

Ukraine and Security of Gas Supplies to Europe

Chi Kong CHYONG

EPRG, Cambridge Judge Business School, University of Cambridge

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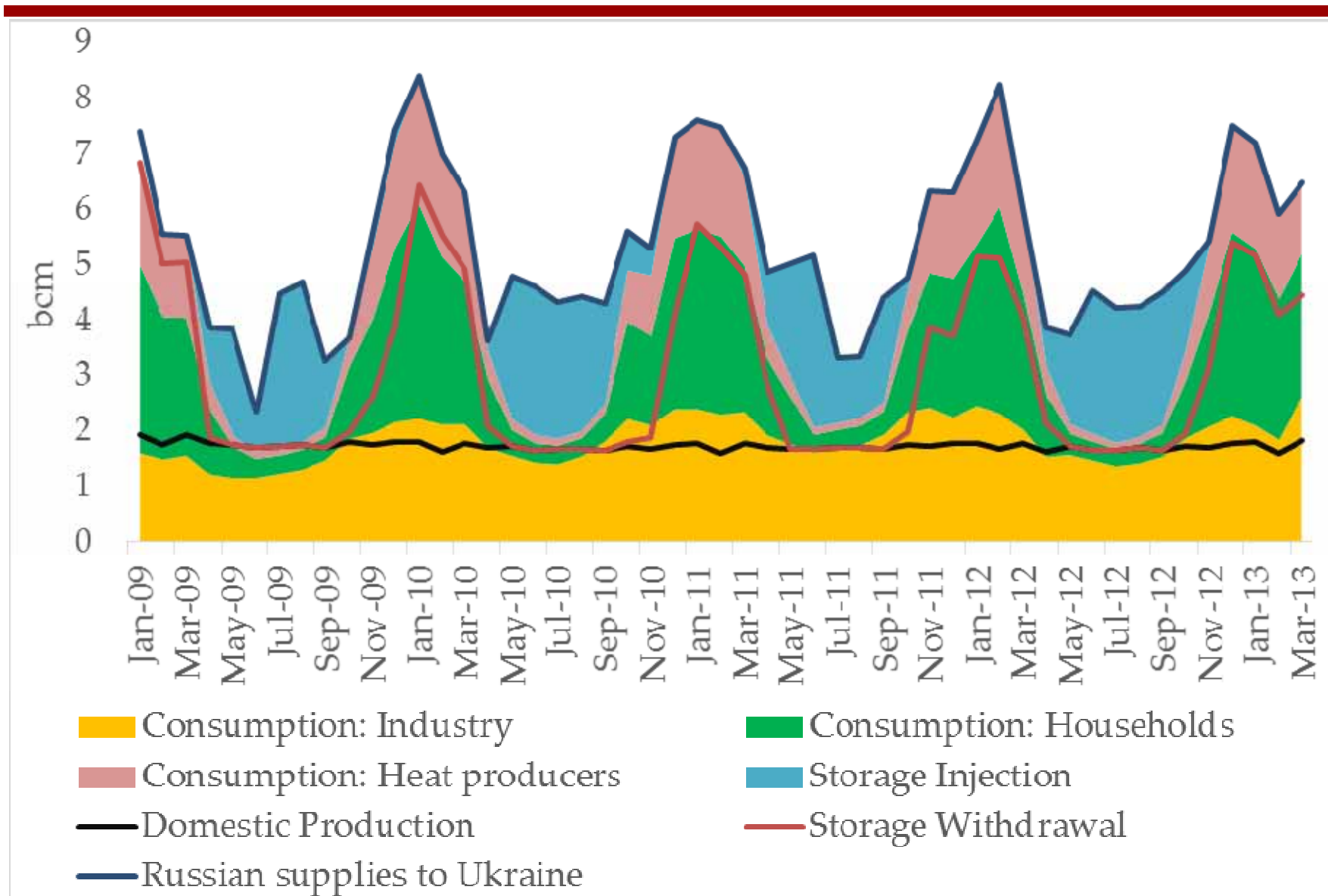
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- The current situation
- Gas in Ukraine's economy and politics
- Options for diversification
- Conclusions

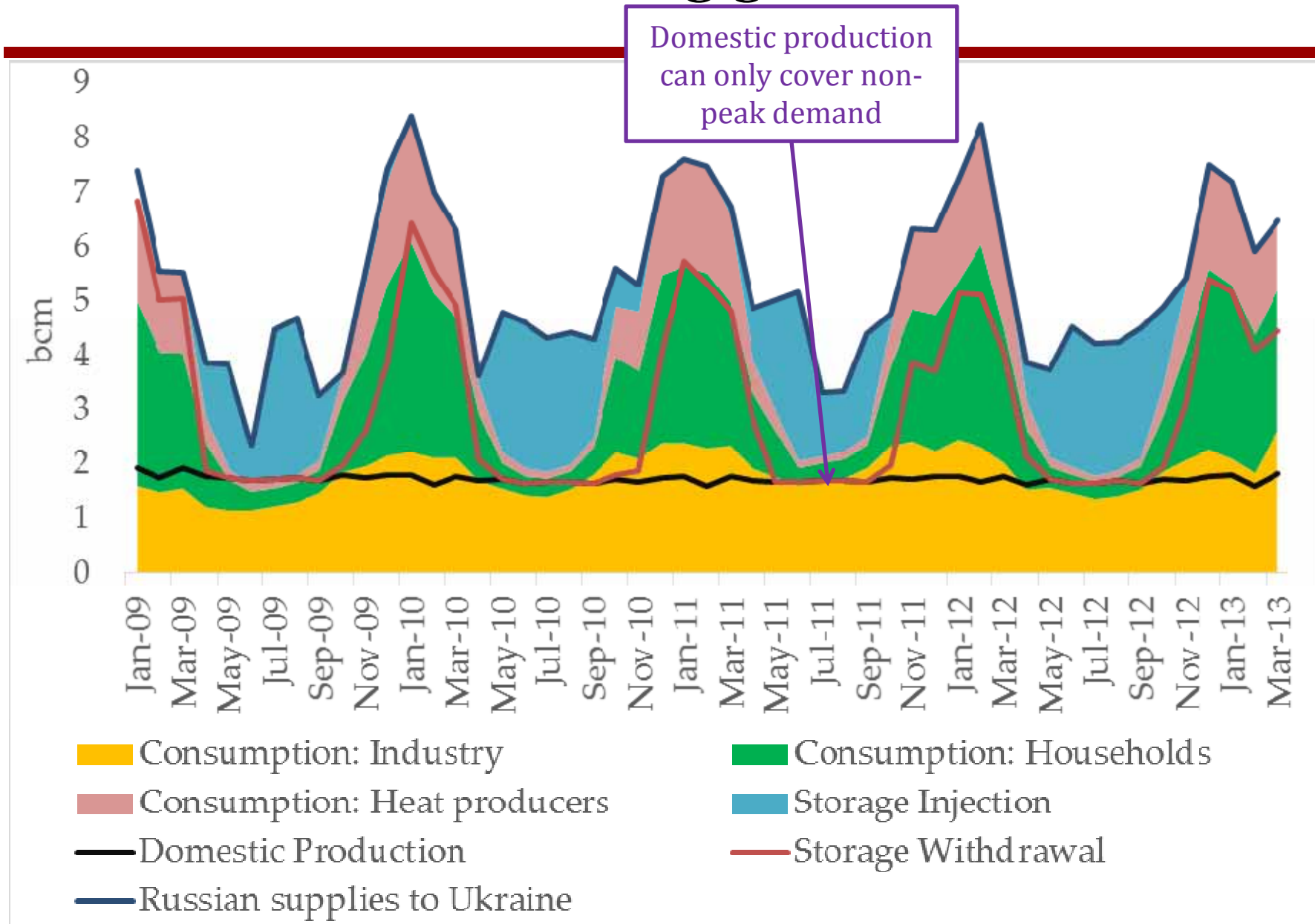
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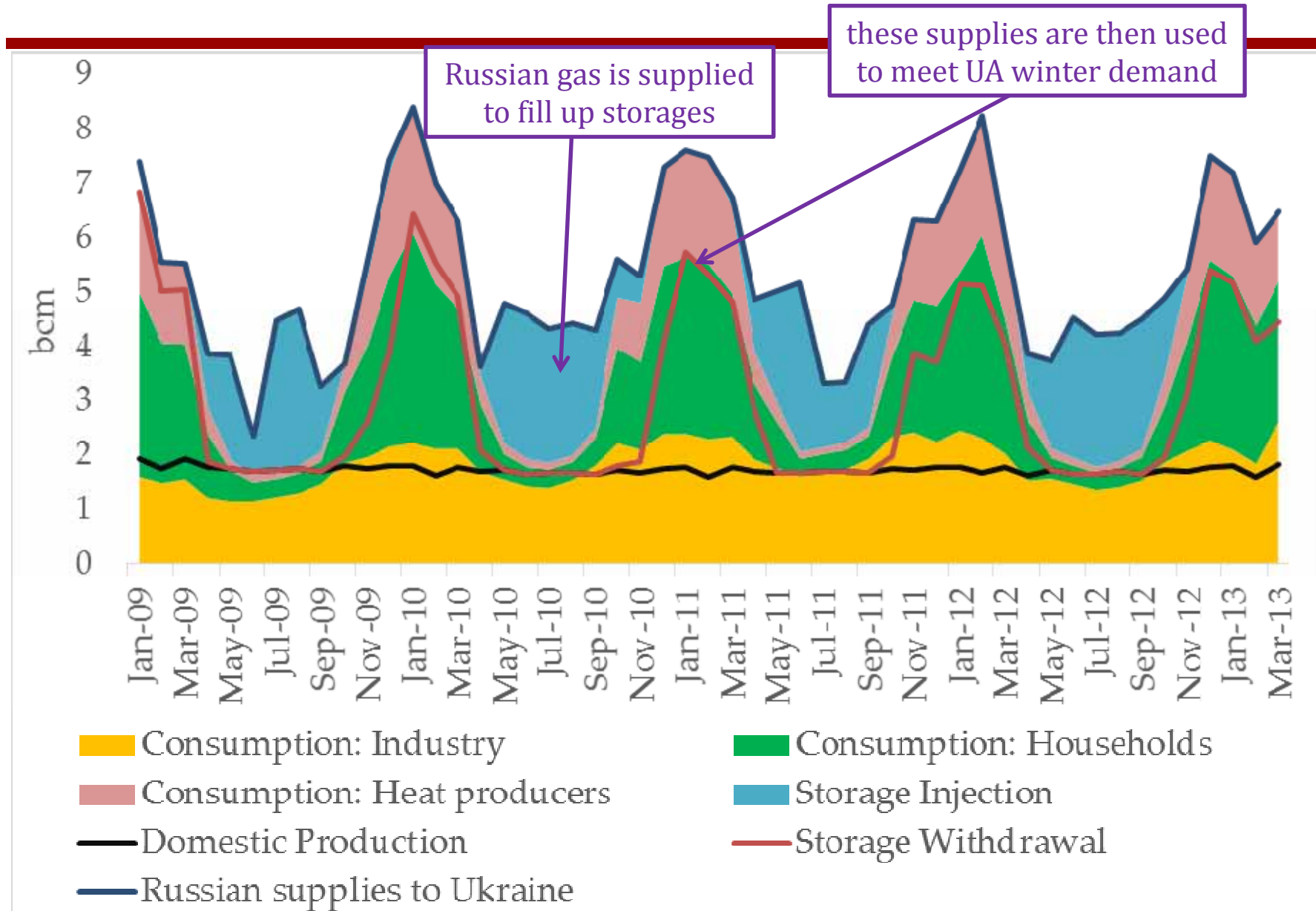
A looming gas crisis?



