OXFORD INSTITUTE FOR ENERGY STUDIES Natural Gas Research Programme

THE OXFORD INSTITUTE FOR ENERGY STUDIES

A RECOGNIZED INDEPENDENT CENTRE OF THE UNIVERSITY OF OXFORD

UNIVERSITY OF OXFORD

Russia and CIS gas demand to 2030

Simon Pirani, James Henderson

Senior Research Fellow,

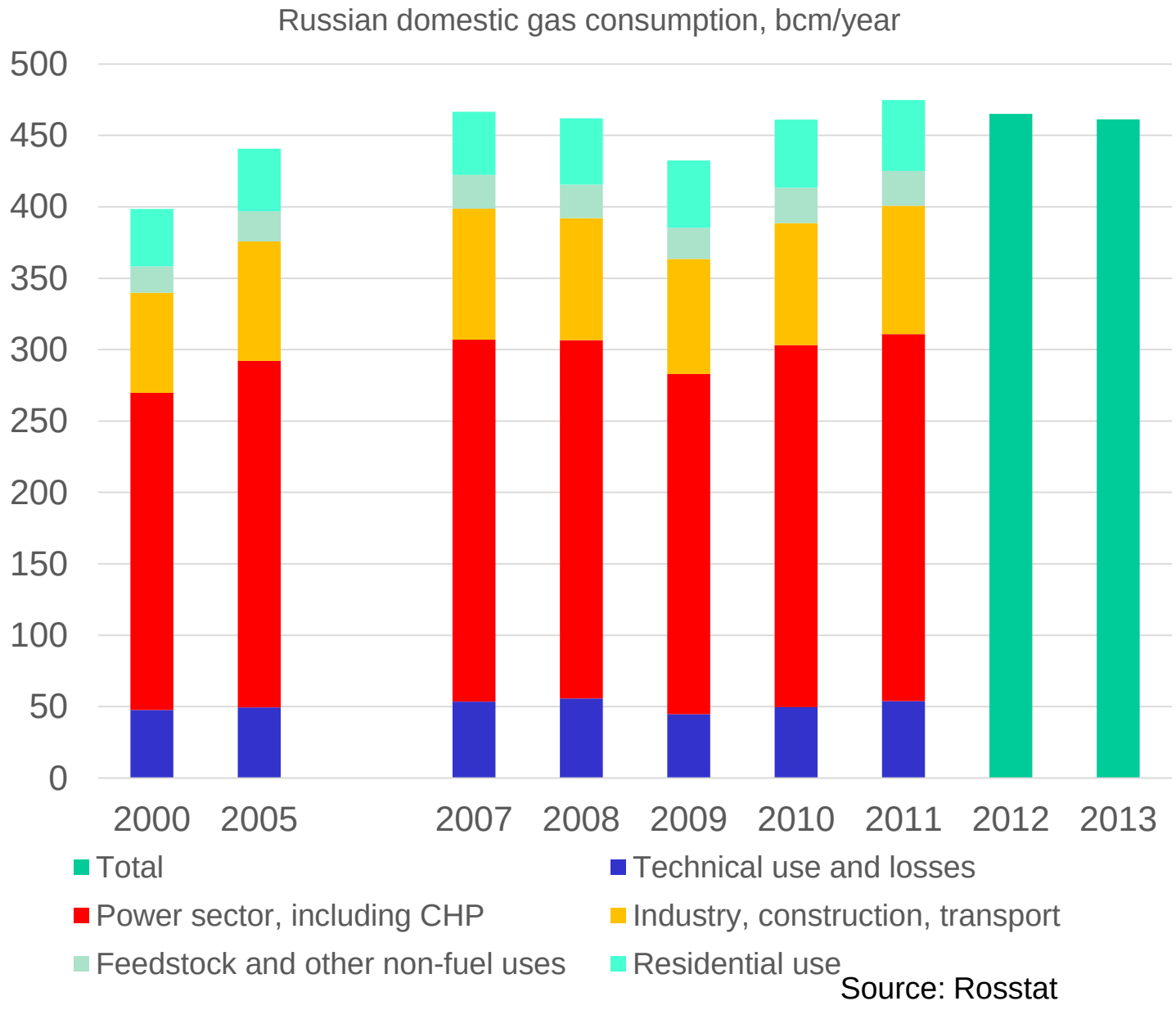
Oxford Institute for Energy Studies, UK

CEE 2014 Annual Meeting, Houston, December 3, 2014

Russian domestic gas demand

- Gas demand growth flattened post-crisis (0.3% per year 2007-11), and fell in 2012-14.
- Sectoral factors put downward pressure on demand:
  - Power: electricity demand is flat; investment in new plant (nuclear, CCGT) destroys demand
  - Heat sector: reform is slow, but reduces demand
  - Industry: slowdown undermines gas demand, while growth leads to some efficiency improvements
  - Residential: gasification raises demand, but changing consumption habits and falling population reduce it
- Economic outlook is poor. Sanctions have exacerbated structural problems. Gas demand is projected to grow slowly or not at all
- A sketch projection: zero growth to 2020. Assuming political stabilization and economic recovery, 1% per year 2021-2030

