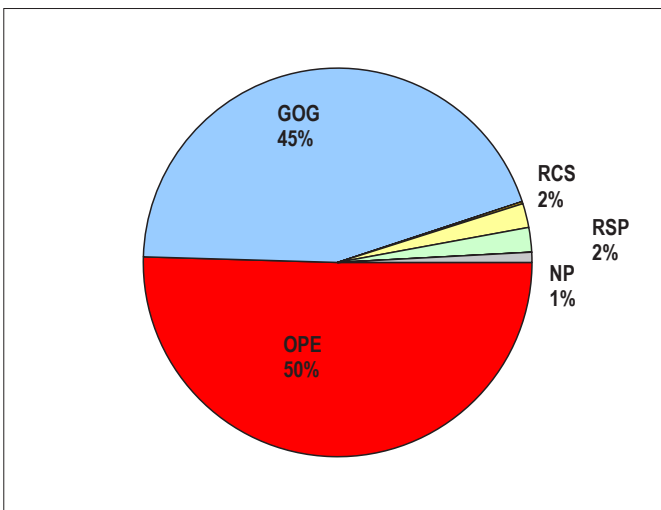


GOG clearly dominates the North American market with fully liquid trading markets in the USA and Canada and the wholesale price in Mexico being referenced to prices in the USA. The small amount of NP is in Mexico where Pemex uses the gas in refinery processes and for enhanced oil recovery.

3.3.2 Europe

European consumption in 2012 was some 16% of total world consumption – around 539 bcm.

Figure 3.7. Europe Price Formation 2012



OPE at 50%, totals around 272 bcm, and is predominantly pipeline imports (212 bcm) into almost every European country, apart from the UK, Netherlands, Denmark and Ireland, followed by LNG imports (40 bcm) into Spain, France, Italy, Turkey, Portugal and Greece, with domestic production (20 bcm) in a variety of countries principally Italy, Germany and the UK legacy contracts.

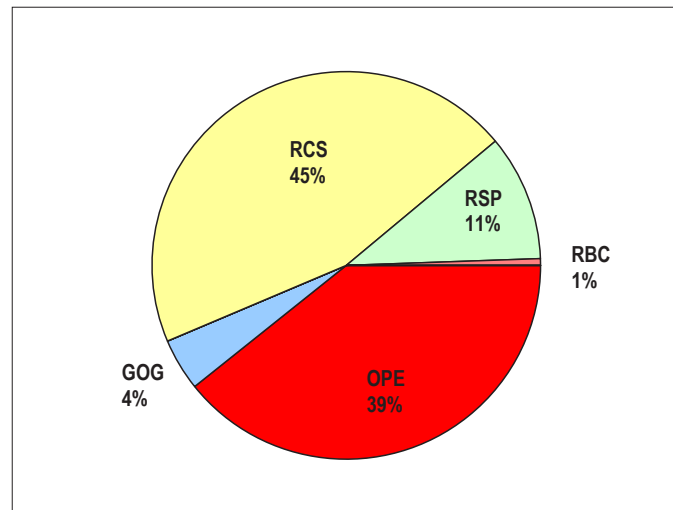
GOG now stands at 45%, totalling around 240 bcm. Some 75 bcm is domestic production, mainly Netherlands and UK, with some 140 bcm being pipeline imports, predominantly all the northwest European countries, but also increasingly the central European countries of Poland, Czech Republic, Slovakia, Austria and Hungary. LNG imports account for some 25 bcm, half of which are into the UK, with the remaining quantities being largely spot cargoes into the more traditional LNG importing countries.

RCS accounts for some 11 bcm and is domestic production in Romania, while RSP also accounts for some 11 bcm and is also domestic production in Poland, Hungary, Croatia and Bulgaria. NP is some 4.5 bcm and is gas used in enhanced oil recovery and refineries in Norway.

3.3.3 Asia

Asian consumption in 2012 was some 8% of total world consumption – around 275 bcm.

Figure 3.8. Asia Price Formation 2012



OPE at 39% totals some 108 bcm and is principally pipeline and LNG imports into China, LNG imports together with some domestic production in India, but the largest element is domestic production in Pakistan where the regulator sets gas wellhead prices but linked to the oil price.

GOG at only 4%, some 12 bcm, reflects spot LNG imports into India and China.

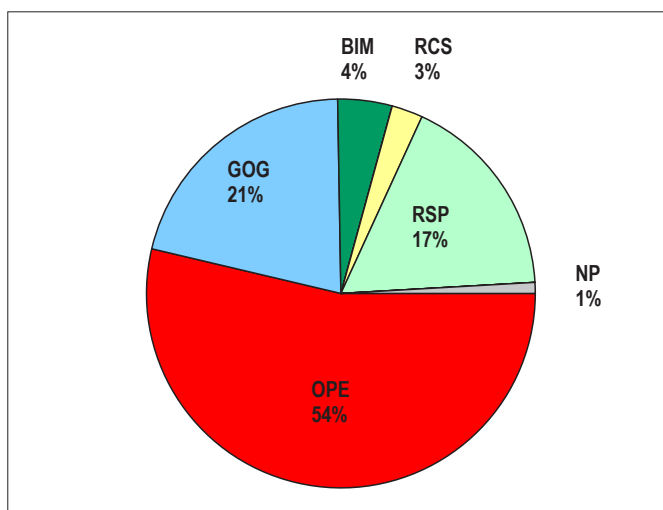
RCS accounts for some 45%, totalling around 125 bcm of domestic production, almost all in China with around 20 bcm in Bangladesh.

RSP at 11%, totals around 29 bcm and is domestic production almost all in India, while RBC at 1%, some 1.5 bcm, is Myanmar domestic production.

3.3.4 Asia Pacific

Asia Pacific consumption in 2012 was some 11% of total world consumption – around 372 bcm.

Figure 3.9. Asia Pacific Price Formation 2012



OPE at 54% totals some 200 bcm, with LNG imports – in Japan, Korea and Taiwan – accounting for 145 bcm. Pipeline imports are some 21 bcm into Singapore and Thailand while domestic production is 35 bcm largely Thailand and the Philippines.

GOG at 21% totals some 78 bcm, of which 45 bcm are spot LNG imports mainly in Japan and Korea and the balance is domestic production in Australia and New Zealand.

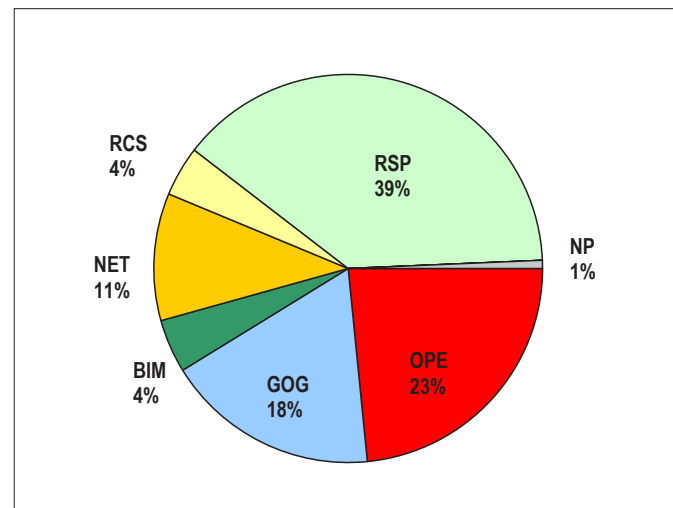
BIM at 4% totals some 17 bcm, comprising part of domestic production in Indonesia, domestic production in Japan and imports into Malaysia from Indonesia.

RSP at 17% totals some 64 bcm and is domestic production in Malaysia and Indonesia, while RCS at 3% or some 10 bcm, is mostly domestic production in Vietnam. NP at 1% or 1.5 bcm is domestic production in Brunei consumed in the energy industry.

3.3.5 Latin America

Latin America consumption in 2012 was some 5% of total world consumption – around 162 bcm.