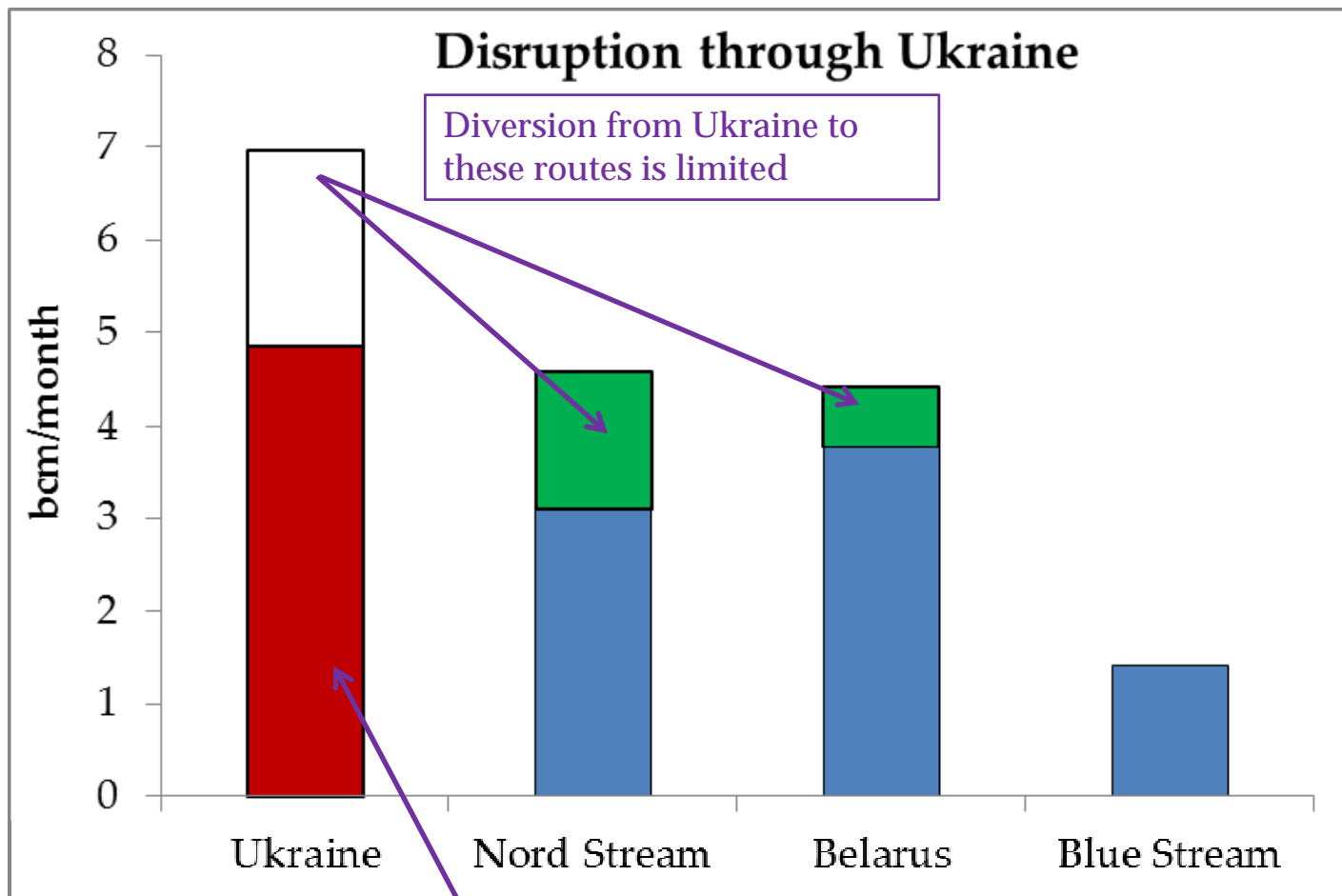
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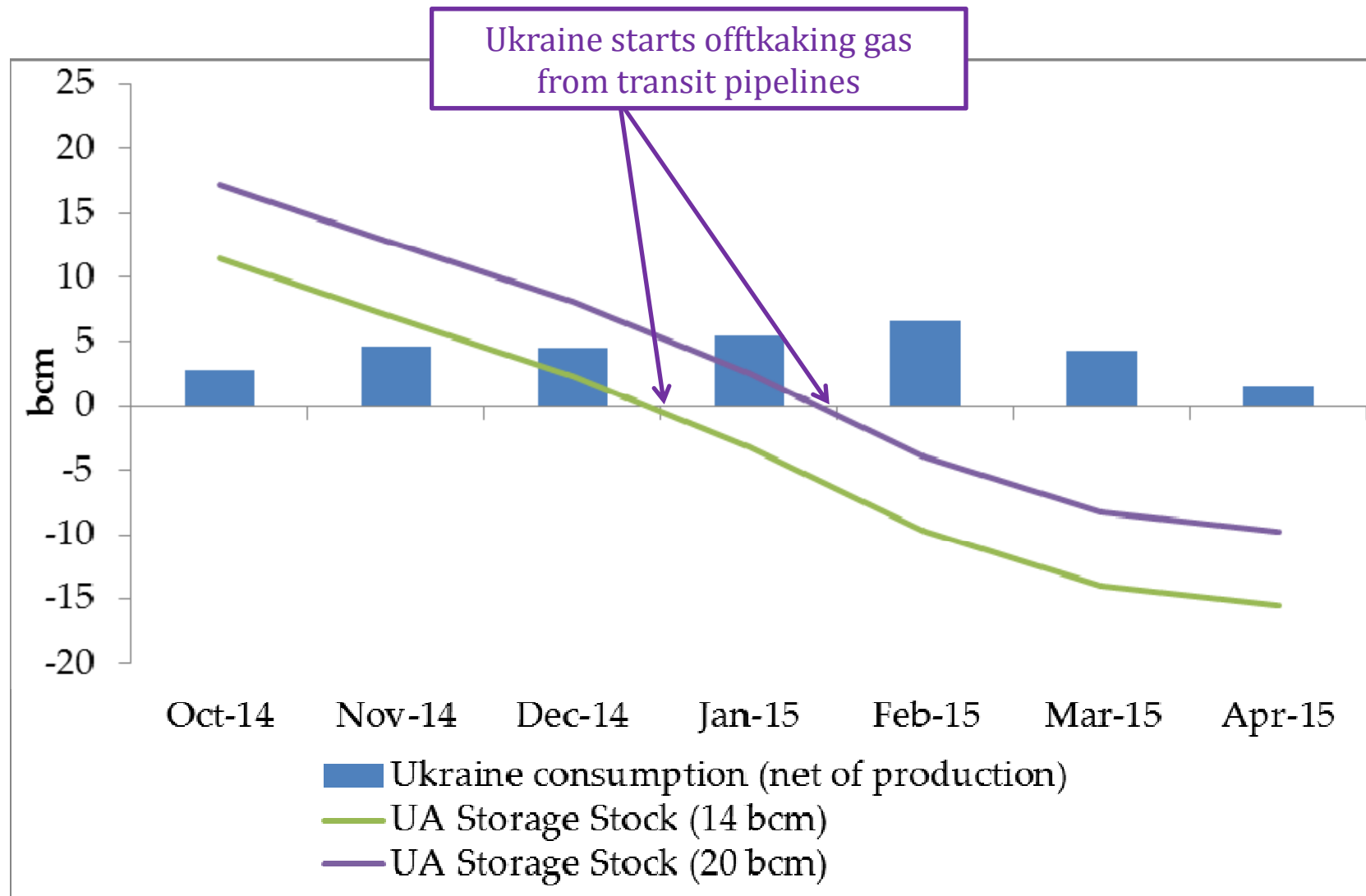
A looming gas crisis?



Ukraine's storage stock and Russian alternative pipelines are not sufficient to avert the potential crisis



Ukraine's storage stock and Russian alternative pipelines are not sufficient to avert the potential crisis

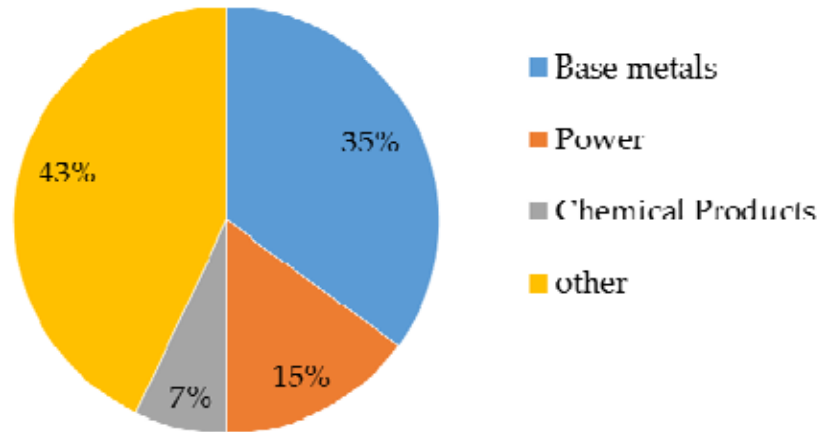


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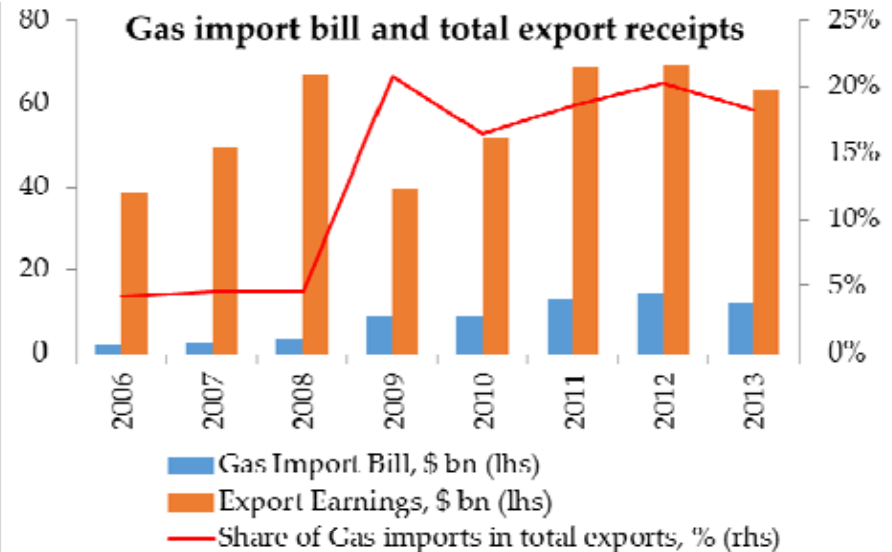
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Half of Ukraine's GDP depends on gas-consuming industries

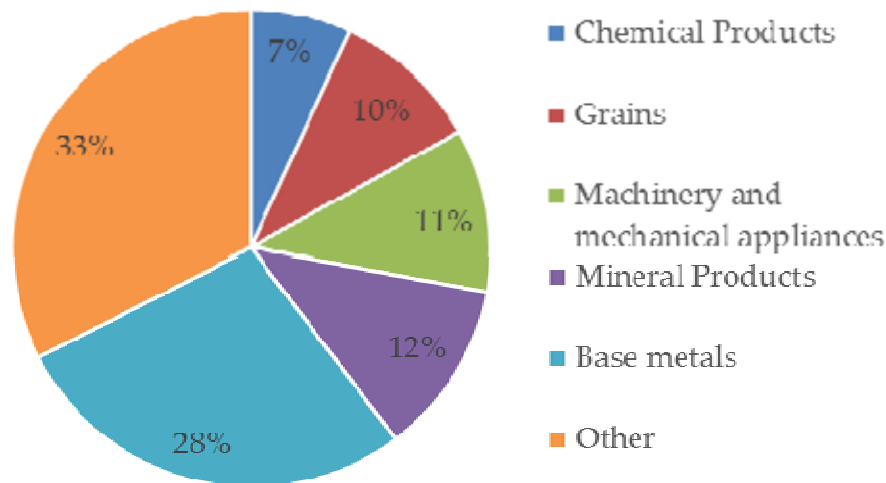
Major gas-consuming industries (% of GDP)



Gas import bill and total export receipts

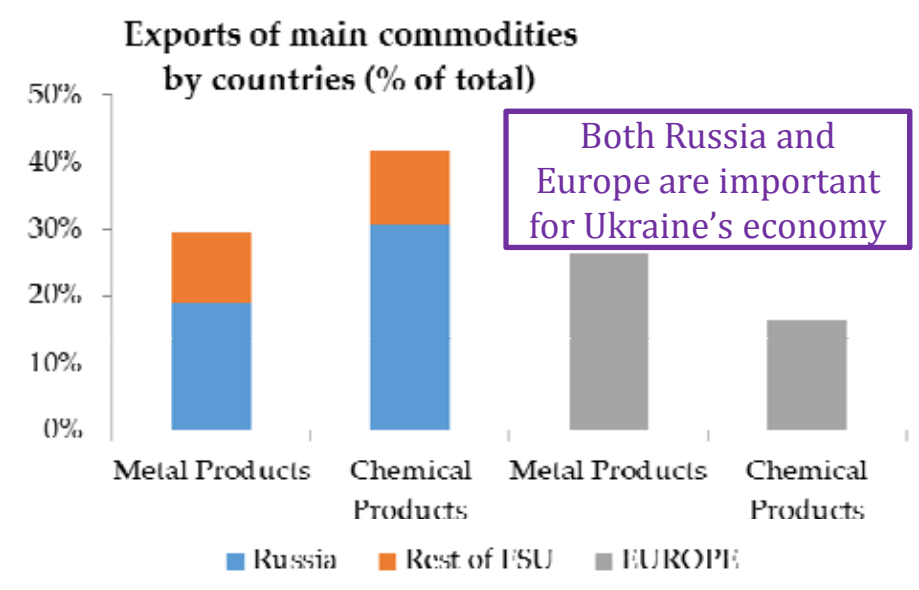


Ukraine's export structure

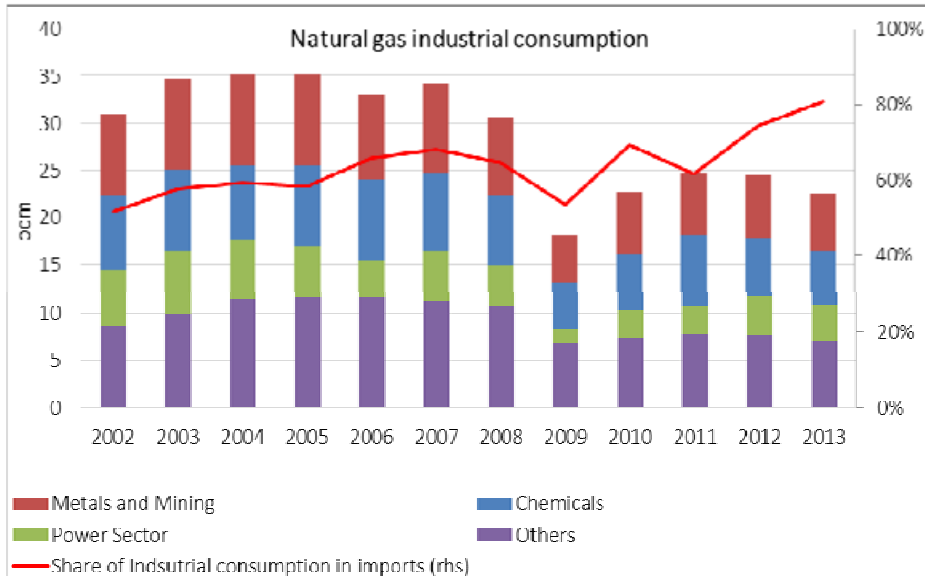
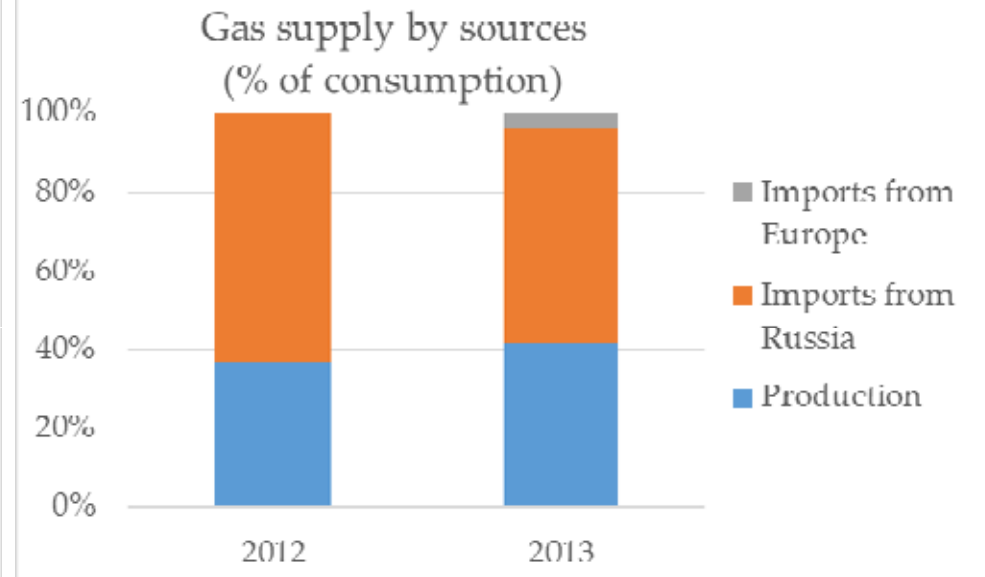
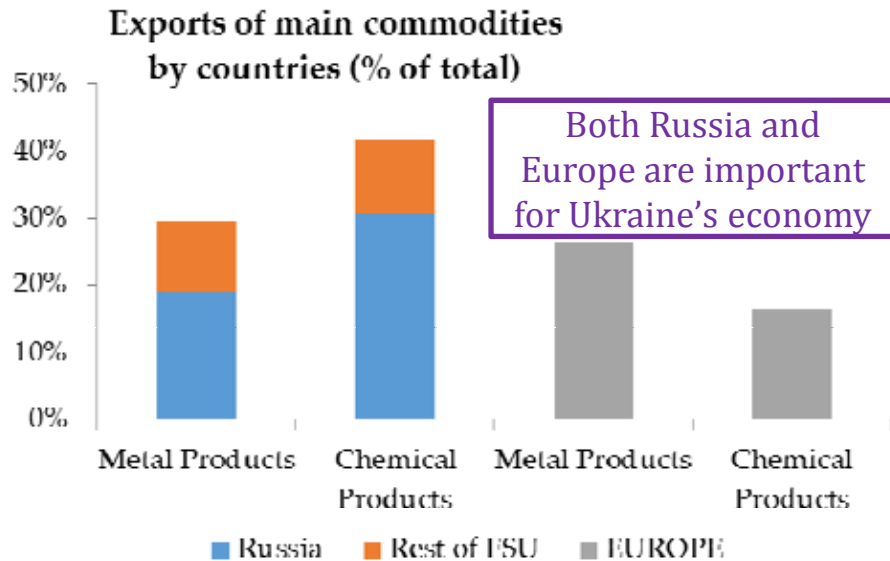