Demand is back to pre-crisis levels, but no higher



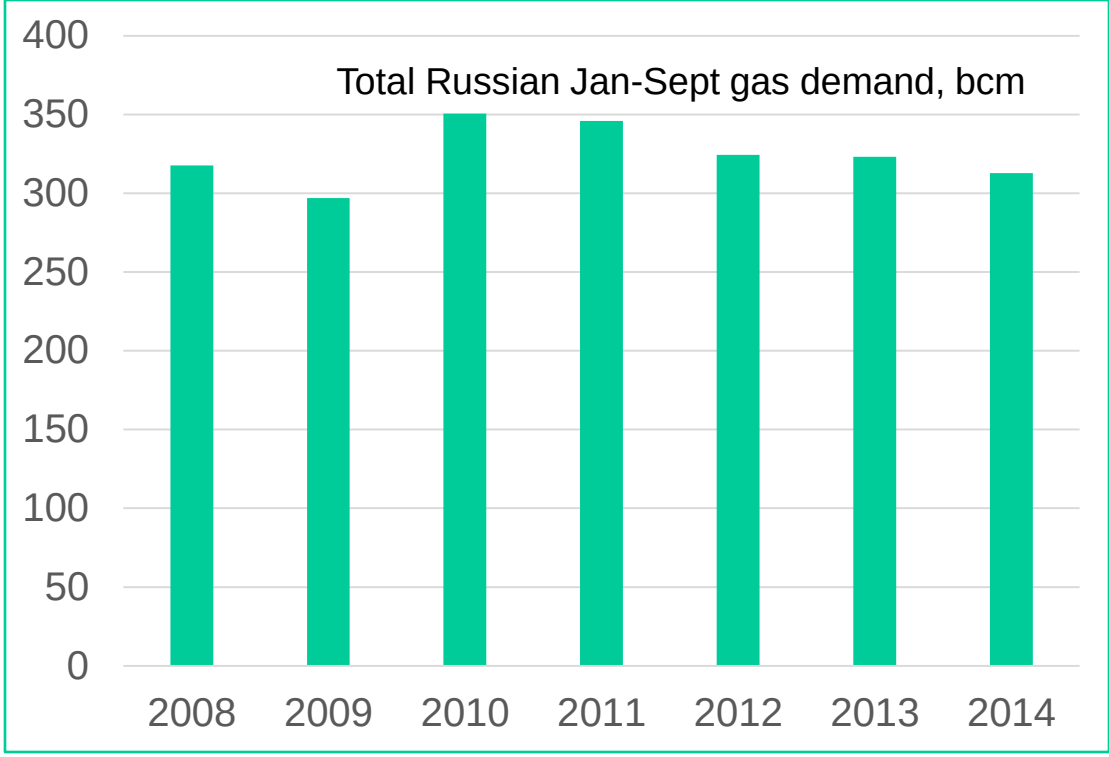
Source: Rosstat

Demand fell by 1.6% in 2012 and 1.0% in 2013, to 461.3 bcm

<u>Consensus forecast to 2020</u>: no return to 2-2.5% annual demand growth. It is likely to be 0-1.5% ... and could even be negative

In 2014, gas demand is back down to the 2008 level (about 2% down on 2013).

Economic outlook is gloomy, due to low oil prices, weak rouble and sanctions



	Actual	Estimates/ projections			
	2013	2014	2015	2016	2017
Economic development ministry outlook					
GDP growth, %	1.3	0.5	1	2.3	3
Electricity output growth, %	-1	-0.5	0.5	0.8	0.9
Industrial output growth, %	0.4	1.7	1.6	1.7	2.1
Gas production, bcm	667.6	657	672	675	690
World Bank outlook					
GDP growth, %	1.3	0.5	0.3	0.4	n/a