Figure 3.10. Latin America Price Formation 2012



OPE at 23% totals some 38 bcm, mainly domestic production in Brazil and Colombia, pipeline imports into Brazil, Argentina and Venezuela and a proportion of LNG imports into Argentina and Chile.

GOG at 18% totals some 29 bcm, almost half of which is domestic production in Argentina. In addition, there are small amounts of domestic production in Colombia and Chile, while the balance is LNG imports into Brazil, Argentina, Chile, Puerto Rico and Dominican Republic.

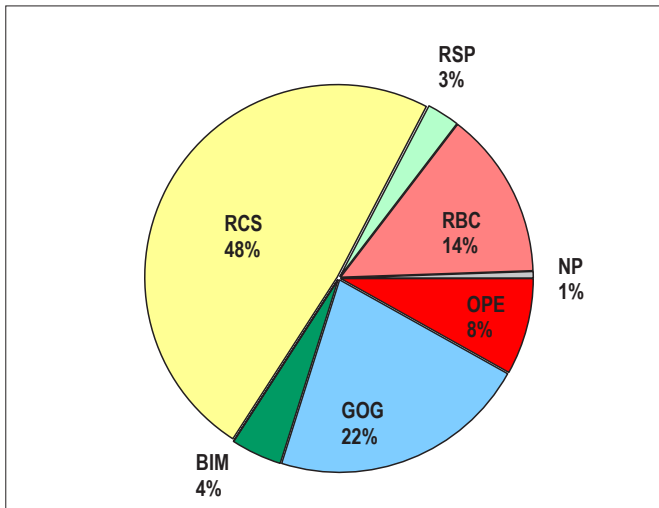
BIM at 4% totals some 7 bcm and is almost all domestic production to the power sector in Trinidad. NET at 11% totals some 17 bcm and is the balance of domestic production in Trinidad used as a feedstock in petrochemicals.

RSP at 39% totals some 63 bcm and comprises domestic production in Venezuela, Argentina, Peru and Bolivia, while RCS at 4% totals some 7 bcm and is domestic production in Argentina, Brazil and Colombia. NP at 1% or 1 bcm is Cuban domestic production.

3.3.6 Former Soviet Union

Former Soviet Union consumption in 2012 was some 19% of total world consumption – around 650 bcm.

Figure 3.11. Former Soviet Union Price Formation 2012



RCS at 48% is the largest share, totalling some 315 bcm and is almost all the major proportion of domestic production in Russia together with domestic production in Azerbaijan. RBC at 14% or 91 bcm is domestic production in Kazakhstan, Turkmenistan and Uzbekistan, while RSP at 3% or 18 bcm is Ukraine domestic production.

GOG at 22% totals some 141 bcm and is all domestic production to the eligible large customer market in Russia.

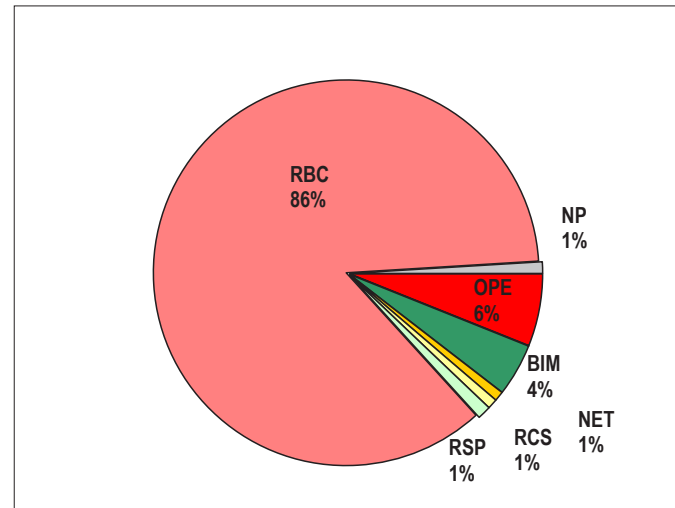
OPE at 8% or 53 bcm is all pipeline imports into Ukraine, Russia and Moldova, while BIM at 4% or 28 bcm represents other pipeline imports in the FSU region, principally from Russia to Belarus.

NP at 1% or 3.5 bcm is part of domestic production in Turkmenistan.

3.3.7 Africa

African consumption in 2012 was some 3% of total world consumption – around 105 bcm.

Figure 3.12. Africa Price Formation 2012



RBC at 86% or some 90 bcm, dominates the region and is domestic production largely in Egypt, Algeria and Nigeria.

OPE at 6% or 6 bcm comprises part of the pipeline imports into Tunisia and Morocco from Algeria, as well as domestic production in Tunisia and part of Ivory Coast.

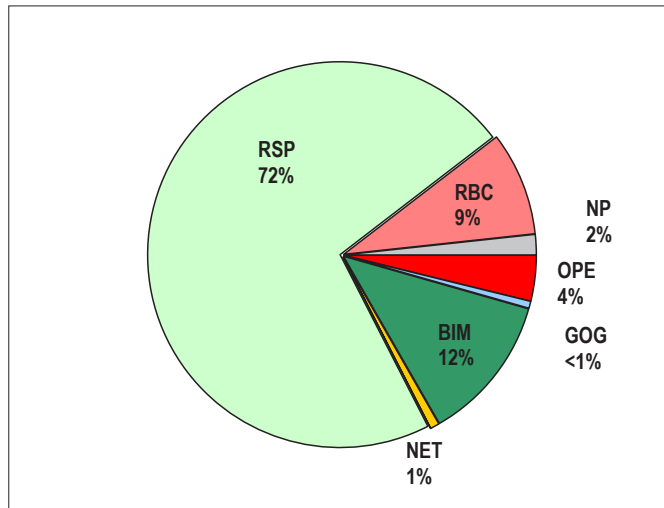
BIM at 4% or 4.5 bcm is pipeline imports into South Africa from Mozambique and the balance of domestic production in Ivory Coast.

The remaining categories – all at 1% or 1 bcm – are RCS (largely South Africa), RSP (part Equatorial Guinea and Tanzania), NET (part Equatorial Guinea) and NP (largely Angola).

3.3.8 Middle East

Middle East consumption in 2012 was some 12% of total world consumption – around 410 bcm.

Figure 3.13. Middle East Price Formation 2012



RSP at 72% or almost 300 bcm dominates the region and is largely domestic production in Iran, Saudi Arabia and the UAE with smaller amounts in Bahrain and Kuwait.

RBC at 9% or 36 bcm is domestic production in Oman, Iraq and Syria.

BIM at 12% or just over 50 bcm is partly pipeline imports from Qatar to UAE and domestic production in Qatar and Israel.

OPE at 4% or 16 bcm is largely pipeline imports into Iran from Turkmenistan and the flows of gas from Egypt to Jordan, Syria and Lebanon, plus some LNG imports into Kuwait and UAE. There are also very small quantities of GOG as spot LNG imports into Kuwait and UAE.

NP at 2% or 7 bcm is largely gas used in enhanced oil recovery and refineries in Kuwait, while NET at 1% or 3 bcm is feedstock gas in Qatar.

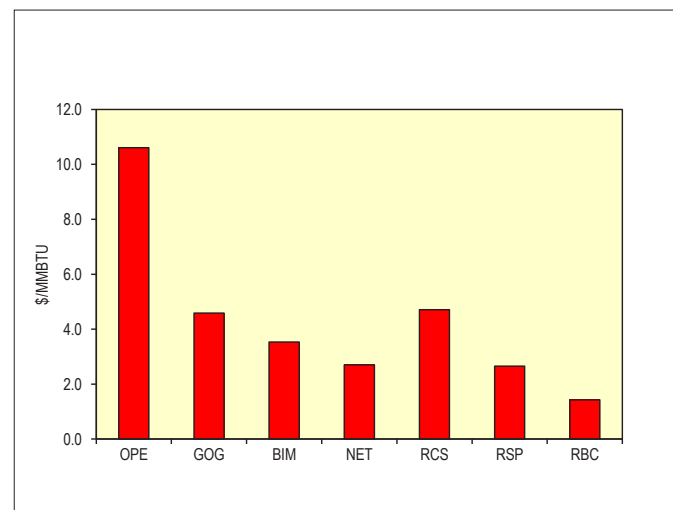
3.4 WHOLESALF PRICE LEVELS

In considering wholesale price levels across regions, countries or price formation mechanisms, it should be noted that the wholesale price can cover different points in the gas chain – wellhead price, border price, hub price, city-gate price – so the comparison of price levels is not always “like for like”. Comparisons, therefore, should be treated with caution and taken only as a broad indication.