High gas price represents some danger to the growth-generating industries as well as Ukraine's macroeconomic conditions

Economic and gas dependency on Russia

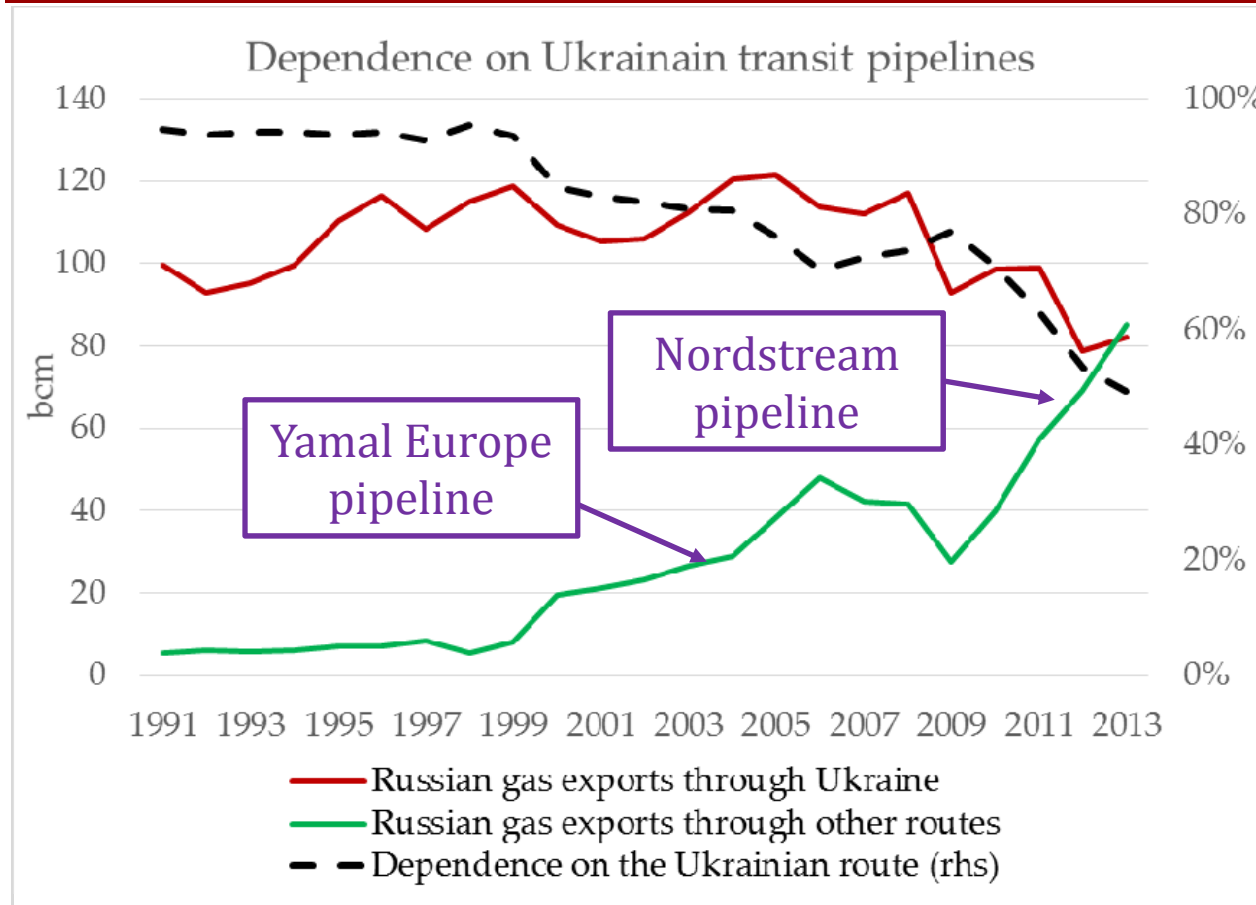


Economic and gas dependency on Russia



but Russia is more important for economic & energy security reasons

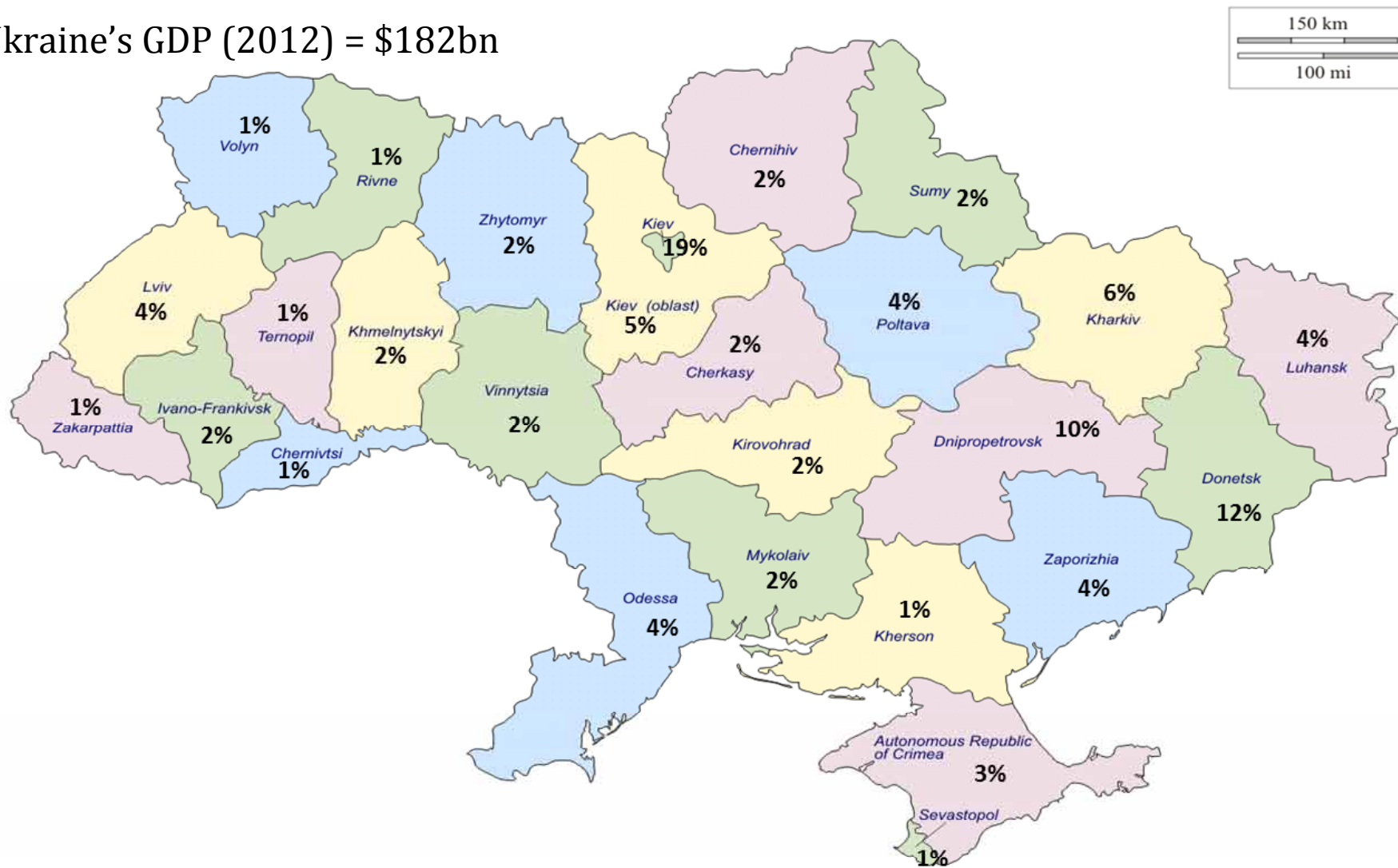
Ukraine's gas transit pipelines - strategic weapon?



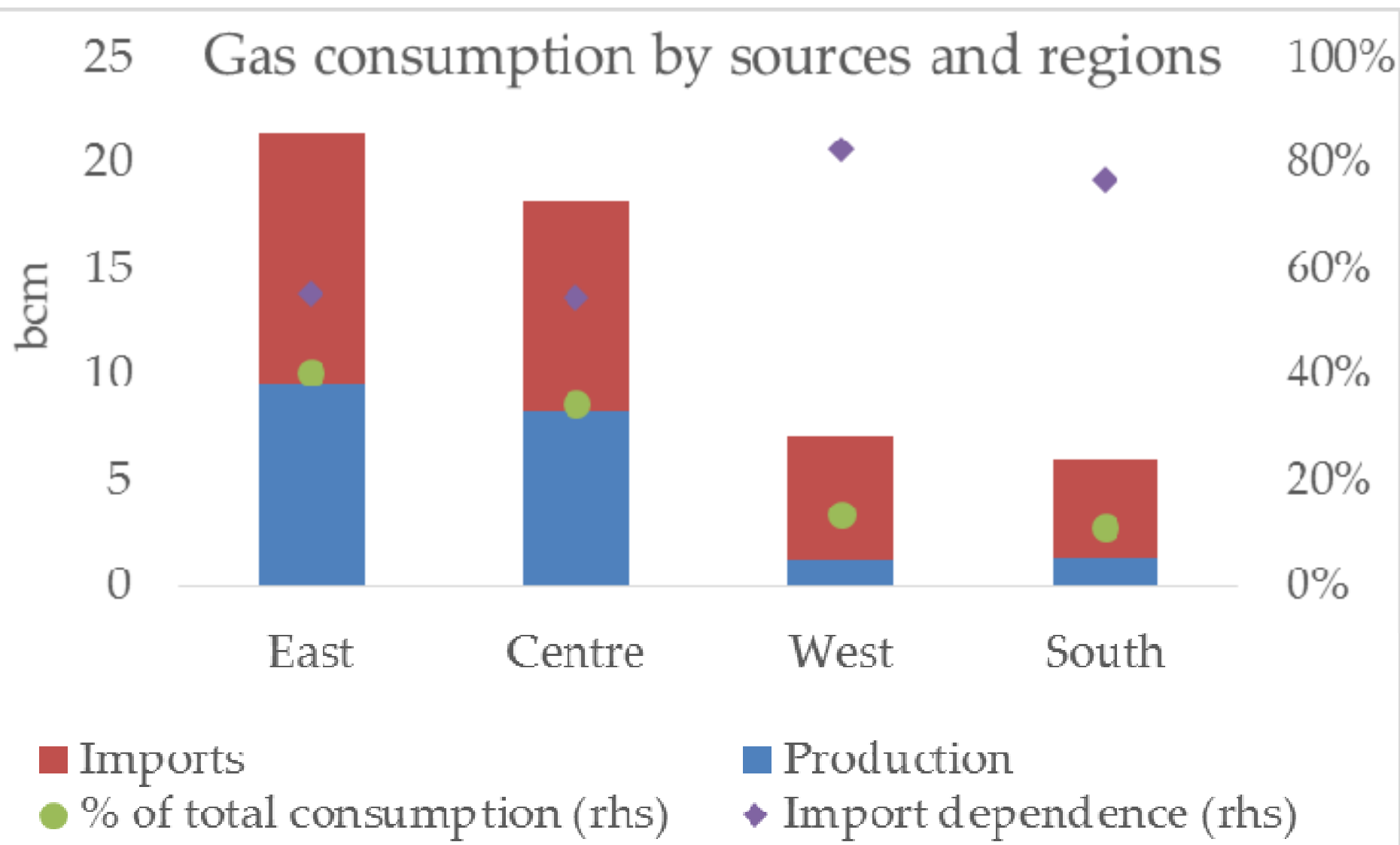
- Reduction in Ukraine's gas transit volume to Europe is due to diversion of gas to Nord Stream (Russia-Germany pipeline)
- Russia was able to diversify away from Ukraine since 1991 reducing its reliance on Ukraine from 95% to 49% at the moment
- After the South Stream, another bypass pipeline, is completed Russia's dependence on Ukraine will zero

Ukraine's economy: regional snap shot

Ukraine's GDP (2012) = \$182bn

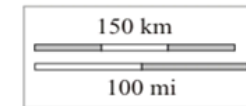


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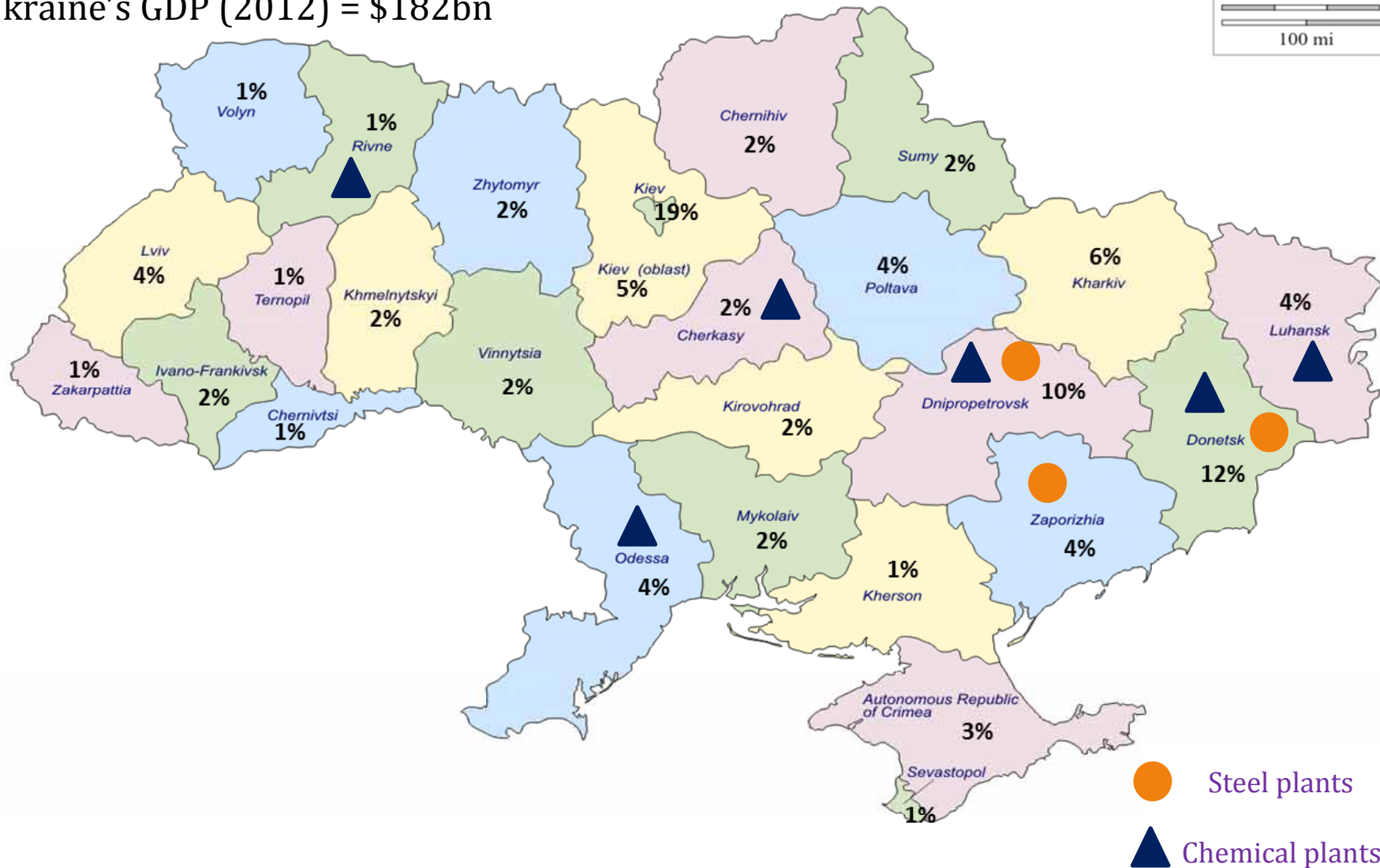


