Short-term gas supply options for Ukraine

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German Advisory Group Ukraine

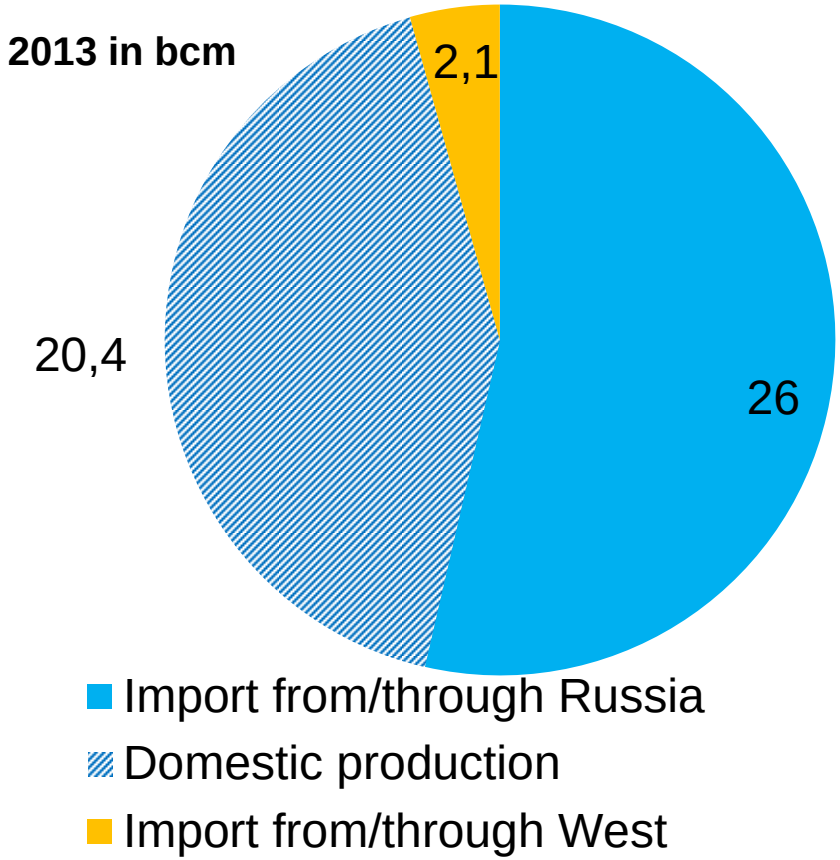
Berlin/Kyiv, June 2014

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Issues

- High share of imports from Russia
- Increasing price setting power of Russia (less reliance on GTS)
- Political tensions
- Limited capacity of readily-available alternatives (reverse flows)



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Objectives

- **Two sometimes competing objectives**
  - **Ensure predictable supply volumes – ‘security’**
  - **Limit economic and political cost – ‘price’**

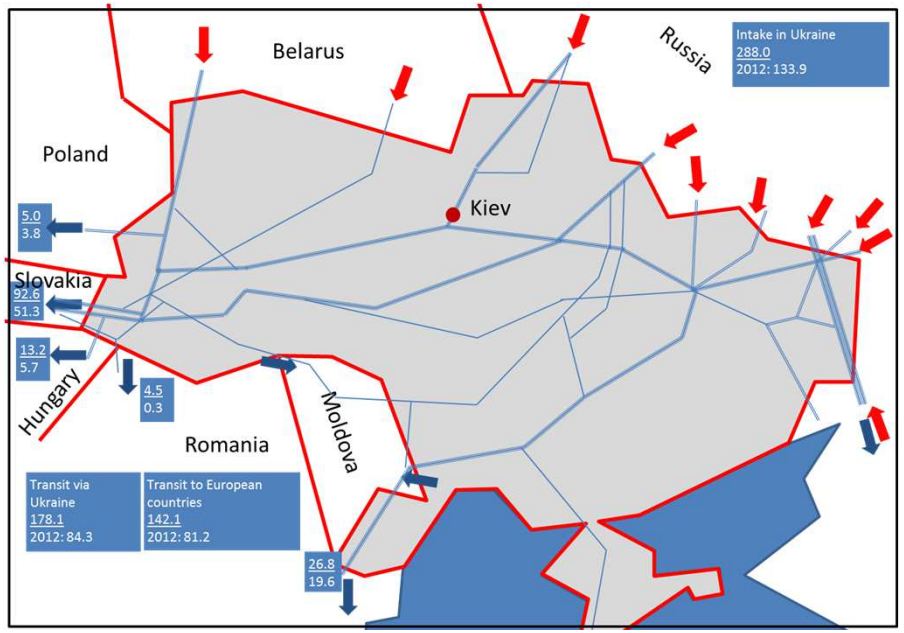
- **Different time-frames:**
  - **Short term**: ensure supplies in politically volatile times
  - **Medium term**: reduce the cost of foreign supplies and improve the resilience of the system (by developing additional supply routes)
  - **Long term**: achieve a stable and competitive gas supply (by increasing production and reducing consumption) / maybe even gas exports