3.4.1 Price Levels by Price Formation Mechanism

The figure below shows a snapshot of wholesale prices for 2012 by price formation mechanism – a comparison over the five surveys is shown in section 4.

Figure 3.14. Wholesale Prices in 2012 by Price Formation Mechanism



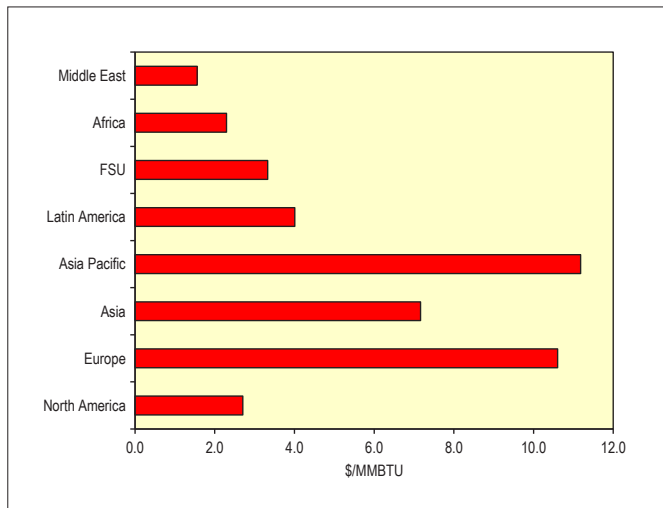
The highest prices, by some margin, are in the OPE category, at over \$10.50 per MMBTU, more than double the price of \$4.59 for the GOG category, which is even slightly below the RCS category. The price level in the GOG category is heavily influenced by the low prices in 2012 in North America.

In the regulated categories, it can be seen that the prices in the RCS category are higher than those in RSP and, in turn, RBC – which were the lowest at just under \$1.40 per MMBTU in 2012.

3.4.2 Price Levels by Region and Country

The figure below shows a snapshot of wholesale prices for 2012 by IGU region – a comparison over the five surveys is shown in section 4.

Figure 3.15. Wholesale Prices in 2012 by Region



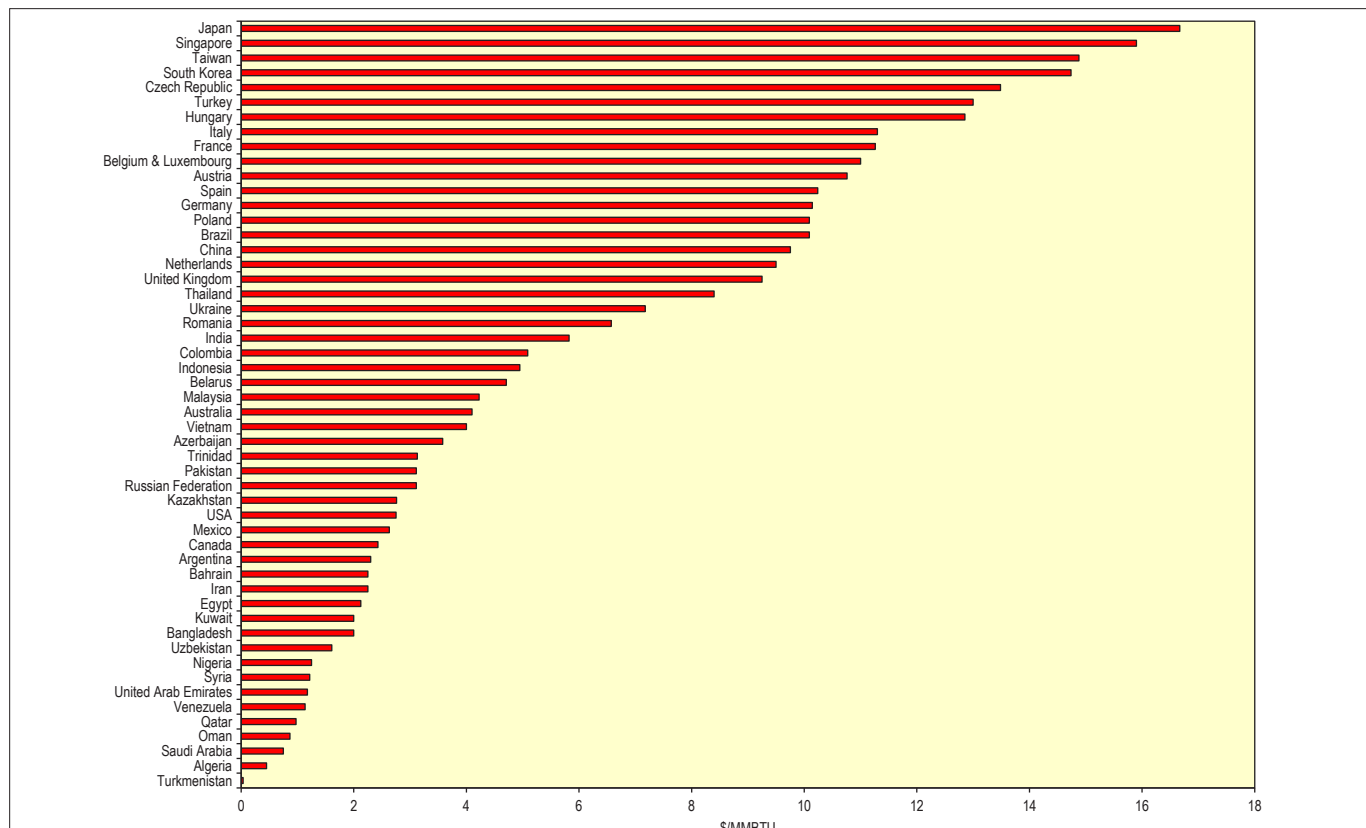
Wholesale prices can obviously vary significantly from year to year, but the top two regions are Asia Pacific – with an average price of over \$11.00 per MMBTU – followed by Europe – with an average price of just over \$10.50. These are both regions

where OPE remains the primary pricing mechanism. The combination of falling prices in North America and rising prices in Asia, Latin America and the Former Soviet Union, has now taken the latter regions above the former. Only the Middle East and Africa, where prices are often held down to the cost of production or below as a subsidy, are average prices lower than in North America.

These conclusions are further reinforced when wholesale prices are viewed at the country level. The figure below includes all countries with consumption greater than 8 bcm in 2012.

The highest wholesale prices in 2012 were found in the largely LNG dependent countries in Asia Pacific – South Korea, Japan and Taiwan – plus Singapore. These were followed by a whole host of European countries including Turkey, France, Italy, Spain and Germany. Prices in the UK and the Netherlands were lower than in the main gas importing countries in Europe, and were also lower than in China, where prices have been increasing. The decline in spot prices in the North American market, meant that prices in the USA, Canada and Mexico were actually lower than in a whole range of countries, where prices had previously been well below North American prices. These included countries such as India, Indonesia, Malaysia, Pakistan and even Russia. At the bottom of the chart were generally countries where wholesale prices were subject to some form of regulation – largely Middle East and African countries – and often below the cost of production and transportation.

Figure 3.16. Wholesale Prices in 2012 by Country



Section 4. Comparisons with Previous Surveys

4.1 INTRODUCTION

This section covers a comparison of the results of the five surveys undertaken from 2005 to 2012 and comprises three parts:

- Results at the World level for the different categories – domestic production, pipeline imports, LNG imports, total imports and total consumption;
- Results for each individual region for total consumption; and
- An analysis of wholesale price levels by region and price formation mechanism.