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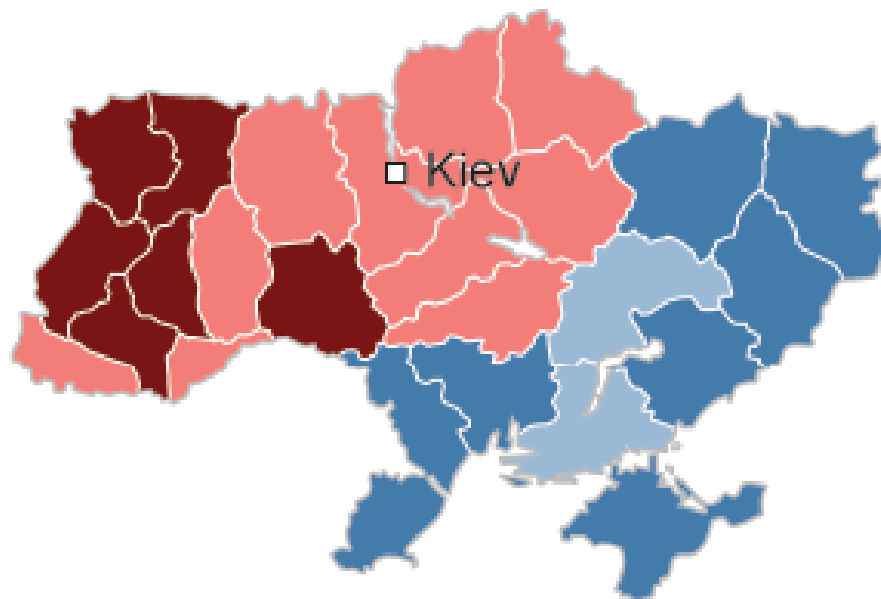
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Ukraine's politics: regional snap shot

Ukraine's divide

2010 election results



Tymoshenko ■ 70%+ ■ 50-69%
Yanukovich ■ 70%+ ■ 50-69%

Russian as native language



■ Less than 20% ■ 20-50% ■ 50%+

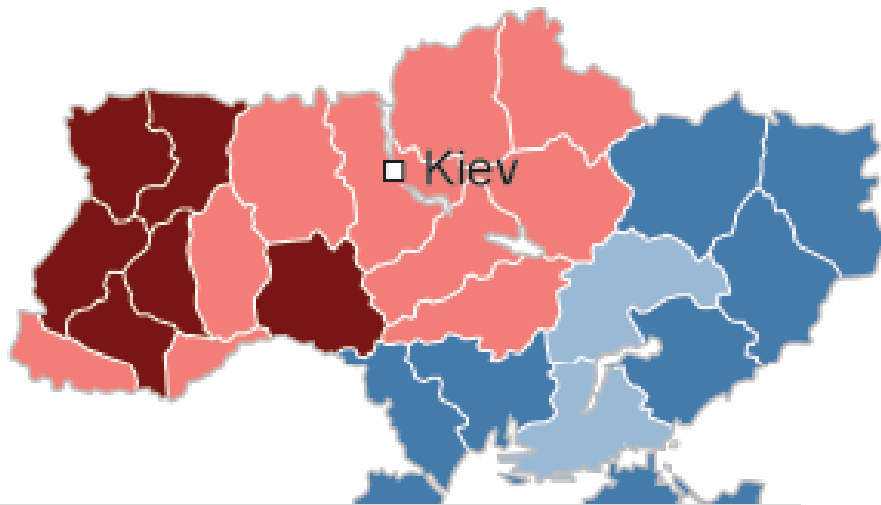
Source: BBC

Source: 2001 national census

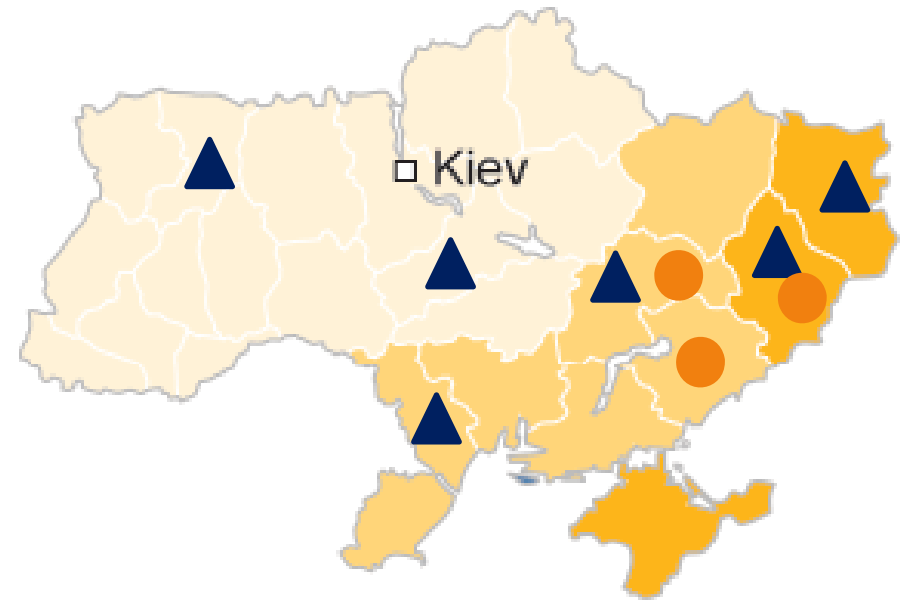
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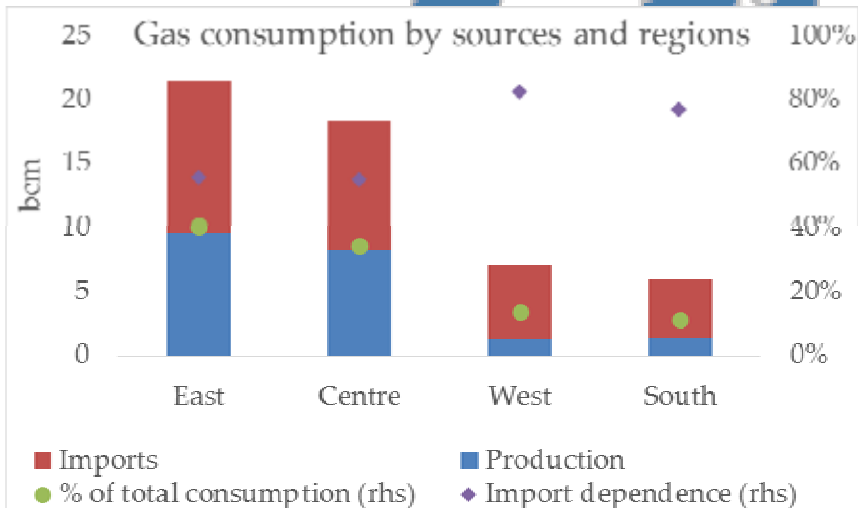
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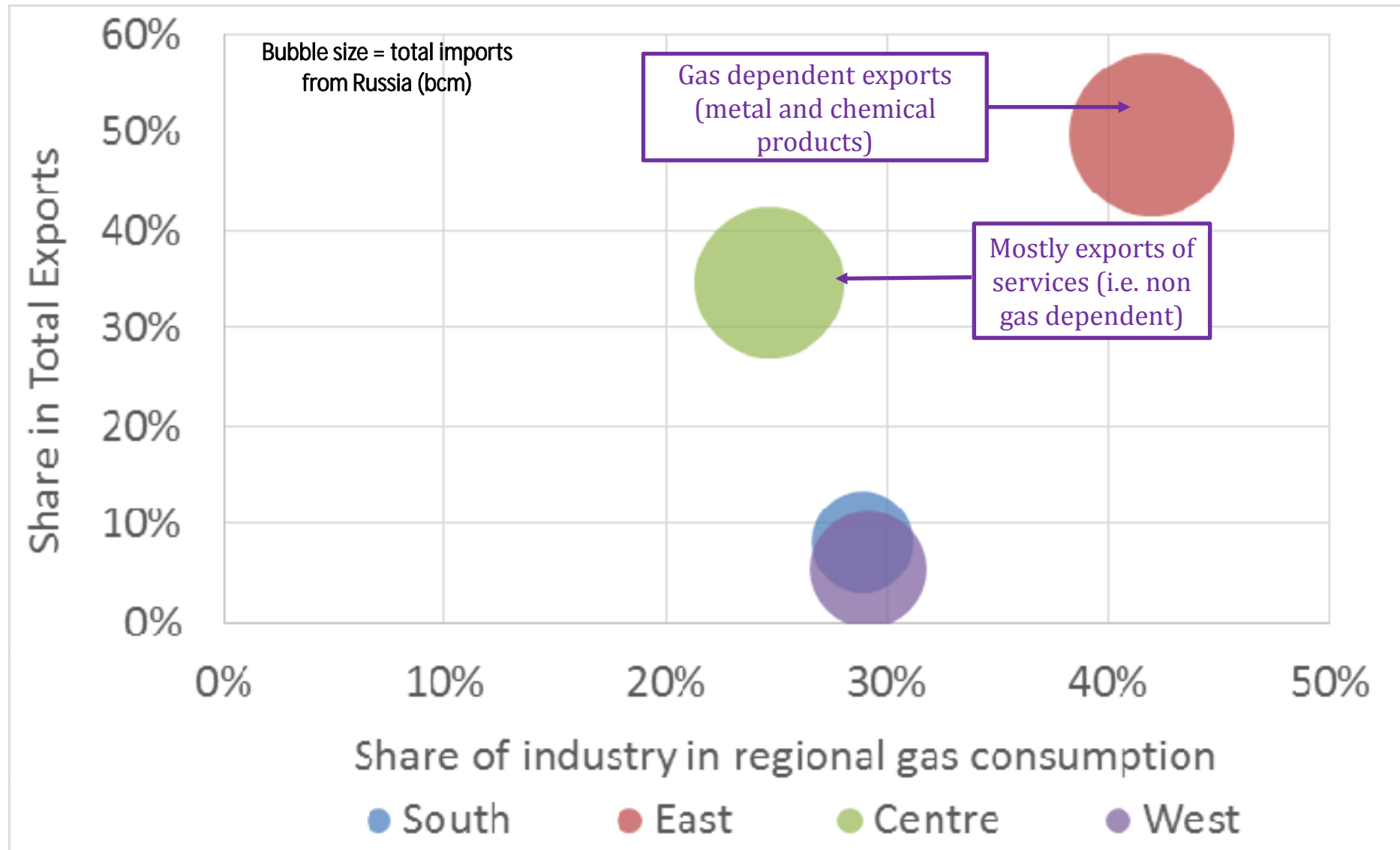
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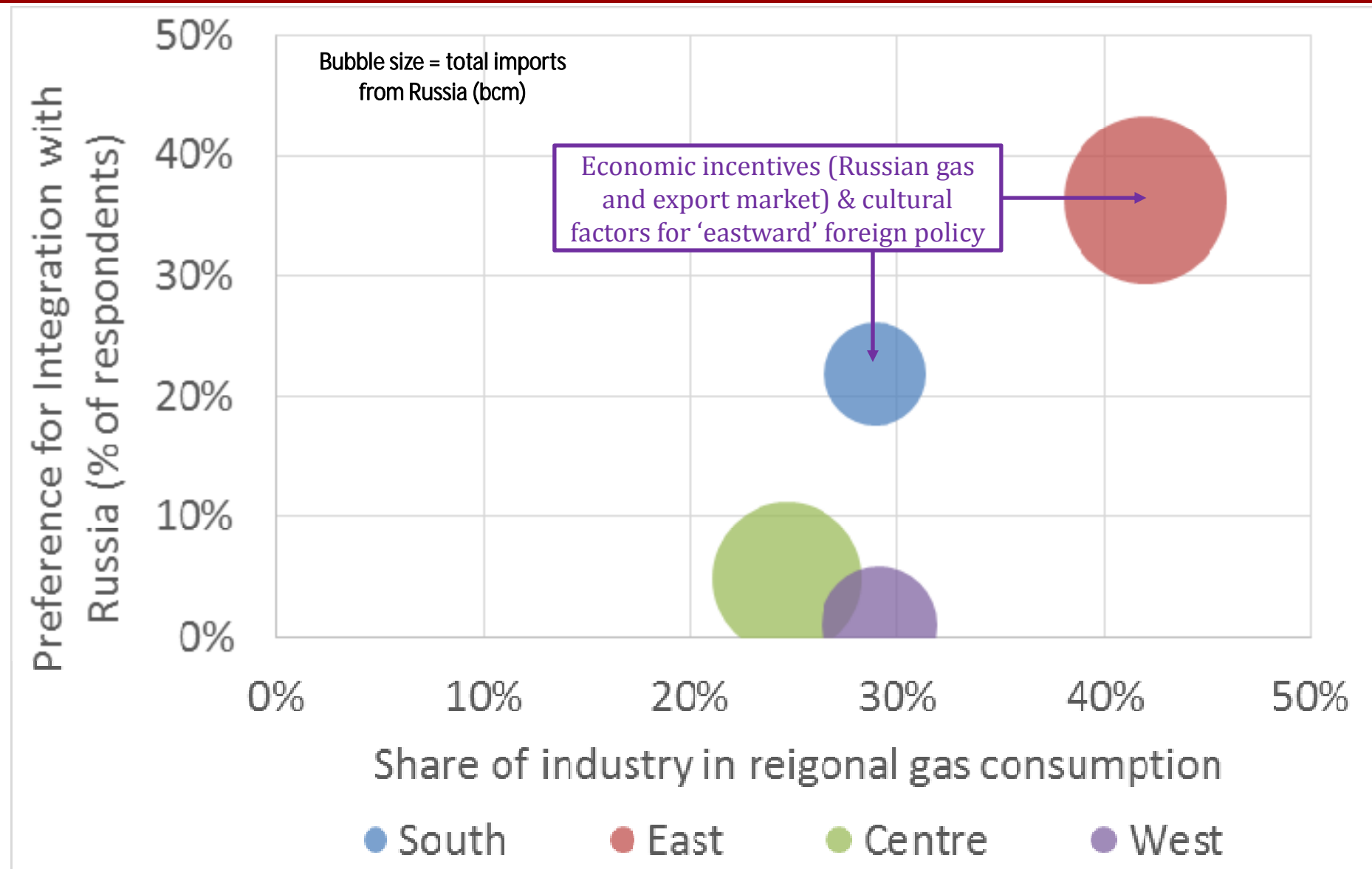
Steel plants
Chemical plants