The power sector: new CCGTs, and nuclear, will further constrain gas demand

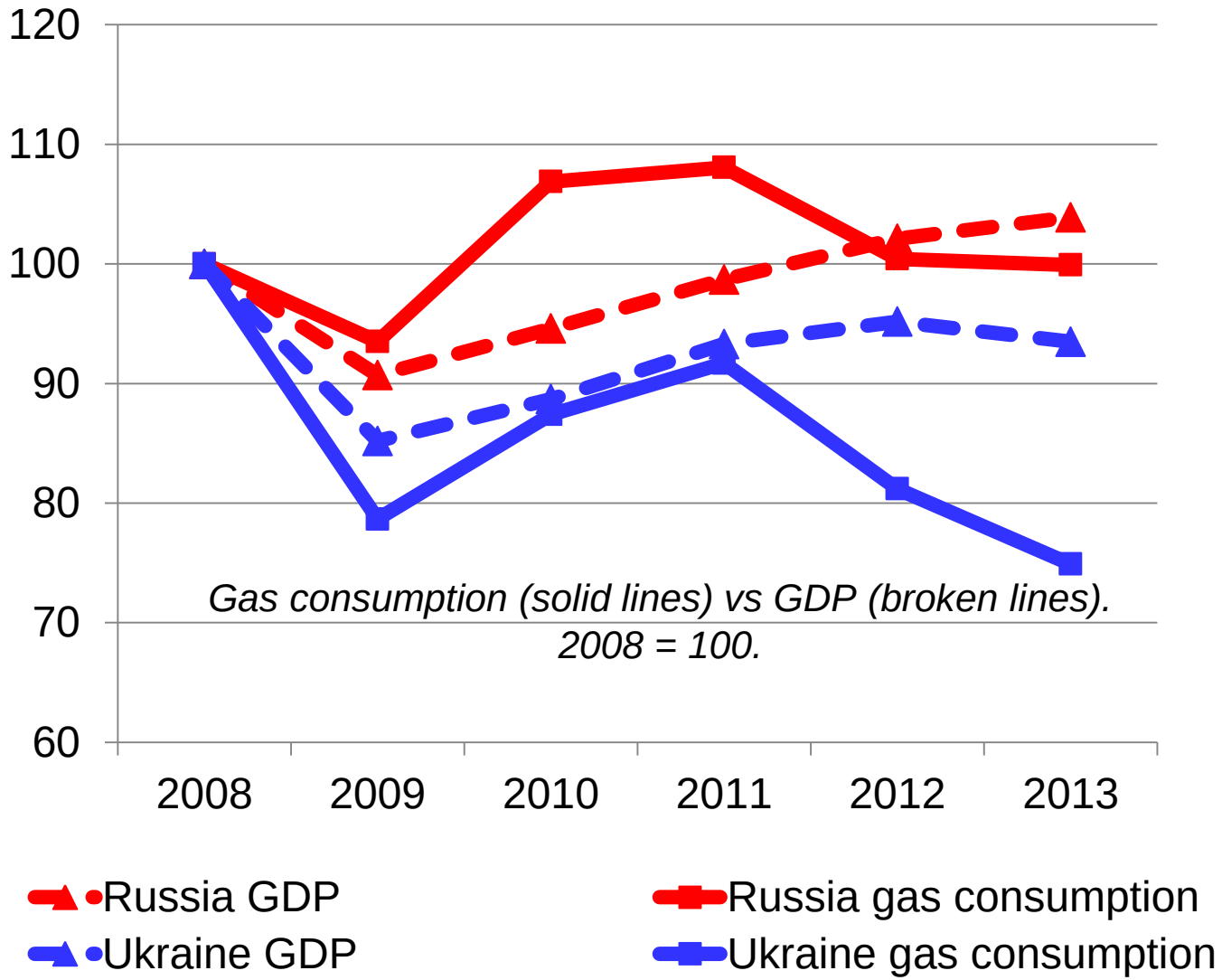
MW of capacity	2012	2013	2014	2015	2016	2017	2018	2019	2020		Total
Nuclear											
New capacity	70	1180	3126	1180	2326	1070					**5238 net**
Decommissioning					-417	-417	-1440	-440	-1000		
New thermal units, commissioned under Capacity Supply Agreements											
European Russia/Urals	2600	2370	4150	4540	980	200					**14840**
Siberia and Far East	500	0	500	1610							**2610**
Source: Alfa Bank											

Energy ministry 2020 forecast implies extra 36 bcm/year of demand. But slower power demand growth and e.g. slower nuke decommissioning could cut that by half or more.