The results for previous surveys may, in some cases, appear slightly different from what has been published in previous reports. This reflects mostly revisions to IEA data on consumption, production, imports and exports but can also reflect retrospective changes to price formation classification when survey respondents have a better appreciation of the classification definitions as they reflect upon the results from the surveys overall.

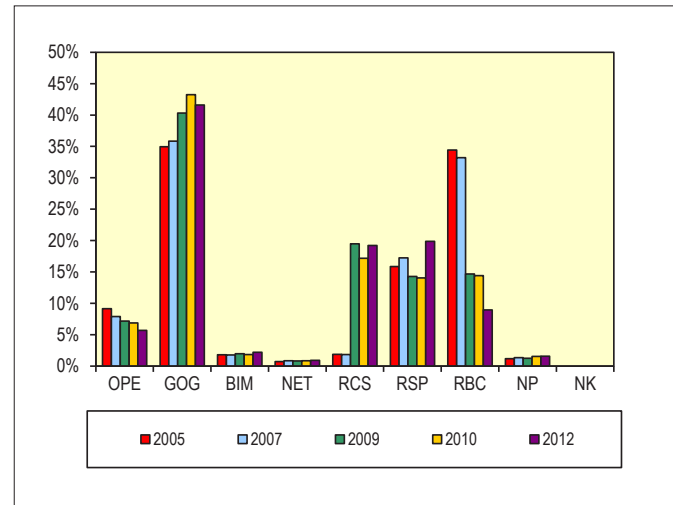
4.2 WORLD LEVEL COMPARISONS

4.2.1 Domestic Production

The main changes in price formation over the five surveys have been the general rise in GOG from 35% in 2005 to a peak of over 43% in 2010, before a small decline in 2012 to some 41.5%. This decline largely reflects declining domestic production in Europe rather than any change in price formation mechanism. The OPE category is not particularly large in terms of domestic production, but the decline reflects both declining production in Europe as well as a switch to GOG in Europe. Apart from OPE, GOG has gained share from the three regulated categories which in 2005 totalled some 52% compared to 48% in 2012. A large part of this occurred in 2009 when the GOG category increased in Russia at the expense of the regulated categories, as the market began to open up to independents more, and there was more effective competition between the independents and Gazprom for power sector and industrial customers – a trend which continued in 2010, before falling back in 2012 as a result of declining demand. There has also been an increase in GOG in Latin America as well.

Within the regulated categories, there have been two main changes, in 2009 when Russia changed from RBC to RCS as prices were finally increased above the cost of production and transportation, and in 2012 when Iran increased prices sharply to move from RBC to RSP.

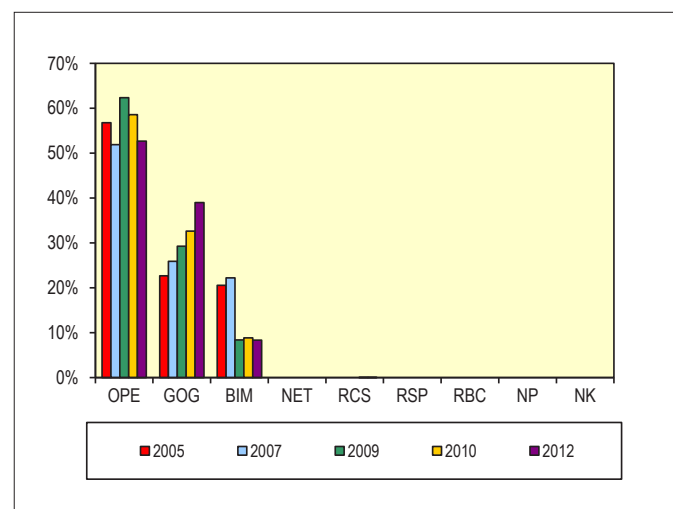
Figure 4.1. World Price Formation 2005 to 2012 – Domestic Production



4.2.2 Pipeline Imports

The main changes in the five surveys from 2005 to 2012 are the continued rise in GOG from just under 23% in 2005 to 39% in 2012, which has been at the expense of the OPE category. However, the decline in OPE has been partly offset by a switch from BIM to OPE in intra-FSU trade in 2009, and more recently the new imports of pipeline gas from Turkmenistan to China. The rise in GOG at the expense of OPE has been entirely in the European market as the Northwest Europe countries began switching to GOG and more recently the Central Europe countries.

Figure 4.2. World Price Formation 2005 to 2012 – Pipeline Imports

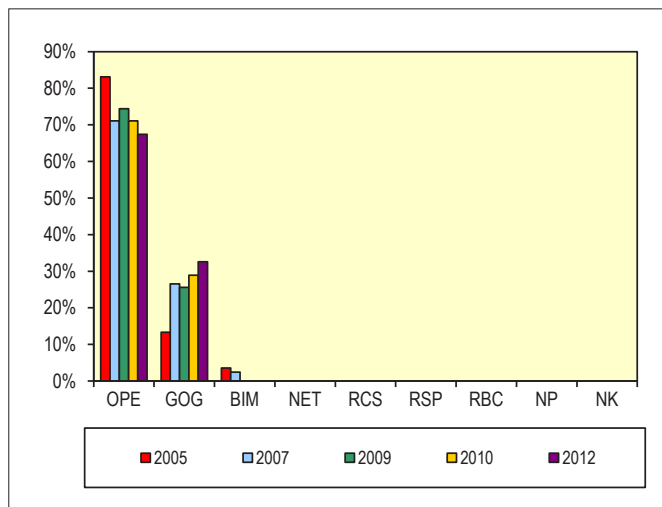


4.2.3 LNG Imports

The main changes in the five surveys from 2005 to 2012 are a gradual rise in GOG from just over 13% in 2005 to 33% in 2012, which has been largely at the expense of the OPE category. There was a significant increase in GOG between 2005 and 2007, which was principally due to a rise in spot LNG imports in Asia and Asia Pacific and a smaller rise in North American imports. Since 2007, there have been offsetting changes with North American LNG imports – which are all GOG – declining, European imports, principally to the UK increasing in 2009 and 2010 and relatively stability in Asia and Asia Pacific spot LNG imports. In 2012, as Europe's LNG imports declined, these were more than offset in the GOG category by rising spot LNG imports in Asia and Asia Pacific.

The BIM category in 2005 and 2007 was the Qatar to India LNG contract which subsequently switched to OPE.

Figure 4.3. World Price Formation 2005 to 2012 – LNG Imports



4.2.4 Total Imports

Total imports are the sum of pipeline imports and LNG imports and have only comprised three categories – OPE, GOG and BIM – in all five surveys from 2005 to 2012. As well as the figure the table below shows the volume breakdown. OPE declined from 63% in 2005 to 57% in 2007 as GOG rose from just over 20% to 26% and then in 2009, OPE gained share rising to 66% as BIM fell from 17% to 6%, with GOG rising to 28%. Since then OPE has lost share by around 9 percentage points and GOG gained a similar share.