Russian gas price affects economic competitiveness of Ukraine's industrialised east



Russian gas strongly influence Ukraine's foreign & energy policies



Russian gas and corruption strongly influence Ukraine's foreign & energy policies

Barter madness: 12 million galoshes for 4 million people in a 40°C heat

After the fall of the Soviet Union, high inflation rates and scarce hard currency made cash transactions unattractive in countries such as Ukraine. Instead, resources such as oil and gas were often swapped for other items which the country was in short supply of – food products, fertiliser, metal, equipment. Before the Russian financial crash of August 1998 this trade in barter dominated Ukraine's energy sector; it has been estimated by one commentator in the *Financial Times* that 90% of all energy commodities in Ukraine in the mid to late 1990s was paid for in barter.¹⁶⁸



Source: Global Witness (2006) 'It's a Gas: Funny Business in the Turkmen-Ukraine Gas Trade'

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Ukraine's energy policy =

state capturing in the energy sector

+

Undiversified economy which depends on energy imports and inefficient energy sector

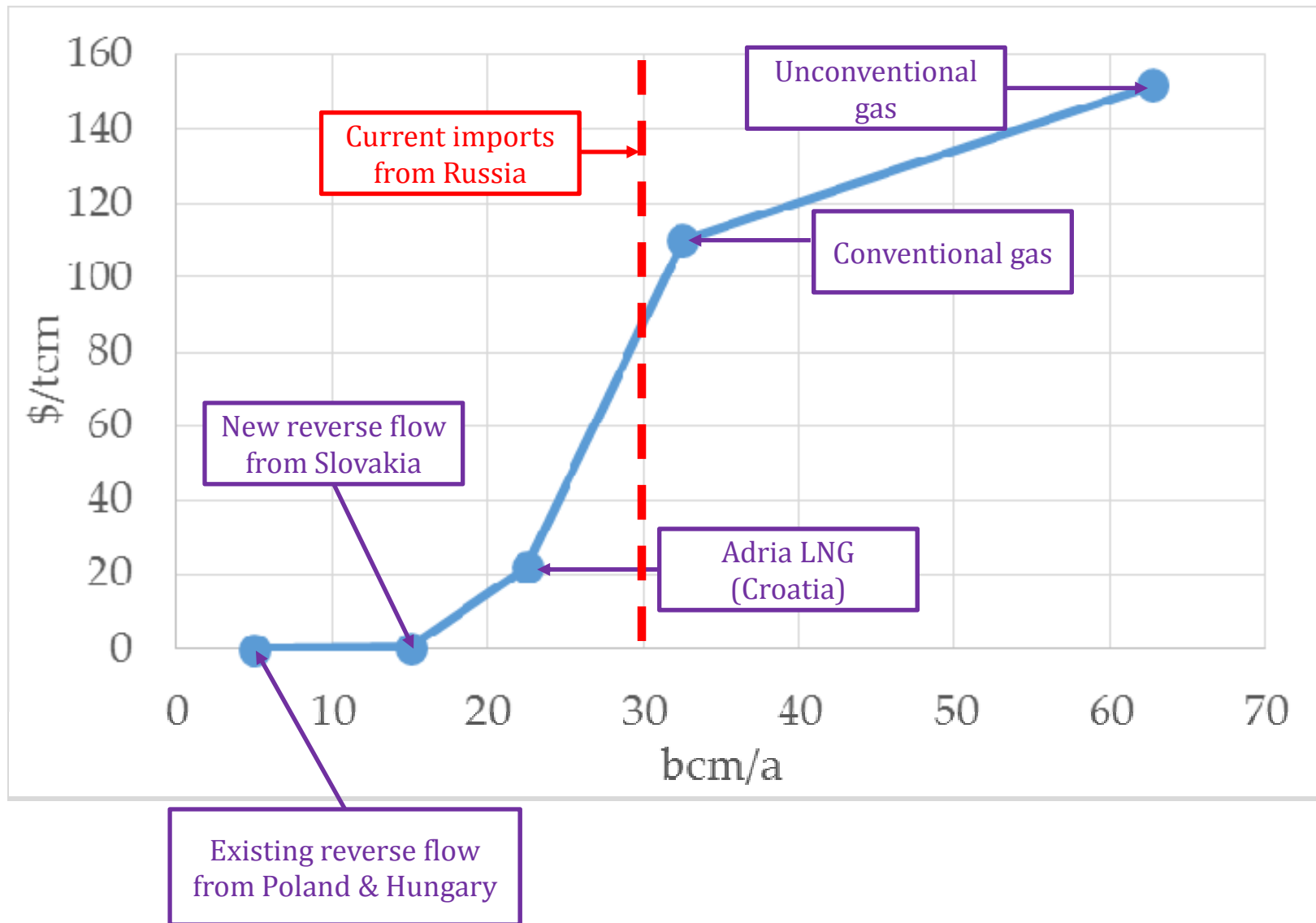
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regional difference in dependency on Russian gas for production of key export commodities

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Potential non-Russian supply options for Ukraine



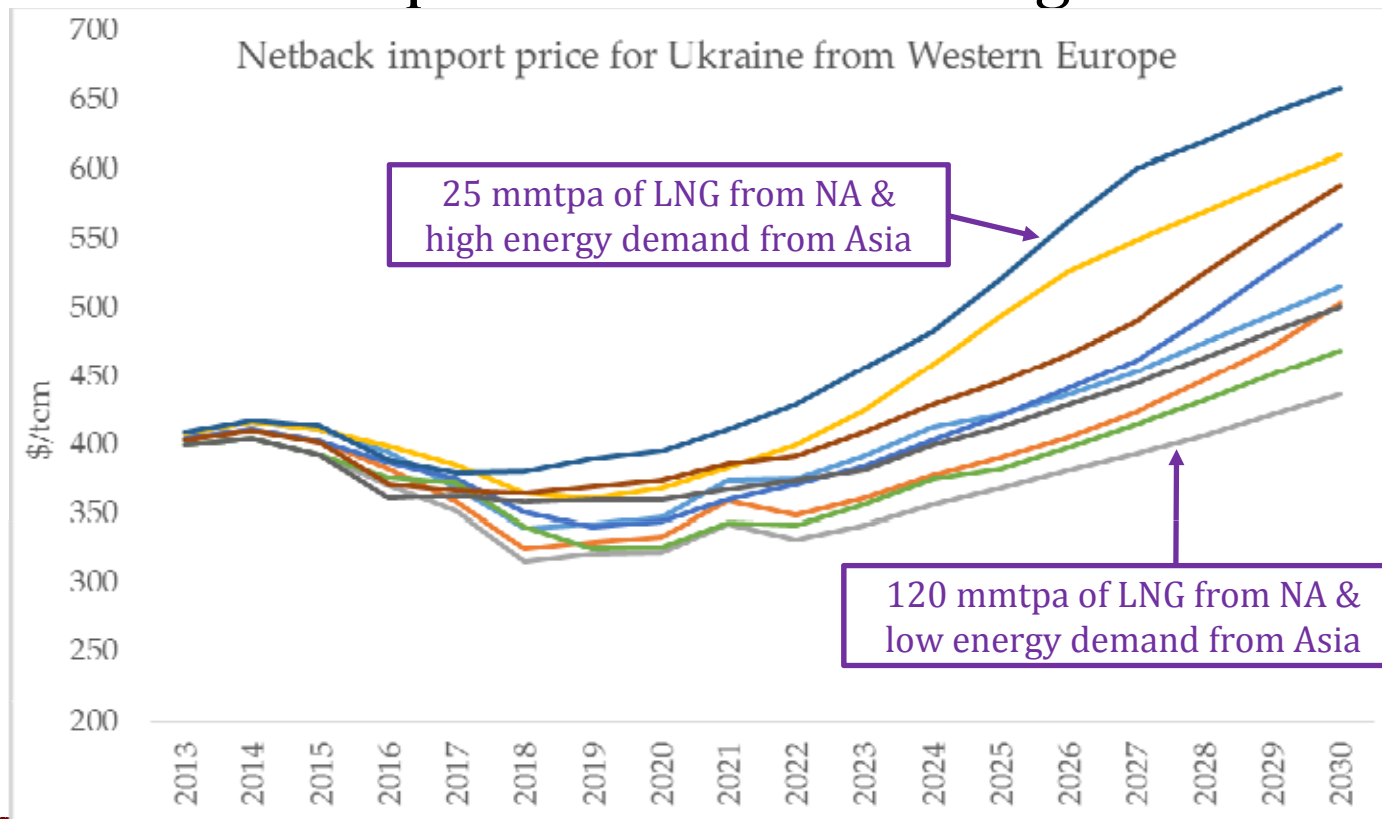
Potential non-Russian supply options for Ukraine

- How much diversification would Ukraine need?
 - How much gas would Ukraine receive from Europe?
 - At what price?

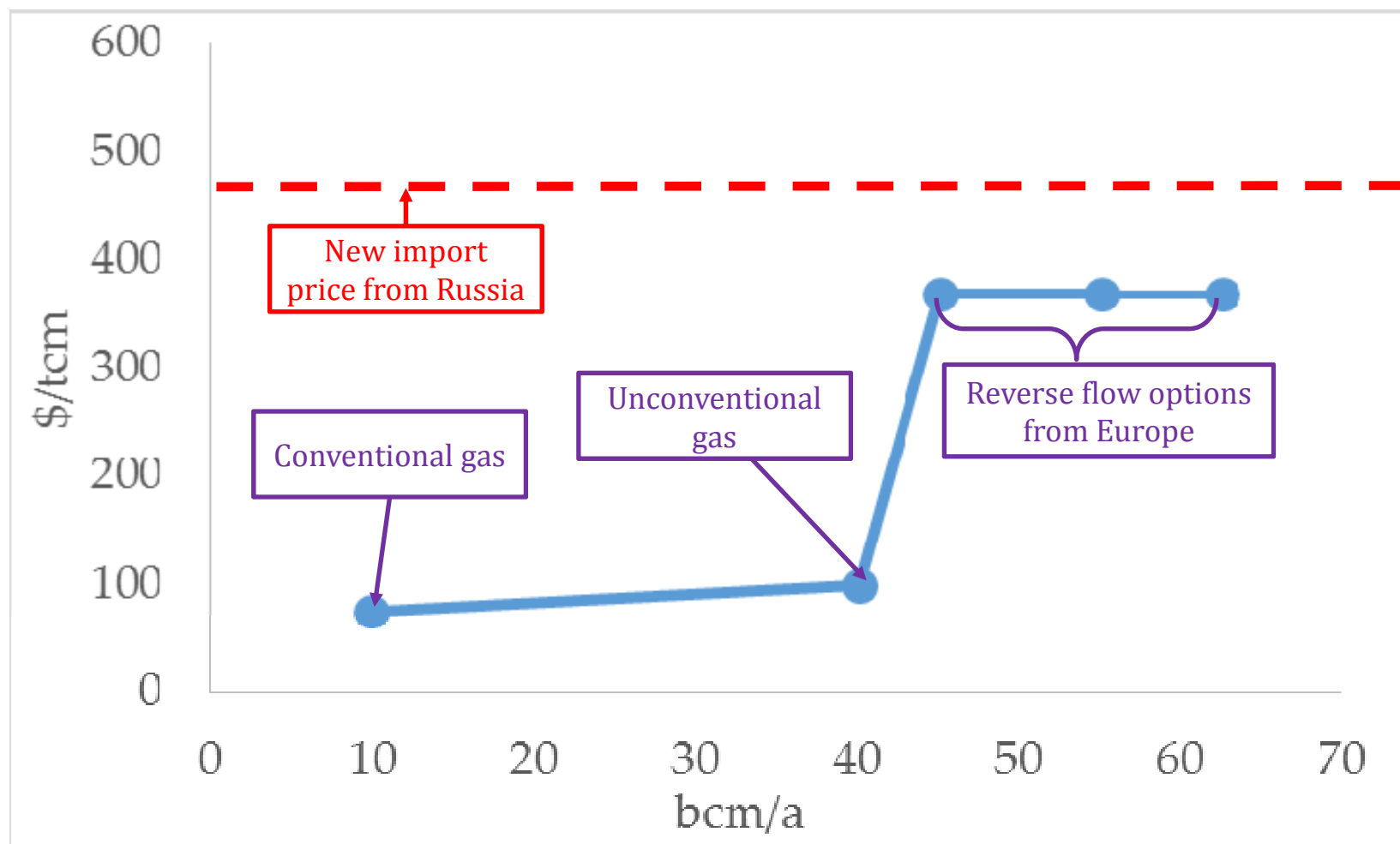
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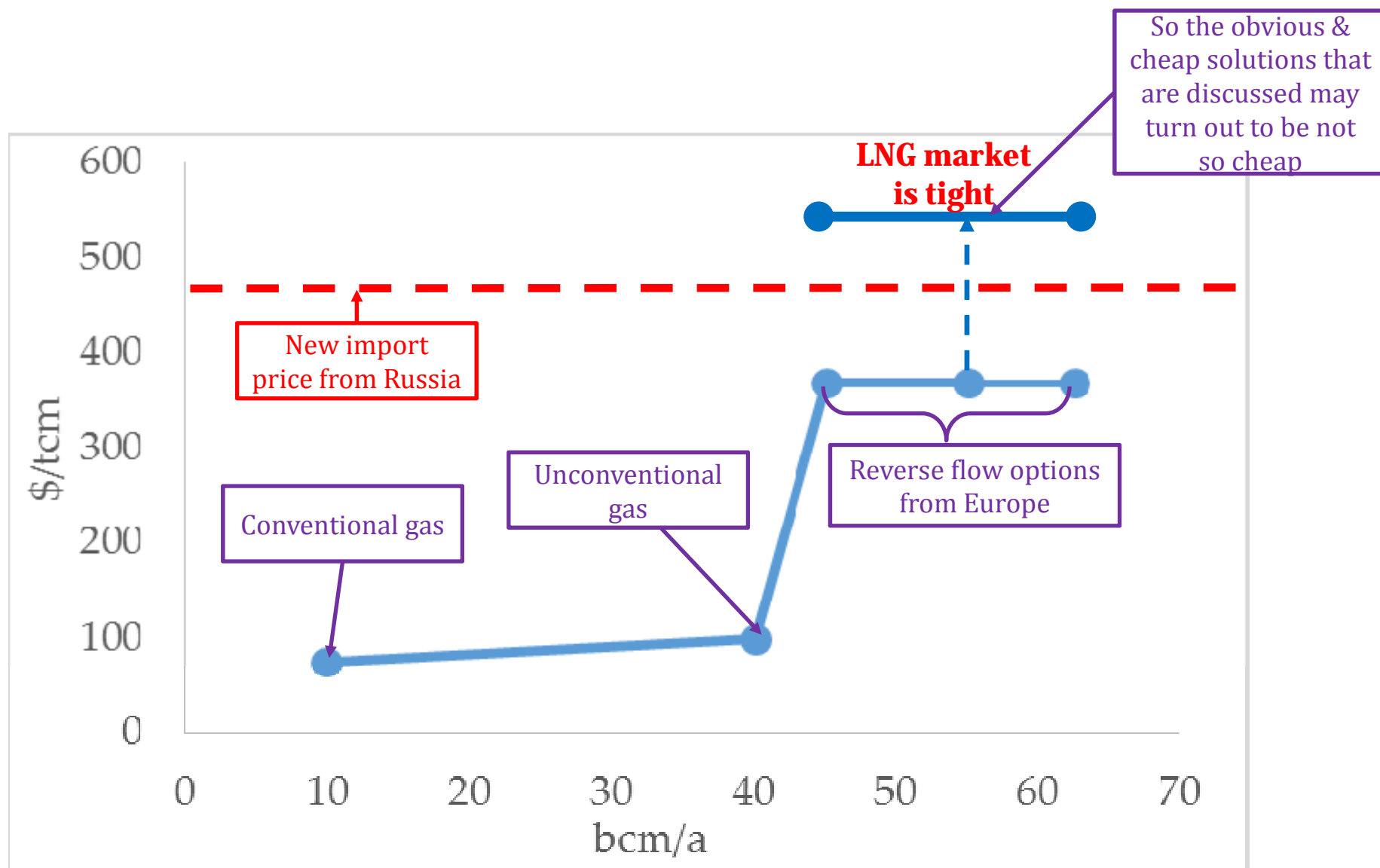
this would depend on international gas markets