Heat: potential for demand reduction

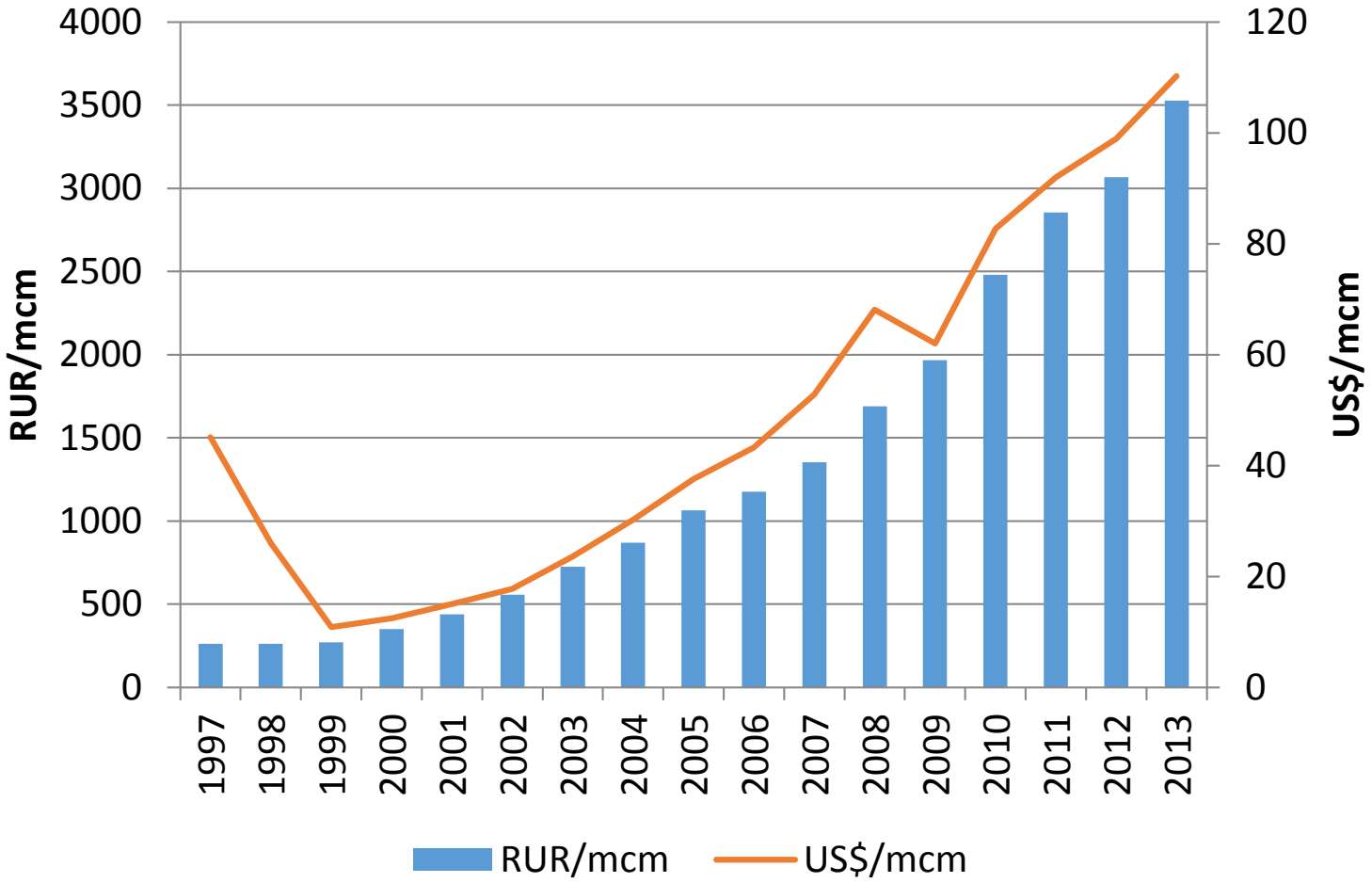
- Heat sector consumes around 160-190bcma via CHPs (part of power sector demand), centralised boilers and individual heat sources
- The heat sector is titanically inefficient – big losses in production, distribution and consumption. The government says losses in 2008 were 33.4 m tonnes of oil equivalent. This accounts for approximately 45-90bcm of gas, depending on the plant used to produce the heat.
- Heat sector is the source of most non-payment problems for gas.
- Making savings will be slow. But if and when they arrive, they could destroy chunks of gas demand.
- 2010 law "on heat supply" lays down framework. Tariff regulation reform will follow.
- Gazpromenergoholding , which owns Moscow CHP (Mosenergo), has now bought the Moscow boiler company (MOEK). It projects an immediate 1 bcm/year saving by shutting 10 boiler houses; and 20 more to close medium-term.

In Ukraine, recession + high prices has cut gas use sharply. Can this happen in Russia?



Regulated prices have risen steadily for 15 years.

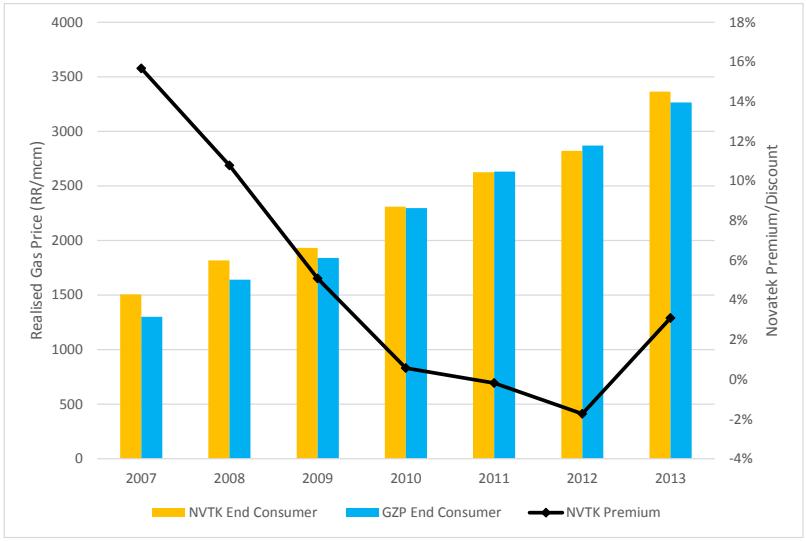
They now cover costs of prod'n and transport