Figure 4.4. World Price Formation 2005 to 2012 – Total Imports

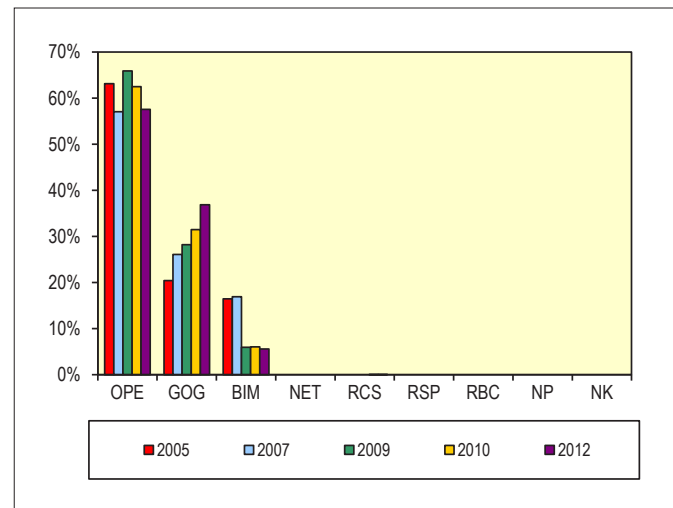


Table 4.1. World Price Formation 2005 to 2012 – Total Imports⁷

BCM

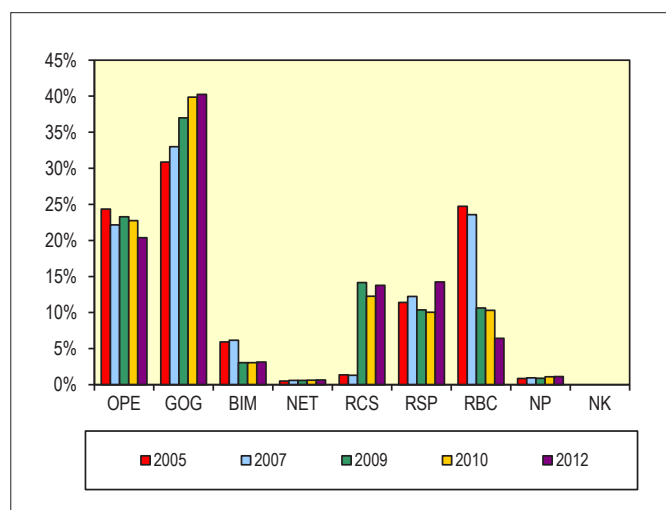
World	Total Imports			
	OPE	GOG	BIM	TOT
2005	509.0	164.7	132.6	806.3
2007	505.6	231.2	150.0	886.8
2009	554.4	237.3	49.9	841.6
2010	589.1	296.6	57.2	943.0
2012	554.0	355.0	53.7	962.9

⁷In 2010 and 2012 there were very small quantities of RCS reflecting the regulated transportation tariff element of pipeline gas from Nigeria to Ghana. The BIM category also includes a small element of transportation tariffs, principally Bolivia to Brazil.

4.2.5 Total Consumption

The figure below shows the changes in the price formation mechanisms over the five surveys from 2005 to 2012.

Figure 4.5. World Price Formation 2005 to 2012 – Total Consumption



The changes between each survey can be summarised as follows:

- Between 2005 and 2007, GOG increased its share by some 2 percentage points and OPE decreased by 2 percentage points reflecting faster growth in consumption in North America than most other regions, a switch from OPE to GOG in Europe, and to a lesser extent in Asia Pacific and Asia, and a very small move from regulated pricing to GOG in Russia and Latin America. RSP also increased its share by 1 percentage point principally due to changes in the Middle East away from RBC;
- Between 2007 and 2009, GOG increased its share by a further 4 percentage points, at a time when total world consumption showed little change, mainly because of the change in Russia from RBC to GOG but also because of the continuing switch from OPE to GOG in Europe. OPE actually gained 1 percentage point with the loss in share in Europe being more than offset by a switch from BIM, which lost 3 percentage points overall, to OPE in intra-FSU trade. The other major change was the decline of 13 percentage points in RBC and a similar gain in RCS, mainly in Russia, but RCS also gained at the expenses of RSP, which lost almost 2 percentage points, as China’s domestic production changed categories as prices increased under regulatory change;
- Between 2009 and 2010, GOG increased its share by another 3 percentage points, with the continuing switch from OPE to GOG in Europe and further move in Russia away from RCS to GOG. OPE declined by only half a percentage point with losses in share in Europe being partly offset by gains in shares in Asia, as China began importing pipeline gas and more LNG under contract, and Asia Pacific on the back of rapid growth in demand in Korea, Taiwan and Thailand;

- Between 2010 and 2012, GOG increased its share by just under half a percentage point, rising to just over 40%, with the continuing increase in share in Europe away from OPE, and more spot LNG imports in Asia and Asia Pacific, being partly offset by a decline in share in Russia. OPE declined by almost 2.5 percentage points, based on the switch to GOG in Europe coupled with declining European demand, only partly offset by a rising share in pipeline imports in China. RCS increased its share by 1.5 percentage points, principally in Russia but also as demand grew sharply in China. RSP increased its share by 4 percentage points and RBC declined by a similar amount, principally due to the change in pricing in Iran and rising demand in Saudi Arabia.

Overall over the 2005 to 2012 period, OPE has declined by 4 percentage points, GOG has risen by 10 percentage points, BIM has declined by almost 3 percentage points, RCS has risen by over 12 percentage points, RSP risen by almost 3 percentage points and RBC declined by over 18 percentage points.

Table 4.2. World Price Formation 2005 to 2012 – Total Consumption

BCM and percentages

World	Total Consumption								TOT
	OPE	GOG	BIM	NET	RCS	RSP	RBC	NP	
2005	696.9	883.6	169.7	14.7	38.9	326.4	707.7	24.3	2862.2
2007	677.3	1008.6	188.7	18.5	39.9	373.8	720.3	29.1	3056.2
2009	714.2	1135.6	94.0	18.5	434.1	318.2	326.7	27.7	3069.0
2010	751.1	1315.9	100.6	20.2	405.2	331.4	339.8	36.7	3301.0
2012	692.3	1367.6	107.0	22.1	467.9	483.8	218.3	38.5	3397.6
2005	24.3%	30.9%	5.9%	0.5%	1.4%	11.4%	24.7%	0.8%	100.0%
2007	22.2%	33.0%	6.2%	0.6%	1.3%	12.2%	23.6%	1.0%	100.0%
2009	23.3%	37.0%	3.1%	0.6%	14.1%	10.4%	10.6%	0.9%	100.0%
2010	22.8%	39.9%	3.0%	0.6%	12.3%	10.0%	10.3%	1.1%	100.0%
2012	20.4%	40.3%	3.2%	0.7%	13.8%	14.2%	6.4%	1.1%	100.0%

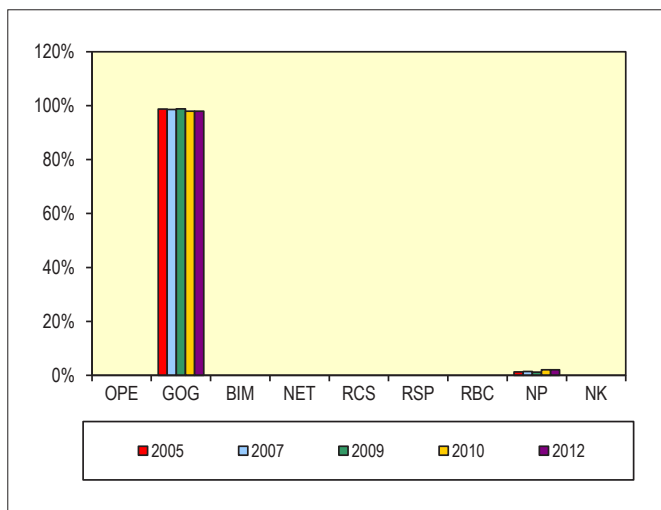
The major overall changes, in the 2005 to 2012 period, have been the continuous move away from OPE to GOG in Europe, and also in Asia Pacific as spot LNG imports have risen, from RBC to RCS and GOG in Russia, from RSP to RCS in China and from RBC to RSP in Iran.

4.3 REGIONAL LEVEL COMPARISONS

4.3.1 North America

Price formation mechanisms have not changed at all, in effect, in North America over the five surveys. Apart from the small amount – around 1% to 2% - of NP which, as noted earlier, is gas used by Pemex in refinery processes and enhanced oil recovery, North America was all GOG in 2005 and has remained so ever since. In fact if the surveys had gone back even further, it is likely that the USA at least would have been GOG since the early 1990s.