Variable costs for non-Russian supply options



Variable costs for non-Russian supply options



Conclusions

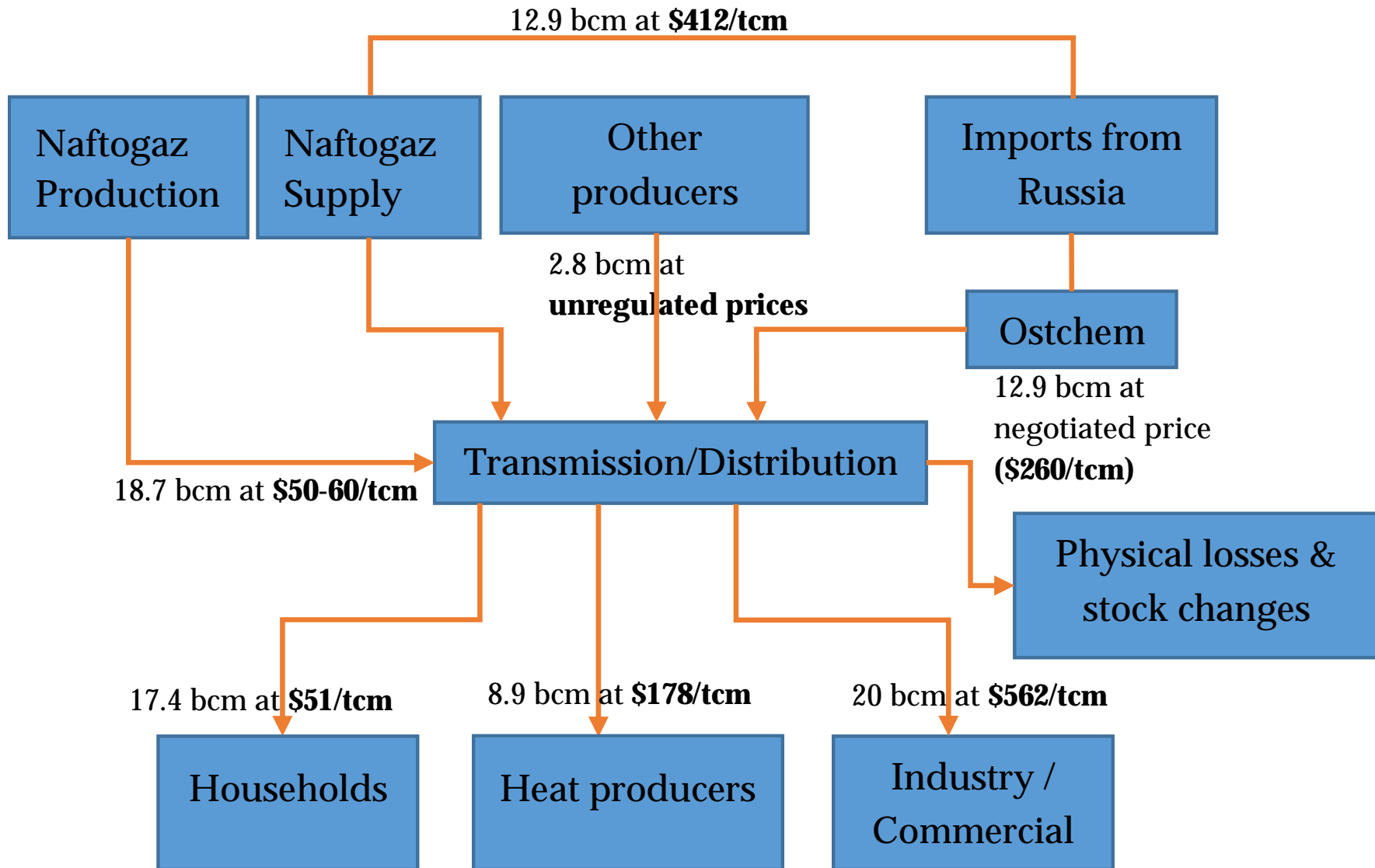
- Supply disruption to Europe is unavoidable unless Ukraine and Russia find an agreement very soon or unless Ukraine is able to import more gas in the reverse mode (from Europe)
- The role of Ukraine as a transit country is diminishing with the construction of pipelines that bypass Ukraine
- Gas and cultural politics play central role in Ukraine's foreign and energy policy
- the economics of reverse flow options are rather questionable

Thank you

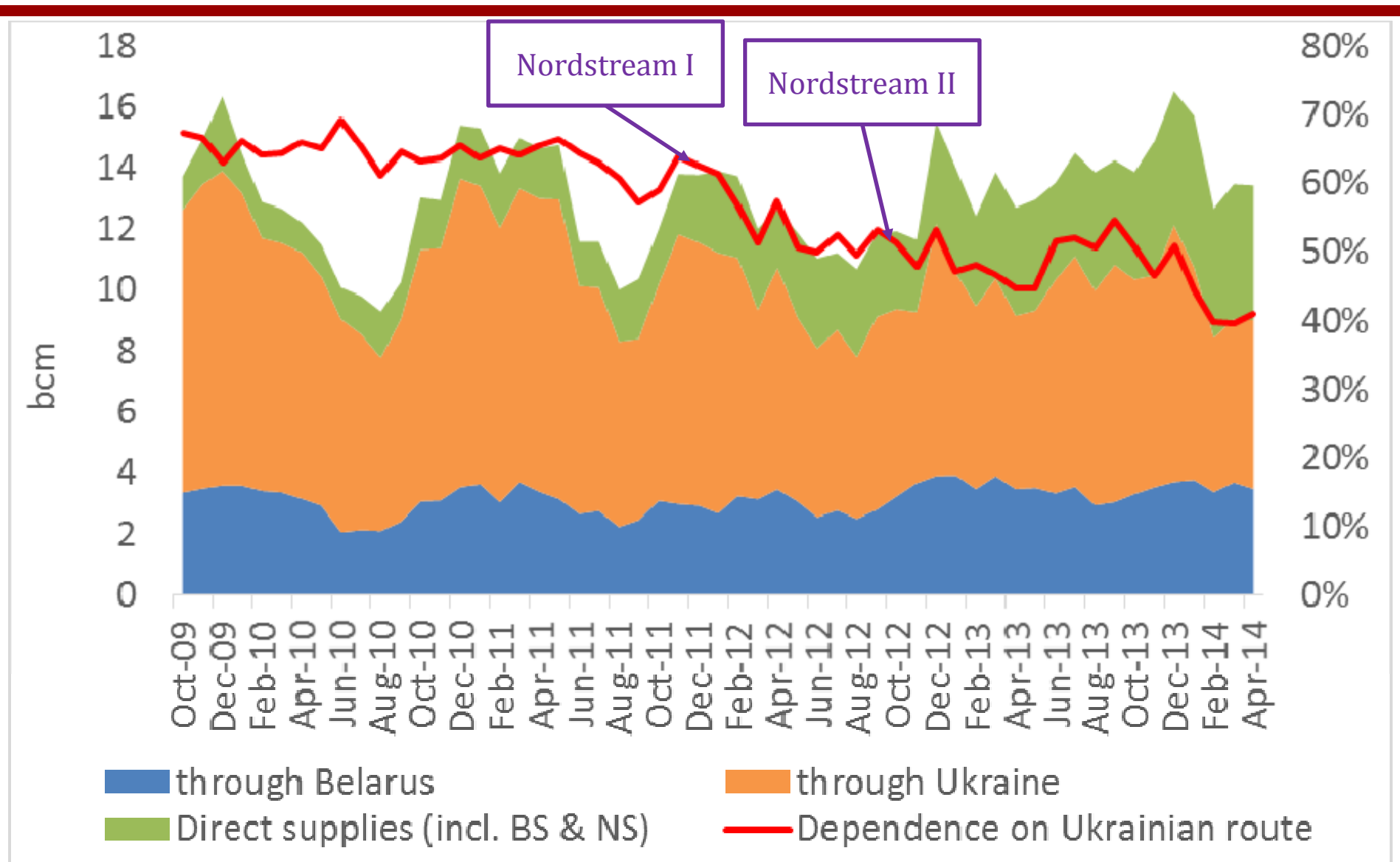
Email: k.chyong@jbs.cam.ac.uk

Appendix

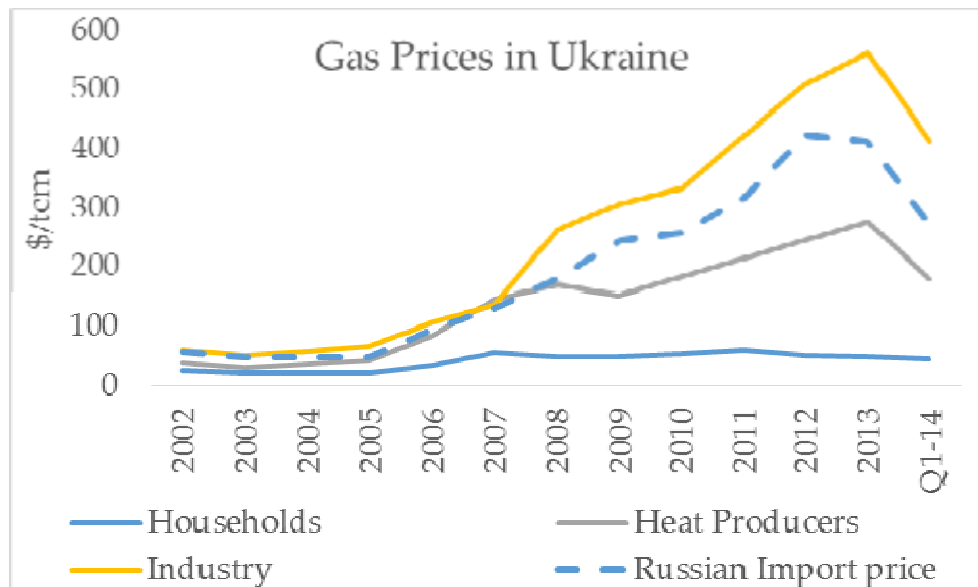
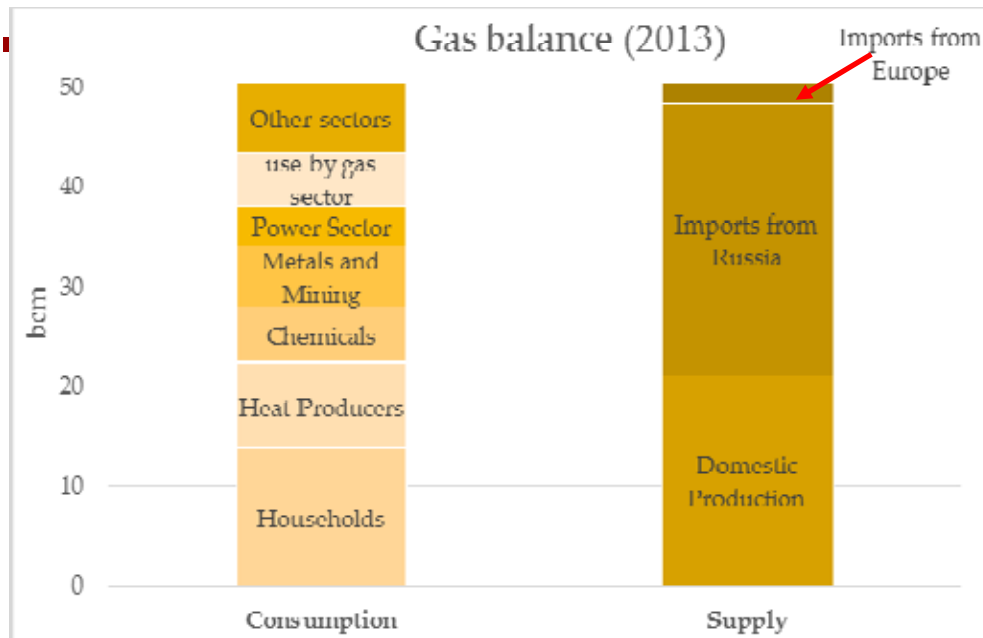
Ukraine's gas sector – the context