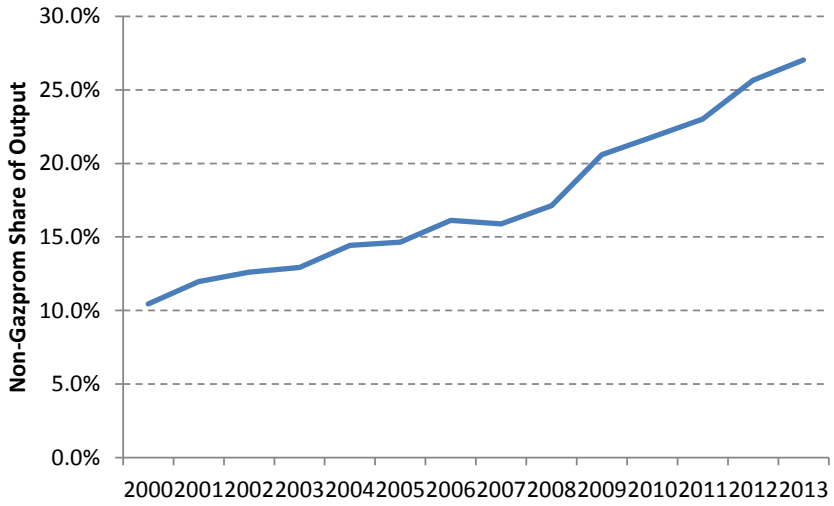
- Up to 2011, independents sold at a premium to regulated prices
- In 2012, non-Gazprom producers offered a discount to the regulated price
- Gazprom is now (2014) lobbying for the right to sell in a pricing corridor with up to 15% discounts from regulated prices

Gazprom's role in the domestic market is in decline

Comparative prices for domestic gas in Russia



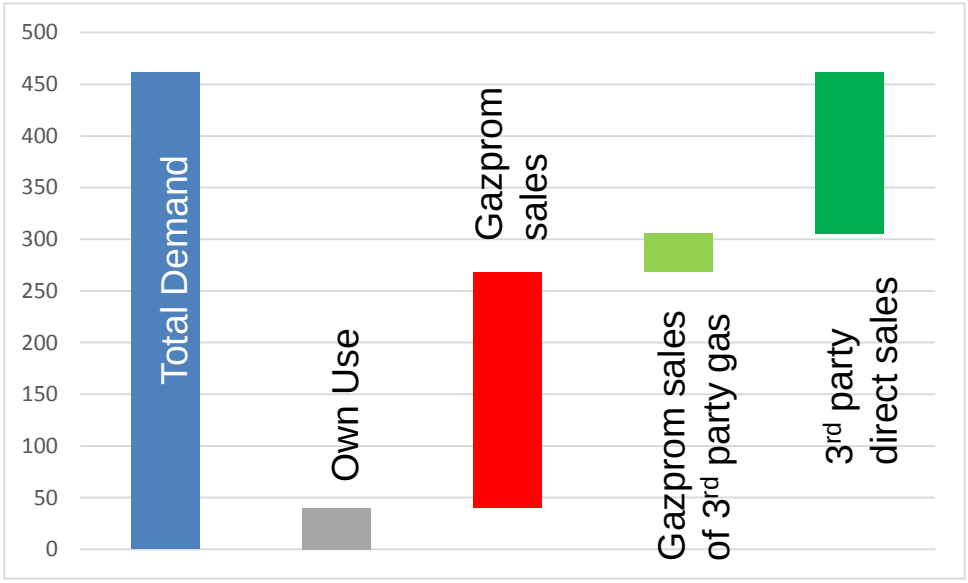
Market share of Independent supply in Russia



- **Gazprom has found its dominant role in the Russian market also being challenged**
- **Rising domestic prices have encouraged Gazprom's development plans but have also incentivised "independent" supply**
- **The Russian gas price has now reached a level where independents can undercut Gazprom, take market share and still make significant profits**
- **Gazprom's gas has become the "least desirable option" for many of its customers, who have now signed up with its competitors**
- **Gazprom likely to be supplying less than 50% of domestic market by 2020**

Competition: non-Gazprom producers are heading for a 50% market share

How is Russian gas demand satisfied?



- Total Russian gas demand in 2013 was 461cm
- Own use for transport accounted for 40bcm of this
- Gazprom sales from equity production totalled 228bcm
- Third parties sold 37 bcm (including imports) to Gazprom and sold 156 bcm directly to consumers