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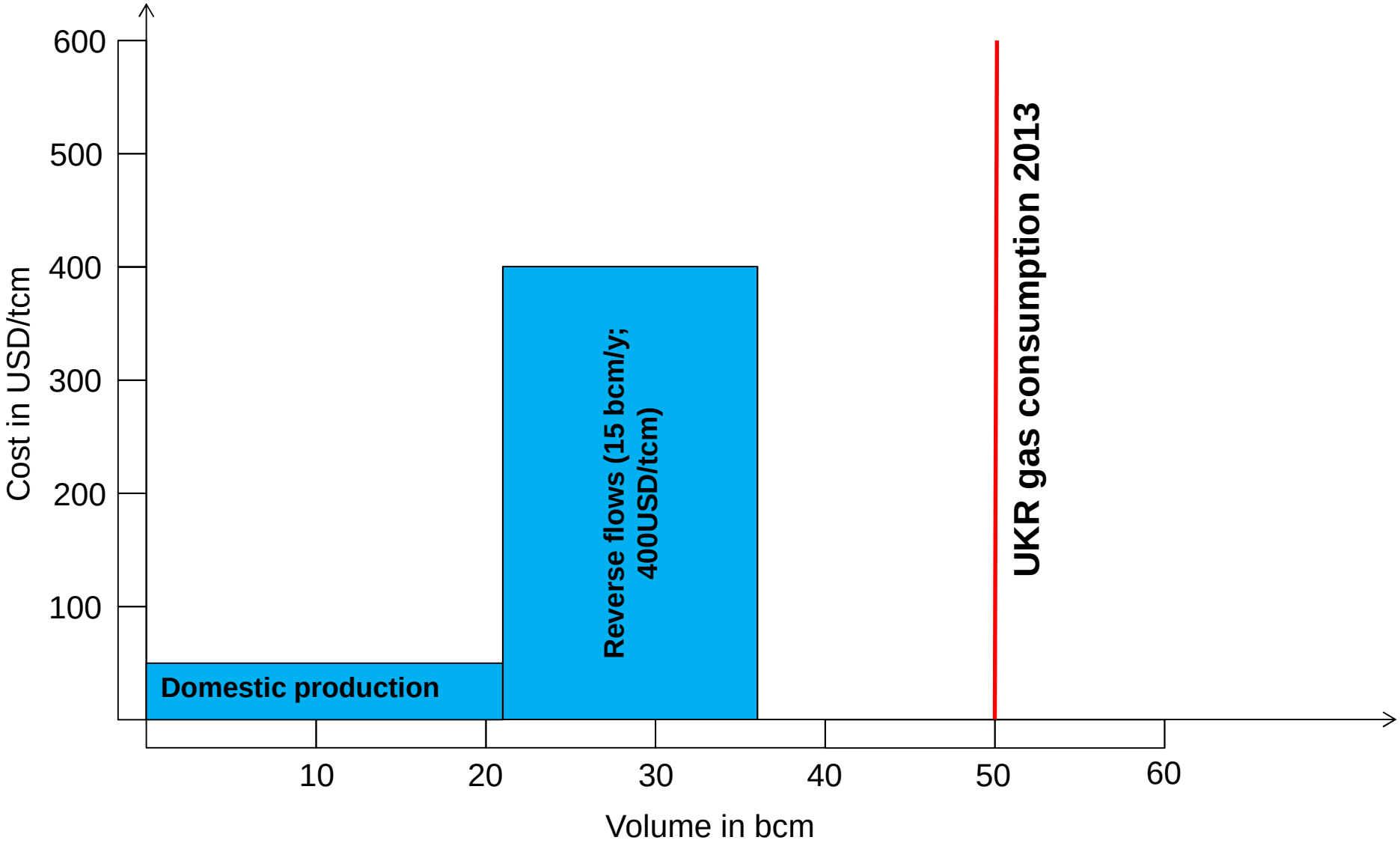
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Reverse flows