Europe and Russia still depend on the Ukrainian route



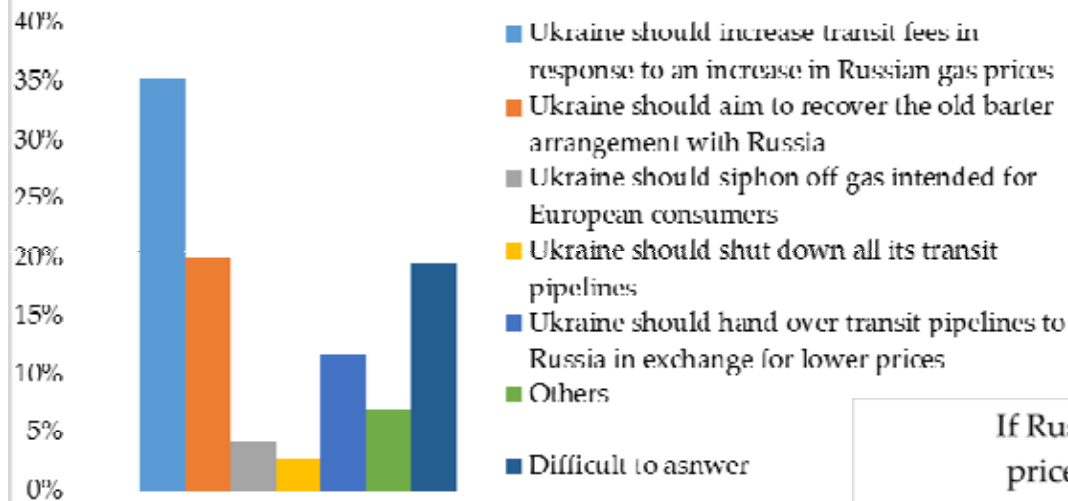
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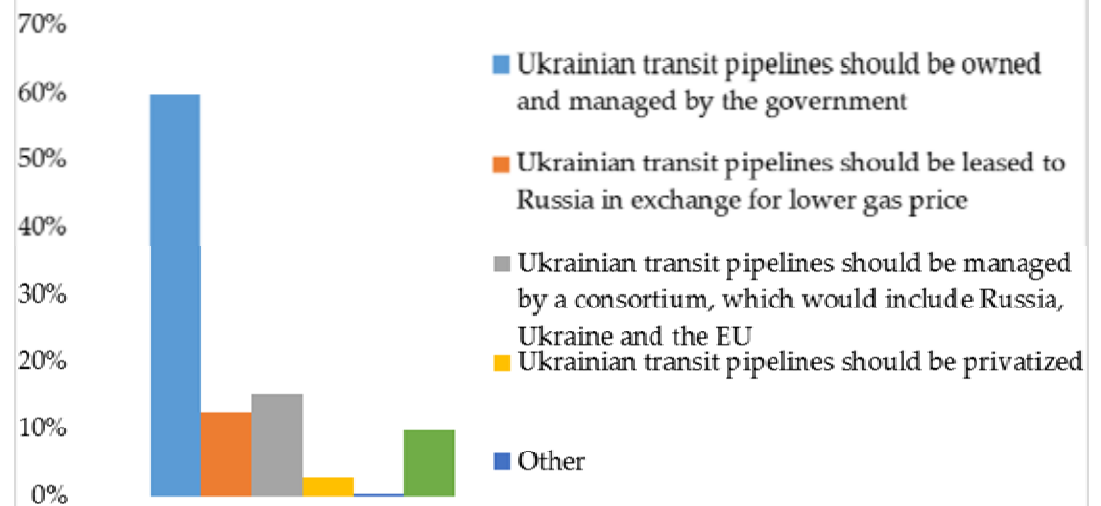
- Households and heat producers account for about half of total gas consumption
- Chemicals, metals and mining, power sectors account for one-third of consumption
- Gas pricing:
 - Gas price for households and heat producers are under-priced relative to import price (marginal price)
 - Domestic gas production could only be used for household consumption and heat production
 - Industry, powergen and other consumers pay prices pegged to import price from Russia

Ukraine's strategic weapon – gas transit pipelines

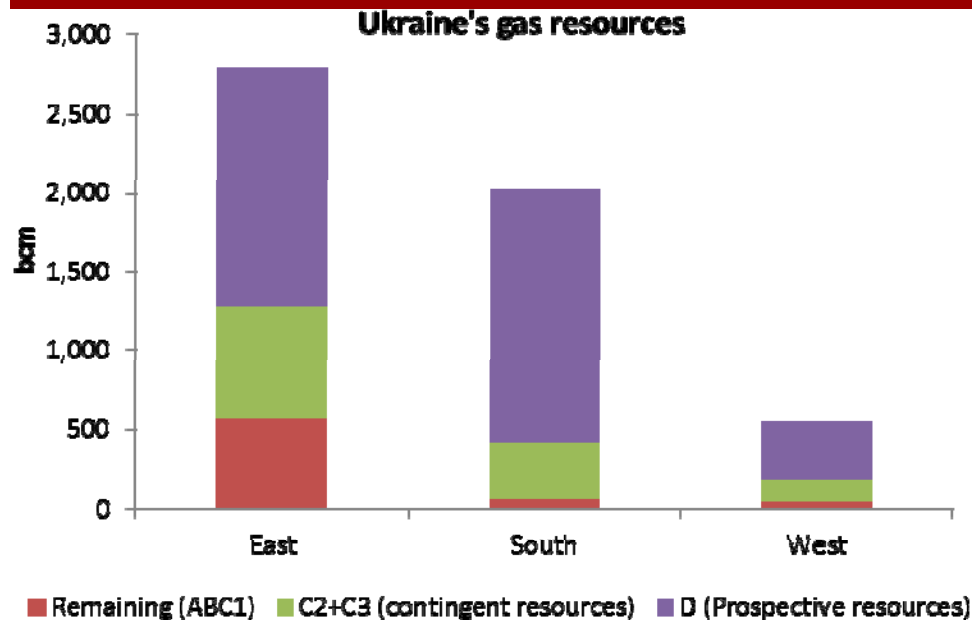
Ukrainians were asked how they thought their country should react to Russia's threat to cut off Ukraine's gas supplies



If Russia would reduce its gas price for Ukraine (i.e. lower price for Ukrainian citizens) with which of the following statements would you agree the most?



Ukraine's Natural Gas Potential



- Ukraine about 1.8 trillion cubic metres of gas, or 33 years of annual consumption at the level of 55 bcm/a
 - 52% of remaining and potential resources is in the East
 - 38% is in the South,
 - and only 10% is in the West

Market framework is not supportive of investment in new field development and exploration of more risky resources:

- Currently gas producers should sell all gas to domestic consumers @ regulated prices of \$50-60/tcm;
- The LRMC for new gas is \$150-250/tcm

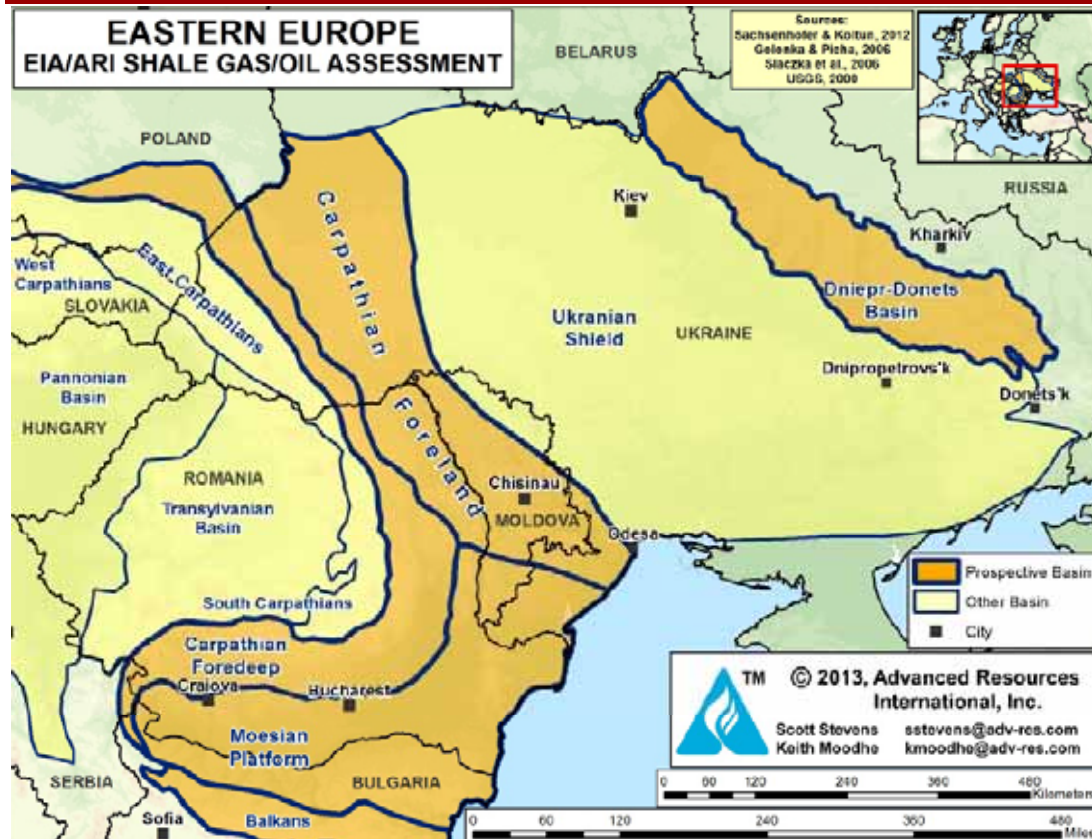
Unconventional Gas Resources in Ukraine



Source: ARI, 2013 as cited in EIA 2013

- Three shale gas basins:
 1. Dnieper-Donets (East),
 2. Carpathian Foreland (West),
 3. Moesian Platform (Southwest)
- Estimated resources:
 - East: 312 (76) Tcf ~ 36 years
 - West: 362 (72) Tcf ~ 34 years
 - Southwest: 48 (10) Tcf ~ 5 years

Unconventional Gas Resources in Ukraine

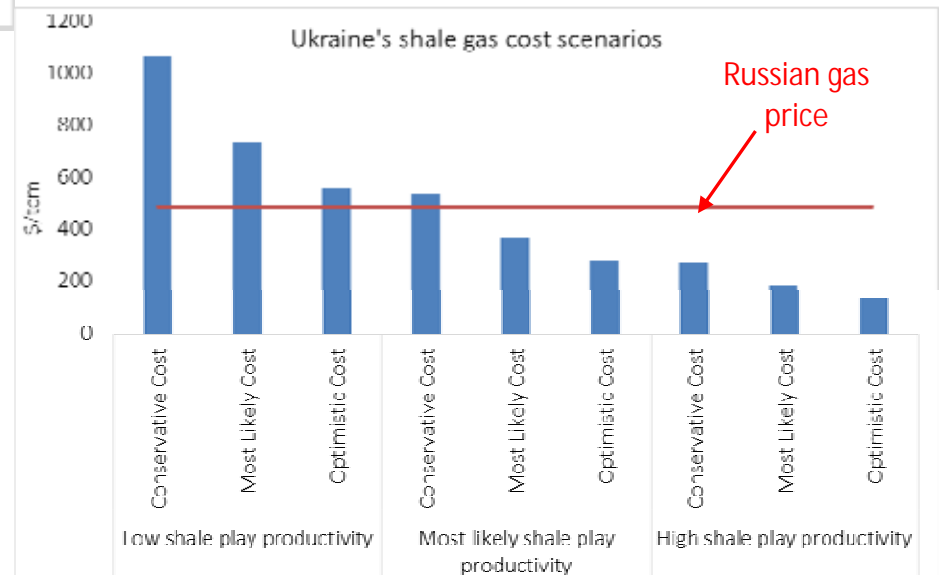
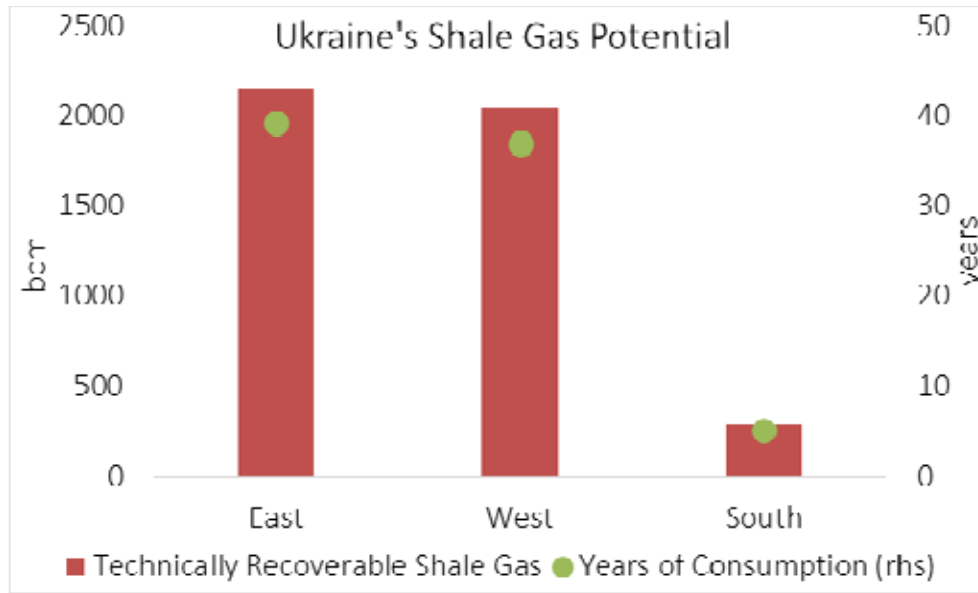


Source: ARI, 2013 as cited in EIA 2013

Eastern regions of Ukraine are very important for shale gas development:

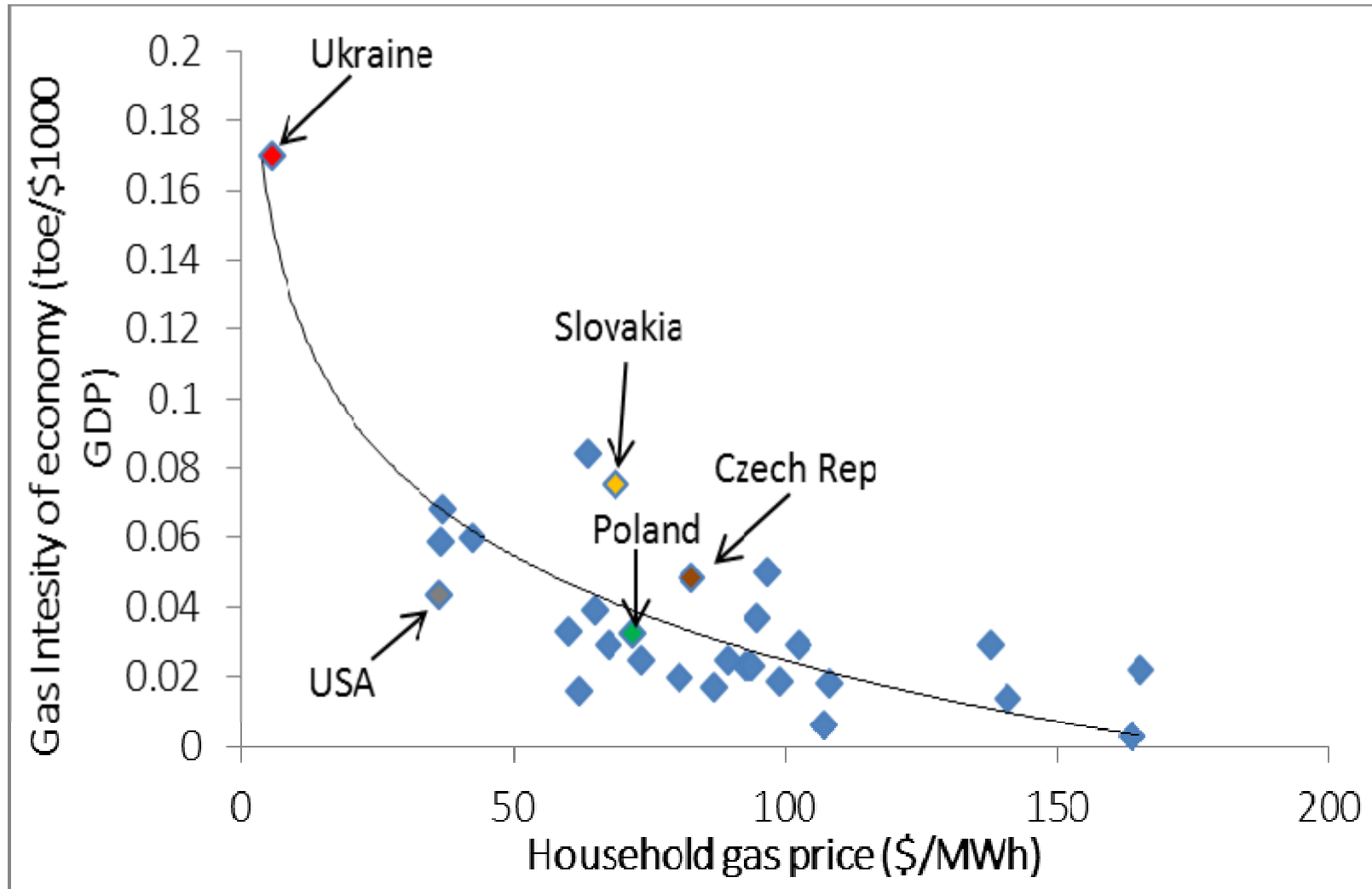
- these regions could serve as the basis to develop upstream logistics because of the existing gas production infrastructure and other developed industrial activities (machinery building etc);
- losing these regions would impose higher costs to develop shale gas in the other regions.