Figure 4.6. North America Price Formation 2005 to 2012

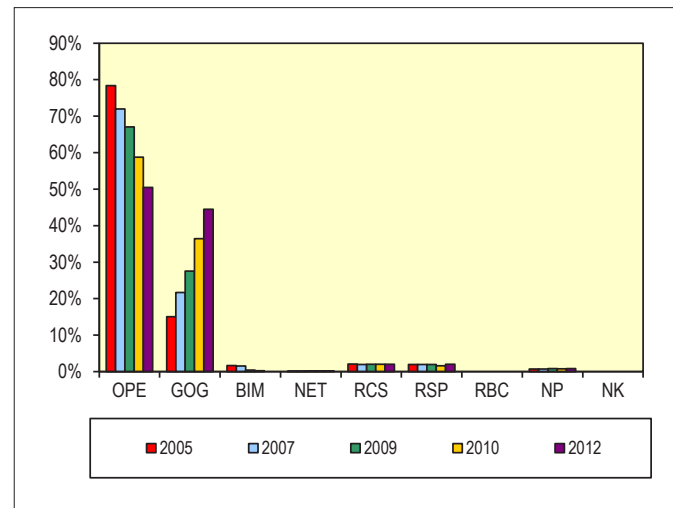


4.3.2 Europe

Europe is one of the regions where the most significant changes in price formation mechanisms have taken place. There has been a broadly continuous move from OPE to GOG since 2005, with GOG's share increasing from 15% in 2005 – when OPE was 78% – to 45% in 2012 – when OPE had declined to 50%. The other largely regulated categories – domestic production in Poland, Hungary and Romania – remained at similar levels.

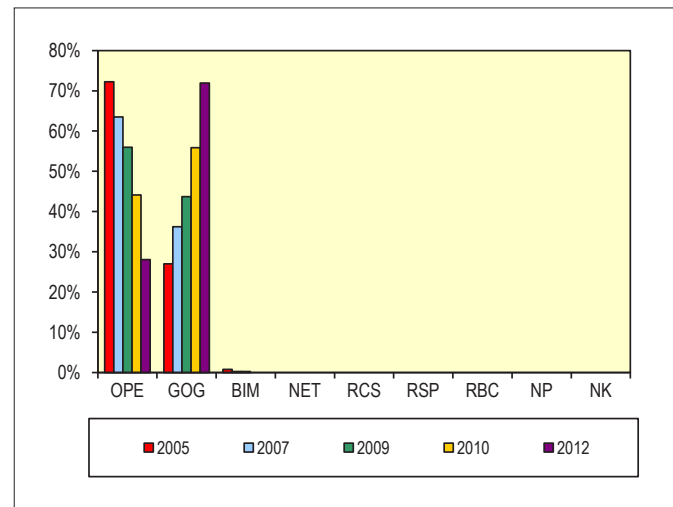
The changes have reflected a number of factors over the years; initially a decline in the volume of gas imported under the traditional oil indexed contracts, being replaced by imports of spot gas and increasing volumes traded at hubs, followed by the ending of contracts or the renegotiation of the terms to include a proportion of hub/spot price indexation in the pricing terms, and in some cases, a reduction in the take-or-pay levels. The trend towards GOG and away from OPE, was reinforced by the continued decline in domestic production in the UK in the old legacy contracts, which are in the OPE category, to be replaced by pipeline and LNG imports, all at GOG. In addition, in the Netherlands price formation had risen to almost 100% GOG in 2012, from 10% in 2005.

Figure 4.7. Europe Price Formation 2005 to 2012



The change in price formation mechanisms in Europe was not universal across the region. The figures below summarise the changes in the key sub-regions.

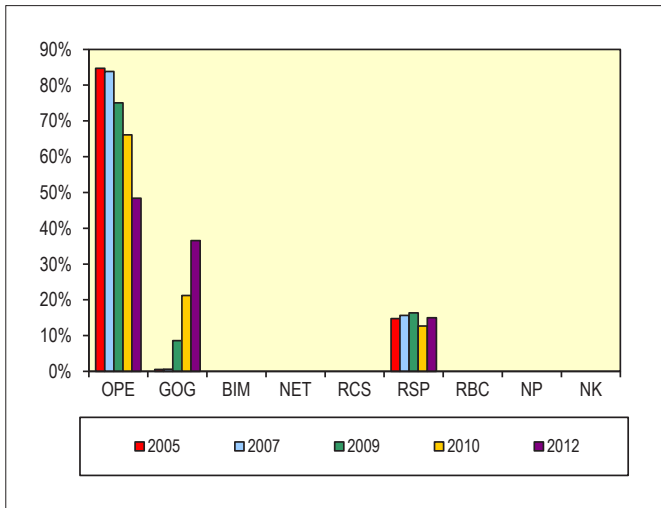
Figure 4.8. Northwest Europe Price Formation 2005 to 2012



Northwest Europe⁸ has seen the most dramatic change in price formation mechanisms, with a complete reversal in the ratio of OPE to GOG from 72% OPE and 27% GOG in 2005 to 28% OPE and 72% GOG in 2012, as a result of increased hub trading and contract renegotiations, as noted above.

⁸Belgium, Denmark, France, Germany, Ireland, Netherlands, UK

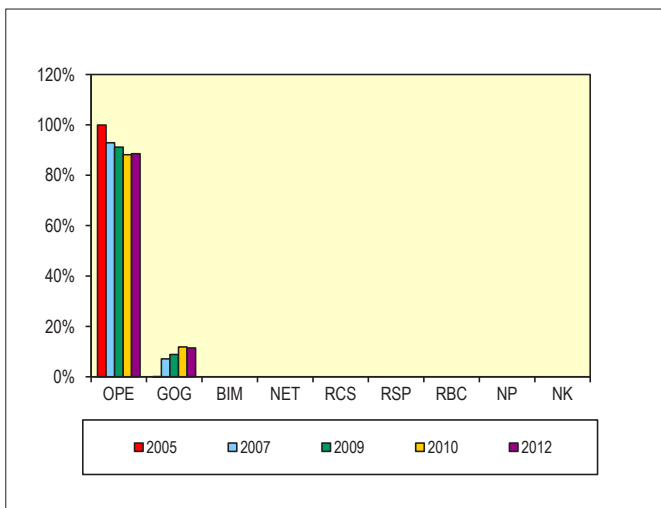
Figure 4.9. Central Europe Price Formation 2005 to 2012



Central Europe⁹ has also, more recently, seen significant changes. Apart from the 15% or so of RSP, in Hungary and Poland, OPE has declined from 85% in 2005 to just under 50% in 2012, while GOG has increased from almost zero in 2005 to over 35% in 2012, principally reflecting increased imports of spot gas, often from Germany, with some element of contract renegotiation.

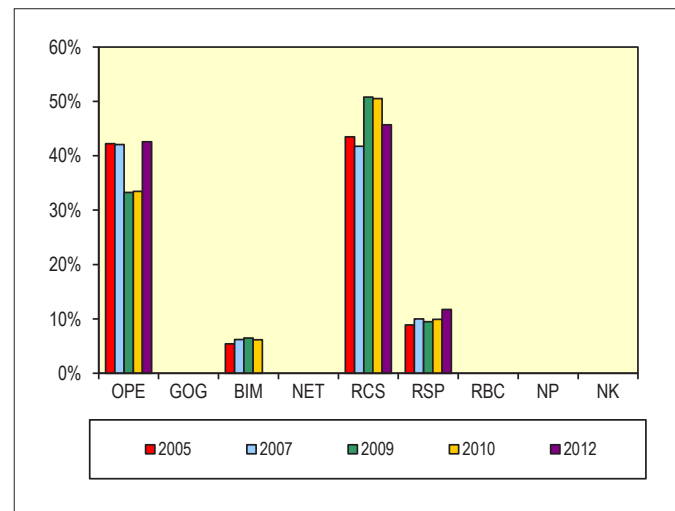
There has been much less change in other areas of Europe such as the Mediterranean¹⁰, where OPE has only declined from 100% in 2005 to just under 90% in 2012 and GOG rising from nothing to just over 10%, largely reflecting spot LNG imports with some spot pipeline imports into Italy.