Conclusions

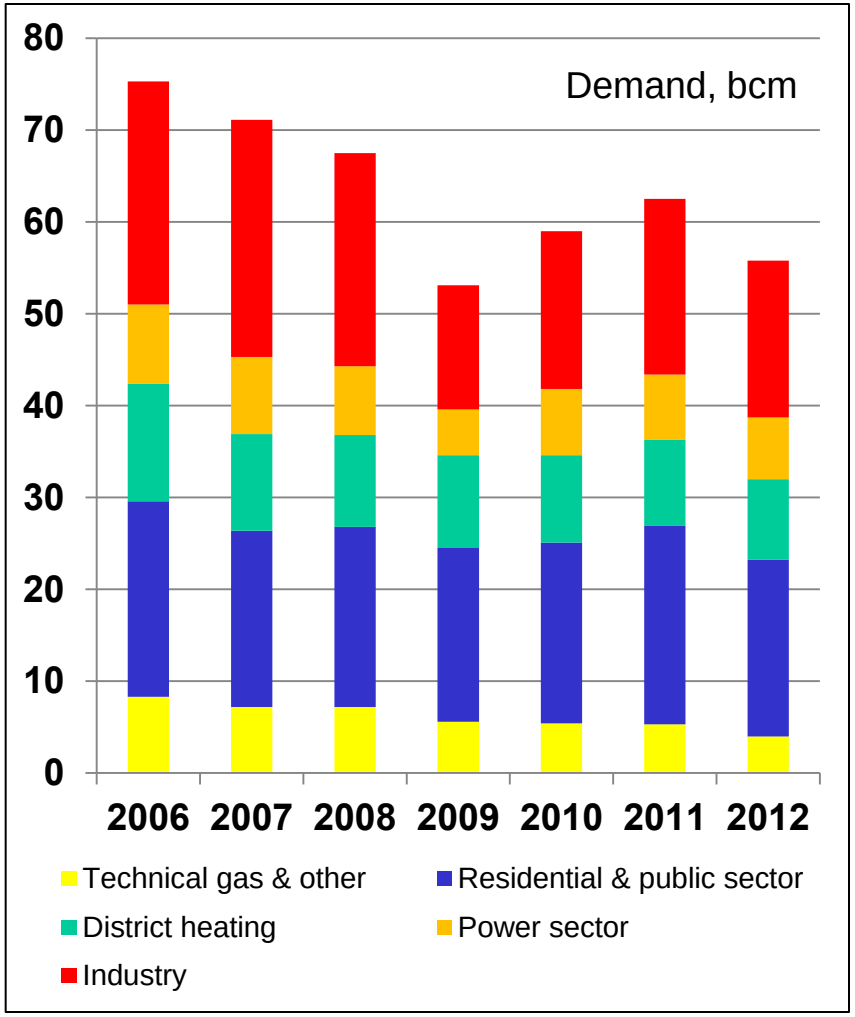
- Demand has flattened since the crisis, and could fall
- Power and heat sector investment improves efficiency and destroys demand
- There is fierce competition between suppliers to the power and industry sectors. Gazprom is losing market share. Rosneft and Novatek will continue to challenge
- The decline in demand for Gazprom's gas in Russia, but also in the CIS and Europe, has created a supply bubble
- Russia has 100bcma (10bcfd) of spare production capacity that can be supplied to Europe and Asia on relatively competitive terms
- Sanctions are forcing Gazprom and the Russian authorities to make some rational commercial decisions, strengthening Russia's competitive position in the global gas market