Ukraine's Natural Gas Potential



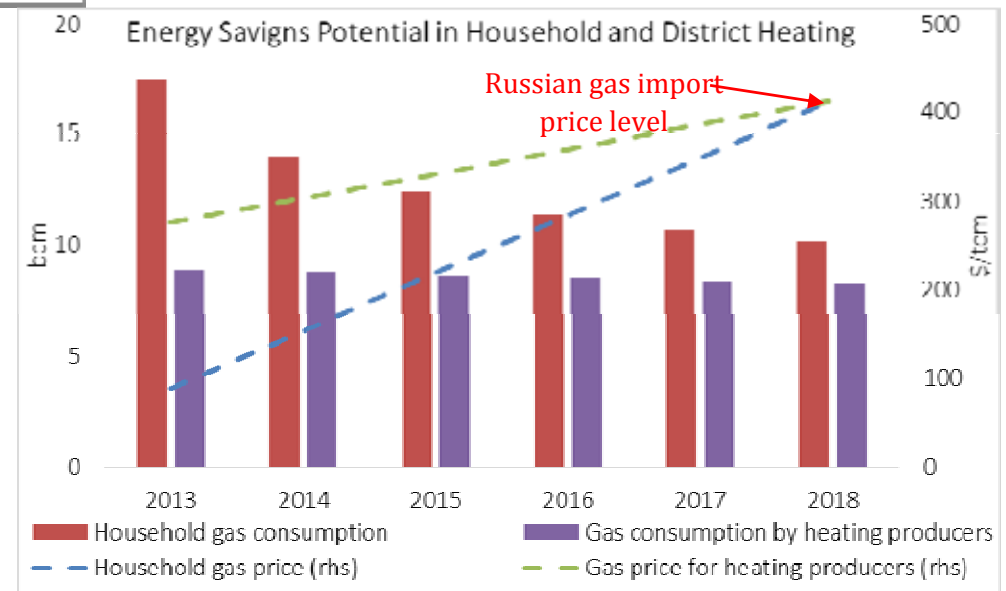
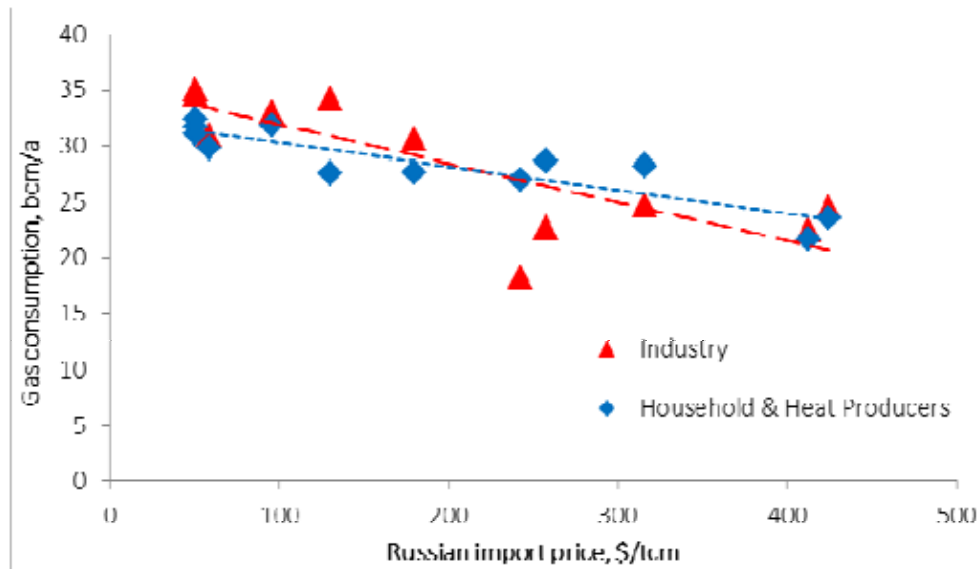
Ukraine's Natural Gas Potential

Ukraine's gas pricing policy – untapped 'unconventional' resource



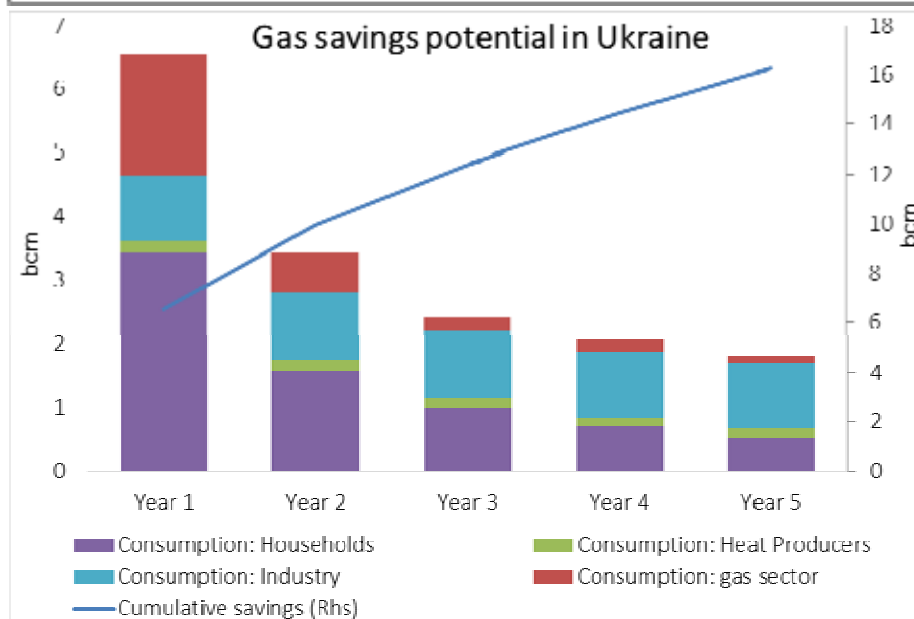
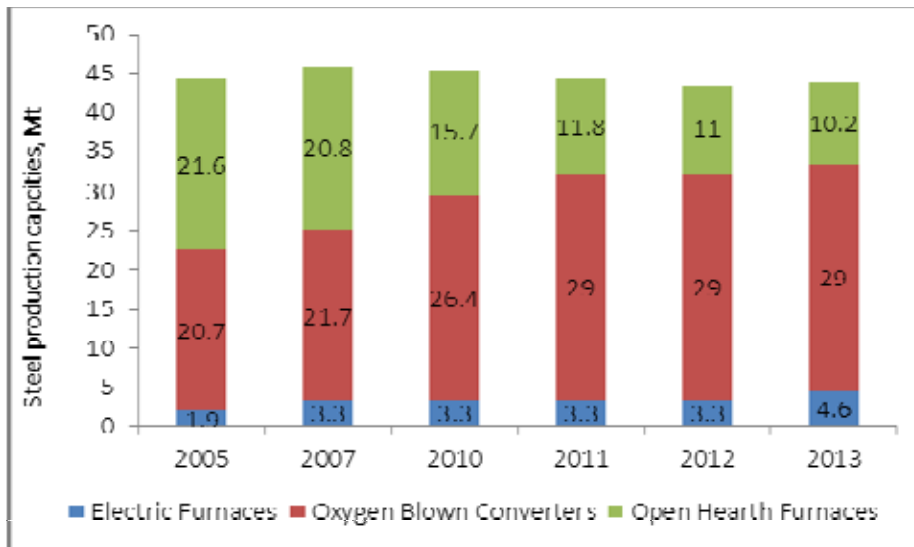
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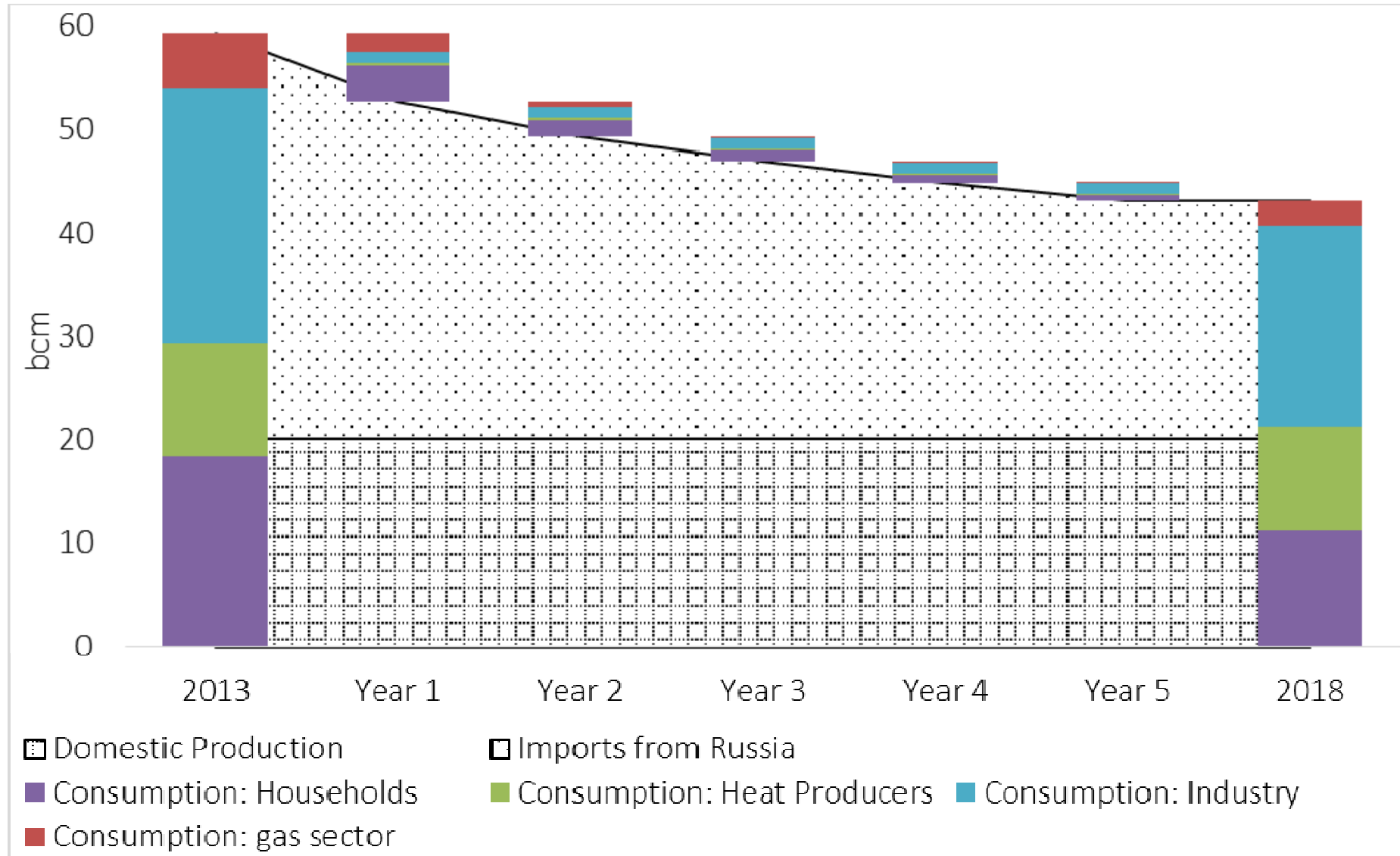
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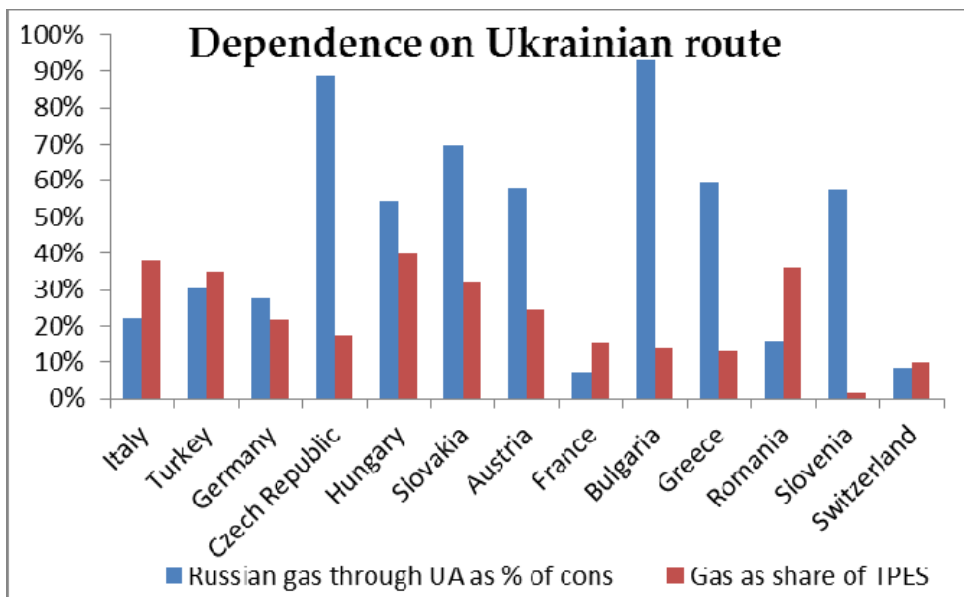
- Steel and chemical plants could potentially reduce their gas consumption by 25-50%:
 - Depends on partial to full modernization of production processes etc
- Gas consumption by the gas sector itself could also save up to 50%:
 - modernization of compressor stations along transit routes
- Massive energy savings potential is however in the residential sector
 - Increasing household price to the import parity level could save up to 42%

Ukraine's Natural Gas Potential

Ukraine's gas pricing policy – untapped 'unconventional' resource



Ukraine's storage stock and Russian alternative pipelines are not sufficient to avert the potential crisis



	Storage Inventory as of Jul-14 (mmcm)	Average monthly consumption (mmcm)	consumption days covered storage
Austria	2815	754	114
Czech Republic	2318	682	103
Hungary	1659	812	62
Poland	1691	1381	37
Slovakia	1968	499	120
Bulgaria	352	250	43
France	5931	3541	51
Germany	16315	6270	79
Italy	11601	5723	62