Figure 4.10. Mediterranean Price Formation 2005 to 2012



In Southeast Europe¹¹ there is no GOG, as shown in the figure below. There is a large element of RCS in Romania and RSP in Croatia, with the lower level of OPE in 2009 and 2010 a consequence of lower demand for imports in Romania and the rise in 2012 reflecting a switch from BIM in Bulgaria, where until 2010 there was payment in kind for transit (BIM) which then became a cash payment with the gas being purchased under the same OPE terms as the other imported gas.

Figure 4.11. Southeast Europe Price Formation 2005 to 2012



⁹Austria, Czech Republic, Hungary, Poland, Slovakia, Switzerland

¹⁰Greece, Italy, Portugal, Spain, Turkey

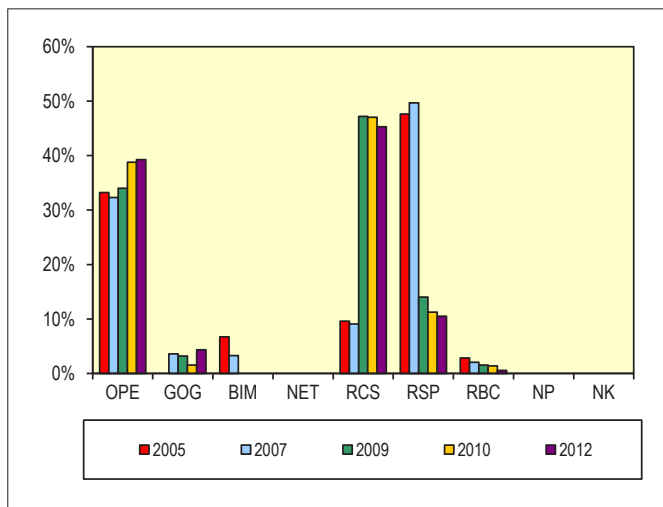
¹¹Bosnia, Bulgaria, Croatia, FYROM, Romania, Serbia, Slovenia

4.3.3 Asia

The changes in price formation mechanisms in Asia have been dominated by China and India. Firstly, there has been an increase in OPE from around 33% to 39% over the five surveys, largely at the expense of the regulated categories and BIM. The move from BIM to OPE reflected the change in the pricing of the Qatar LNG contract to India between 2007 and 2009, while the more recent rise in 2010 and 2012 was due to the start of pipeline imports into China from Turkmenistan, which are oil indexed under the contract.

The changes in RSP – down from 48% in 2005 to some 10% in 2012 – and the corresponding rise in RCS from 10% to 45% - was all due to the change in price formation in China as regulated prices were increased to economic levels. The decline in RBC reflected declining consumption in Myanmar. GOG, which showed some increase in 2012, is all spot LNG imports.

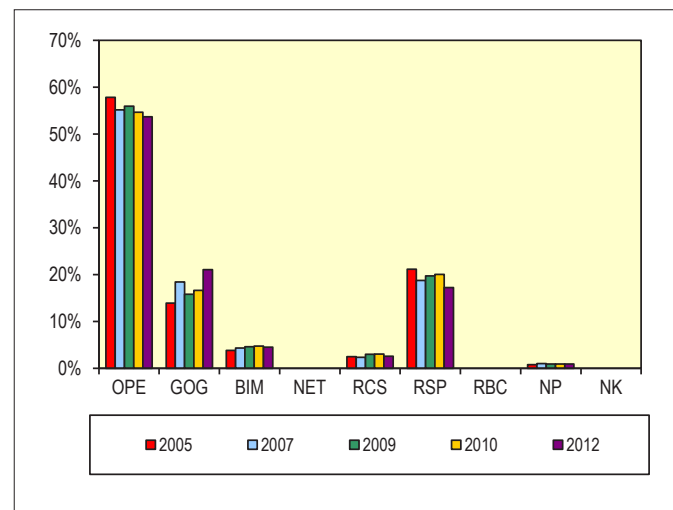
Figure 4.12. Asia Price Formation 2005 to 2012



4.3.4 Asia Pacific

There have been only minor changes in price formation mechanisms in Asia Pacific since 2005. GOG has risen from 14% to 21%, with OPE declining from 58% to 54% and RSP down from 21% to 17%. Changes have not been consistent over time, but the rise in GOG has largely been the rise in spot LNG imports, mostly in Japan plus a smaller rise in Korea. The fall in the RSP share reflects the relatively sluggish growth in consumption in Indonesia and particularly Malaysia.

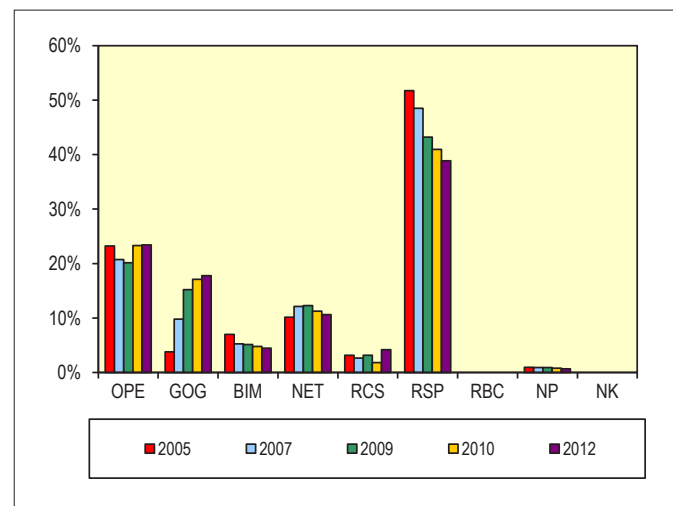
Figure 4.13. Asia Pacific Price Formation 2005 to 2012



4.3.5 Latin America

The changes in price formation mechanisms in Latin America have seen a rise in GOG from 4% to 18% and a decline in RSP from 52% to 39%. The rise in GOG in part is due to rising spot LNG imports in Argentina, Brazil and Chile, and a switch away from RSP to GOG in Argentina. The latter reflected producers and marketing entities, being allowed to sell gas at unregulated prices to large eligible customers such as power plants.

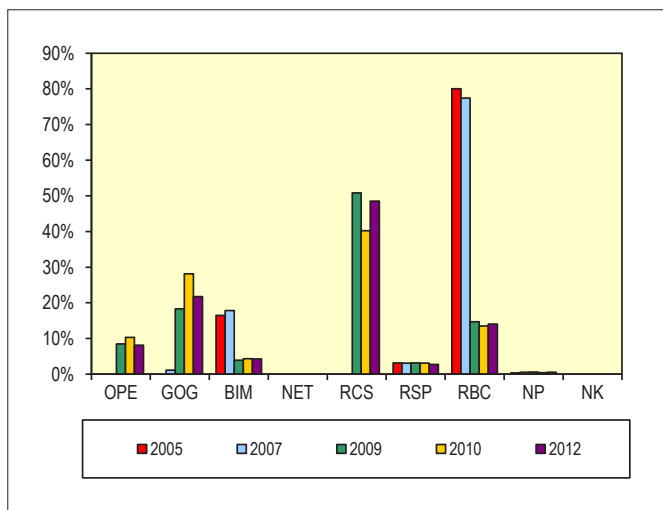
Figure 4.14. Latin America Price Formation 2005 to 2012



4.3.6 Former Soviet Union

The Former Soviet Union is another region, like Europe, where there have been significant changes in price formation mechanisms, largely based around Russia. From having domestic production completely in the RBC category in 2005, there was a switch to GOG as the independent producers began to compete with each other and Gazprom to sell gas to the power sector and large industrials, and the rising Gazprom regulated prices saw a switch from RBC to RCS. The other change was in intra-FSU trade where pricing switched from BIM to OPE, particularly in the Russia to Ukraine trade.