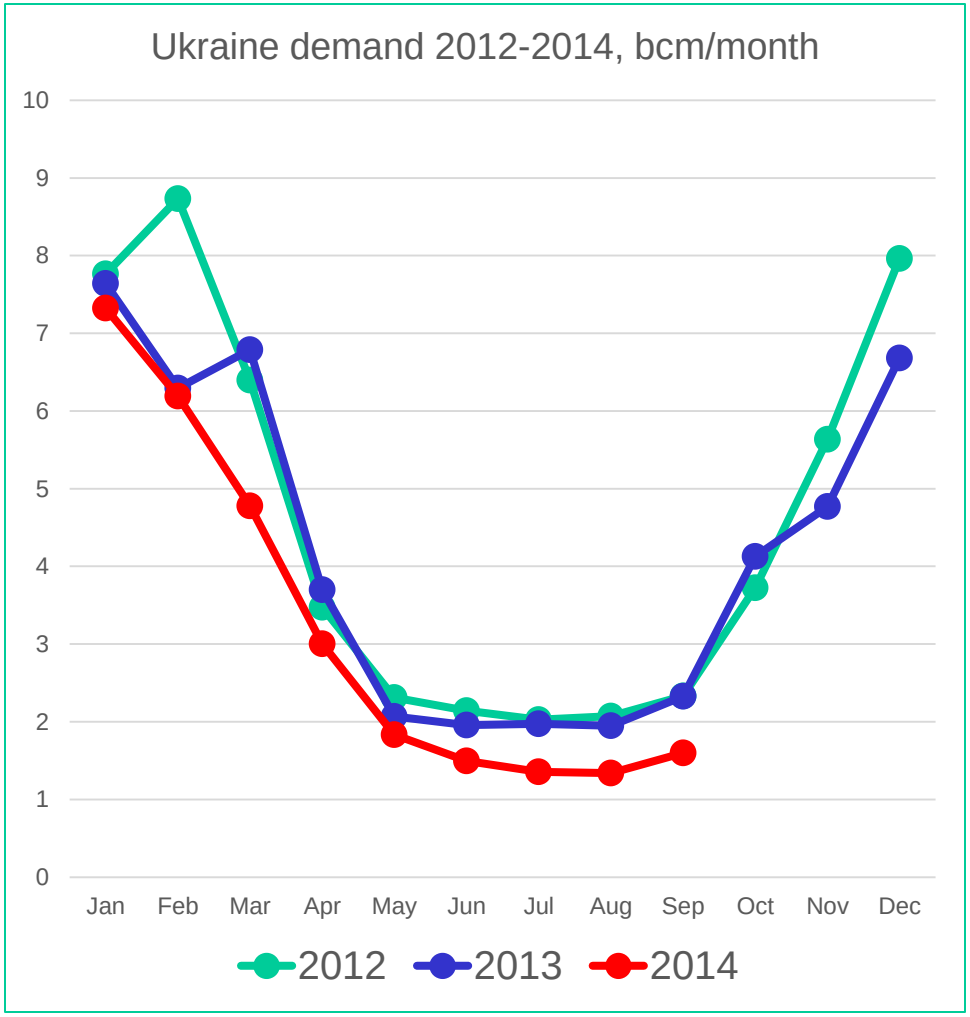
Ukrainian gas demand

- Gas demand has fallen sharply, from 75 bcm in the mid 2000s, to 50 bcm in 2013 and approx. 42 bcm in 2014.
- Sectoral factors:
  - Industrial consumption (c. 16 bcm/year): economic/military crisis has caused shutdowns; high prices have driven switching to coal. Restored production could raise gas demand
  - Heat sector (c. 8 bcm/year) waste and non-payment rampant
  - Power (c. 6 bcm/year): demand steady, mainly for Kyiv (other power is coal, nuclear and hydro)
  - Residential and public sector (c. 20 bcm/year): could fall further due to elementary efficiency savings and payment discipline
- Assuming stabilization of political/military situation, restored economic activity could raise demand
- Any coherent energy policy will diversify from gas
- A sketch projection: 35-40 bcm/year demand to 2030. Any gains from economic activity will be counteracted by diversification policies

Ukraine: gas demand in decline

2006-13: demand fell by one third (from ~75 bcm/yr to ~50 bcm/yr).
2014: Q1-3 demand was 28.9 bcm (down from 34.7 bcm in 2013)





The long term: is this where Russian and Ukraine markets get uncoupled?

- Post-Soviet system (oil-linked LTCs plus bilateral political agreements) may be finished, as a result of political/military crisis. Gazprom-Naftogaz contract may not last to 2019. Will trilateral EU-Russia-Ukraine deal this winter lead to more of the same?
- Future Ukrainian energy policy will disfavour gas
- IMF and EU have levers on Ukrainian policy: expect market reform (albeit slowly) and the break-up of Naftogaz
- The single-buyer model is finished. Will an oligopoly replace it?
- Reverse flow will influence prices; fuel switching and energy saving will cut demand. But the gas Ukraine uses will all (or nearly all) be Russian. Russia can continue to dominate Ukraine's gas market if it wishes
- Will upstream development recover?
- Will western European companies participate in the Ukrainian market?
- In future, could gas be purchased on the Russian border for transit to, and sale in, European markets?

Central Asia/Caucasus gas demand in the significant markets

GAS DEMAND PROJECTIONS					
bcm	2011 (est.)	2015 (proj.)	2020 (proj.)	2030 (proj.)	Assumptions
Turkmenistan	17	18	19	20	Political and economic stability
Uzbekistan	43.9	44	45	45	Some (not drastic) political and economic change
Kazakhstan	11.2	16.5	19.5	25	Gov't policy to use gas in local economy implemented
Azerbaijan	7	9	9	14	Economic growth slows, but continues
Note. 2011 numbers for Kazakhstan and Azerbaijan from state statistical agencies; others are estimates					
Note. Kyrgyzstan and Tajikistan joint consumption = c. 1.5 bcm/year. Georgia and Armenia = c. 4 bcm/year					
Source: Pirani, Central Asian and Caspian Gas Production and the Constraints on Export (2012); 2030 projections added Nov. 2014					