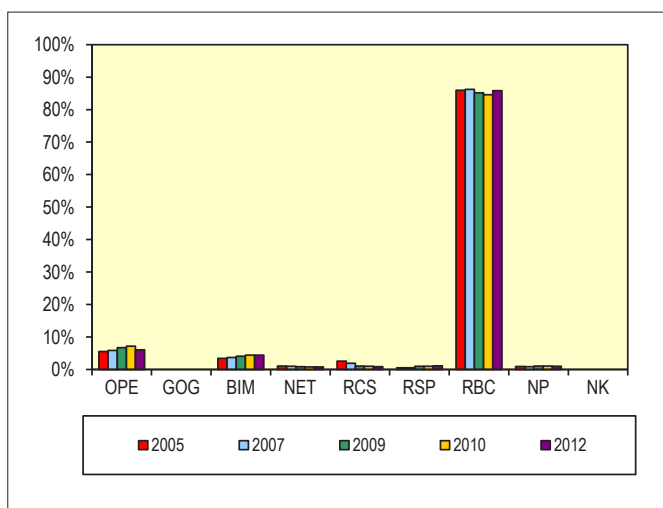
Figure 4.15. Former Soviet Union Price Formation 2005 to 2012



4.3.7 Africa

There have been almost no material changes in price formation mechanisms in Africa between 2005 and 2012. The region remains dominated by RBC, with gas prices largely subsidised.

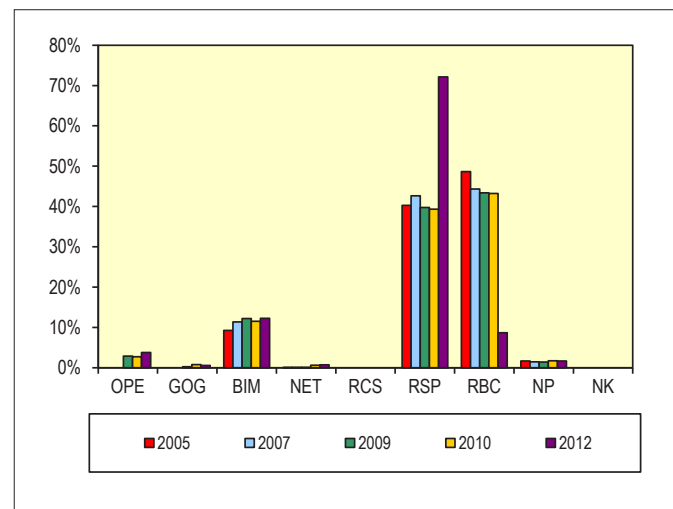
Figure 4.16. Africa Price Formation 2005 to 2012



4.3.8 Middle East

The changes in price formation mechanisms in the Middle East have almost totally taken place between 2010 and 2012, when prices were increased significantly in Iran, moving from the RBC category to the RSP category. The other change was in small quantities of OPE and GOG as LNG began to be imported into Kuwait and UAE.

Figure 4.17. Middle East Price Formation 2005 to 2012



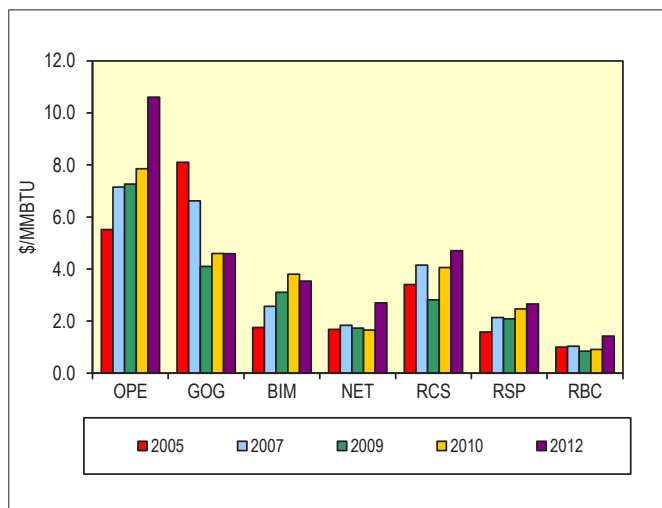
4.4 WHOLESALE PRICES COMPARISON

In considering wholesale price levels across regions, countries or price formation mechanisms, it should be noted that the wholesale price can cover different points in the gas chain – wellhead price, border price, hub price, city-gate price – so the comparison of price levels is not always “like for like”. Comparisons, therefore, should be treated with caution and taken only as a broad indication.

4.4.1 Changes in Wholesale Prices by Price Formation Mechanism

The figure below compares changes in wholesale price levels across the five surveys by price formation mechanisms.

Figure 4.18. Wholesale Price Levels 2005 to 2012 by Price Formation Mechanism

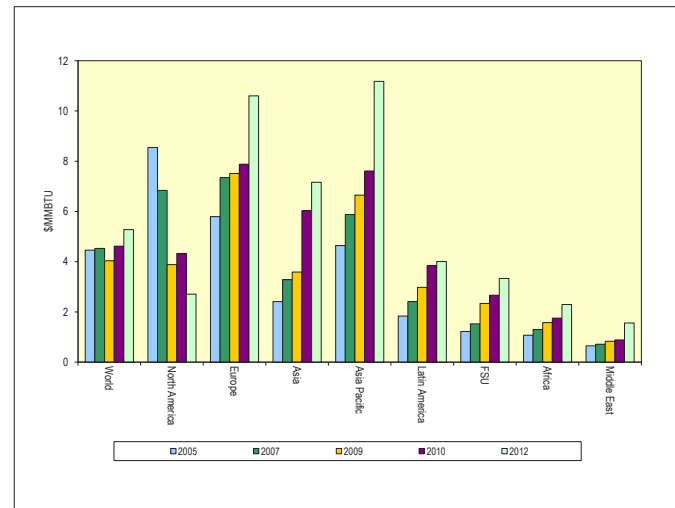


In 2005 the highest prices by price formation mechanism were for GOG at \$8.10 per MMBTU, but these declined between 2005 and 2009, before levelling off at around \$4.50. The decline was largely due to falling prices in North America. In contrast OPE prices rose significantly from \$5.50 per MMBTU in 2005 to over \$10.50 in 2012, as oil prices increased. There were also general increases in prices over time in the regulated price categories as well. The rise in prices in the BIM category reflected largely the loss of low priced intra-FSU trade to the OPE category as prices were raised in line with oil prices.

4.4.2 Changes in Wholesale Prices by Region

The figure below compares changes in wholesale price levels across the five surveys by region.

Figure 4.19. Wholesale Price Levels 2005 to 2012 by Region

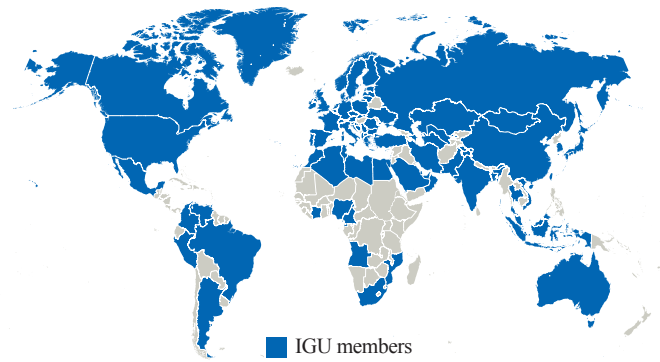


At the world level, on average, wholesale prices have risen between 2005 and 2012 from around \$4.50 per MMBTU to \$5.30. This rise has been across all regions apart from North America, where the dramatic increase in shale gas supply has led to sharp falls in prices. The rise in prices in Europe and Asia Pacific have been well documented and studied, but prices have also risen in Asia, largely due to increases in prices in China, both as more gas is imported and regulated domestic prices are increased, and in India for similar reasons. Less well documented, however, has been the general rise in prices in other regions, such as Latin America, where average prices have more than doubled and in the Former Soviet Union, where average prices have almost tripled, largely due to the rise in regulated prices in Russia. In Africa, where over 85% of prices are effectively subsidised (RBC), there have also been price increases, with the largest consumer Egypt raising prices, although remaining with subsidies. Also in the Middle East prices have risen slowly, with a significant increase in 2012 over 2010, as a result of the regulatory changes in Iran.



IGU

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