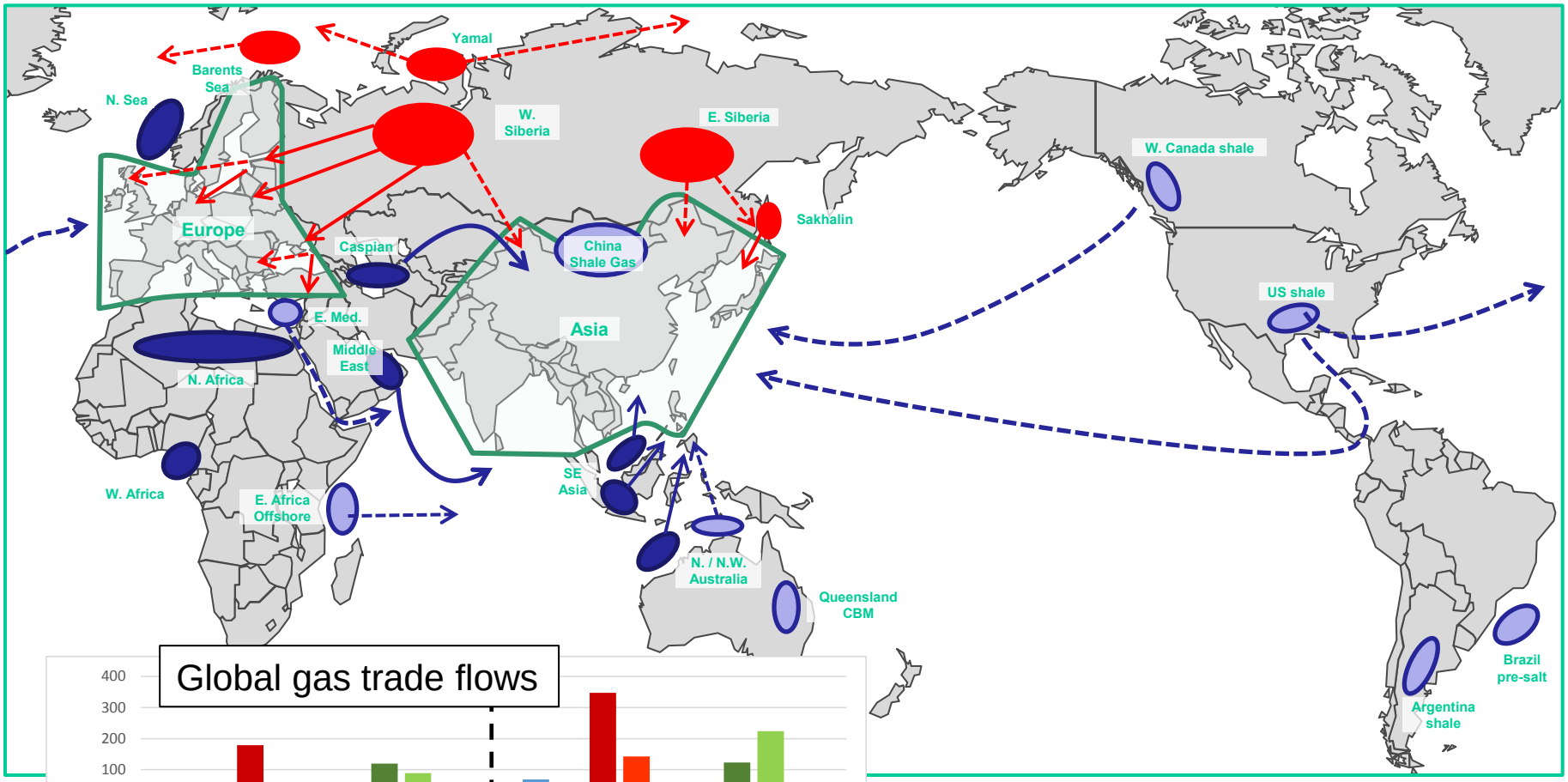
Demand in decline since 2011

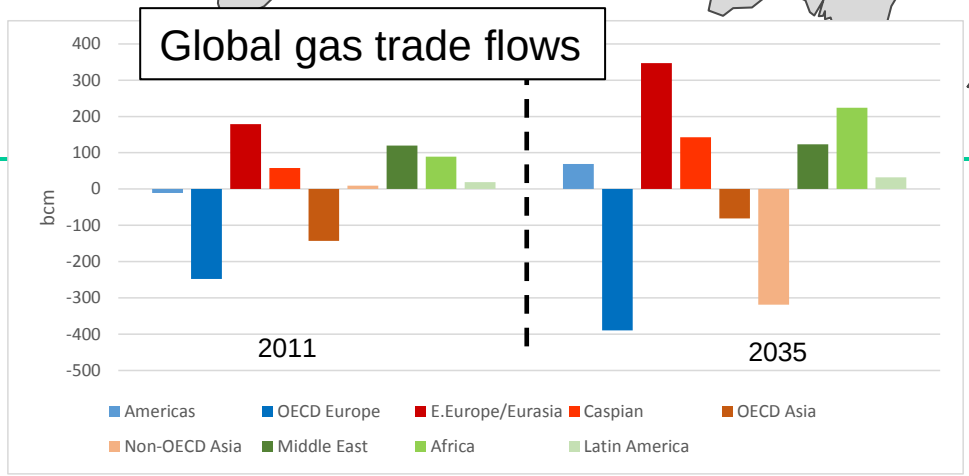
Russian domestic gas consumption, bcm	2000	2005	2007	2008	2009	2010	2011	2012	2013	2014 (proj.)
Total domestic consumption	398.5	440.7	466.7	462.0	432.6	462.1	472.8	465.4	461.3	452
Technical use and losses	**47.7**	**49.6**	**53.6**	**55.9**	**44.8**	**50.7**	**51.9**	n/a	n/a	n/a
Energy sector	**222.0**	**242.6**	**253.4**	**250.9**	**238.2**	**253.4**	**256.9**			
Power stations (incl. urban CHP)	151.6	169.3	180.4	181.7	169.4	183.6	189.5			
Centralised boilers (=dist. Heating)	70.4	73.3	73.0	69.3	68.8	69.8	67.3			
Consumption as fuel	**110.1**	**127.5**	**135.9**	**131.8**	**127.8**	**133.3**	**139.6**			
Mining and extractive sector	10.8	12.6	12.4	12.5	11.6	12.1	12.6			
Manufacture and processing sectors	31.8	35.7	37.6	35.4	33.4	35.1	36.8			
Other*	27.5	35.3	41.8	37.4	35.7	38.3	40.5			
Residential use	40.1	43.9	44.3	46.4	47.2	47.8	49.7			
Feedstock and other non-fuel uses (=mostly chemical prodn)	**18.6**	**21.0**	**23.7**	**23.4**	**21.7**	**24.7**	**24.4**			

* including construction, agriculture, transport, other

- More than half of demand is for power and heat
- Economic slowdown impacts demand; economic growth leads to some efficiency improvements

Russia sits at the heart of the global gas market, and is increasingly making commercially competitive, as well as political, choices





Source: WEO 2013