- In theory Ukraine can be supplied from the West
- Around 15 bcm/y
- A number of issues need to be settled first;
  - **Technical**: enable ‘reverse flows’
  - **Commercial**: enable Naftogaz to contract with suppliers (→option contract)
  - **Legal**: Assess effect on existing ToP- contracts with Gazprom



Short-term gas supply without Russia

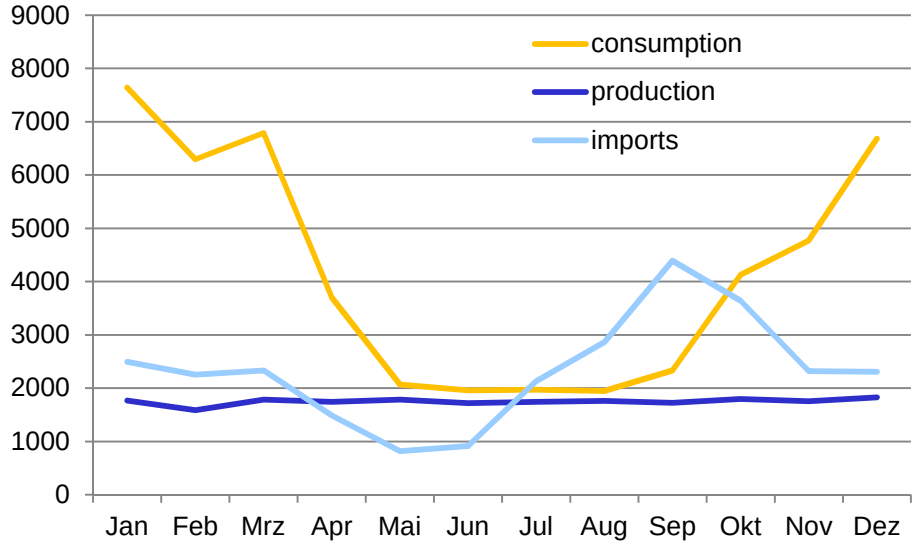


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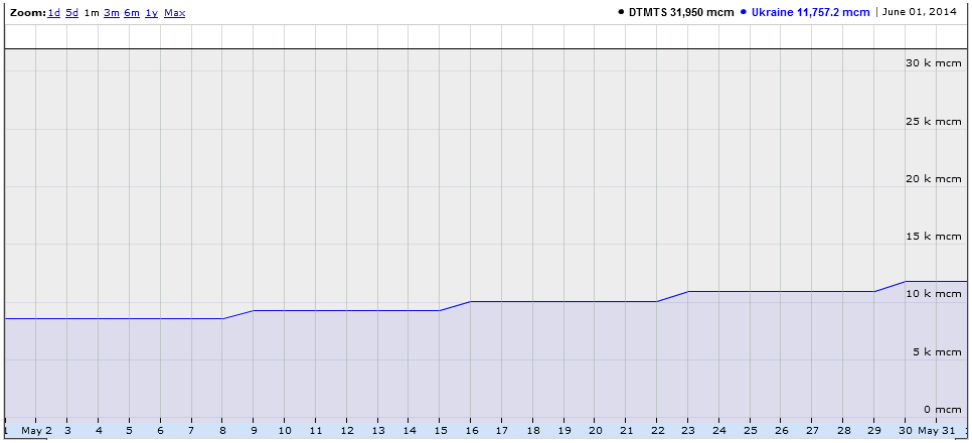
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Fill gas storages

- Winter demand is 3-4 times summer demand – production and imports about flat
- 10-15 bcm need to be stored
- About 30 bcm of storage capacity
- Buy and store additional gas
- Cost=gas price + techn. storage cost + interest rate + opportunity cost of storage (approx. gas price + 100 USD/tcm)
- **Only available if prepared before a crisis**



Source: Minenergo

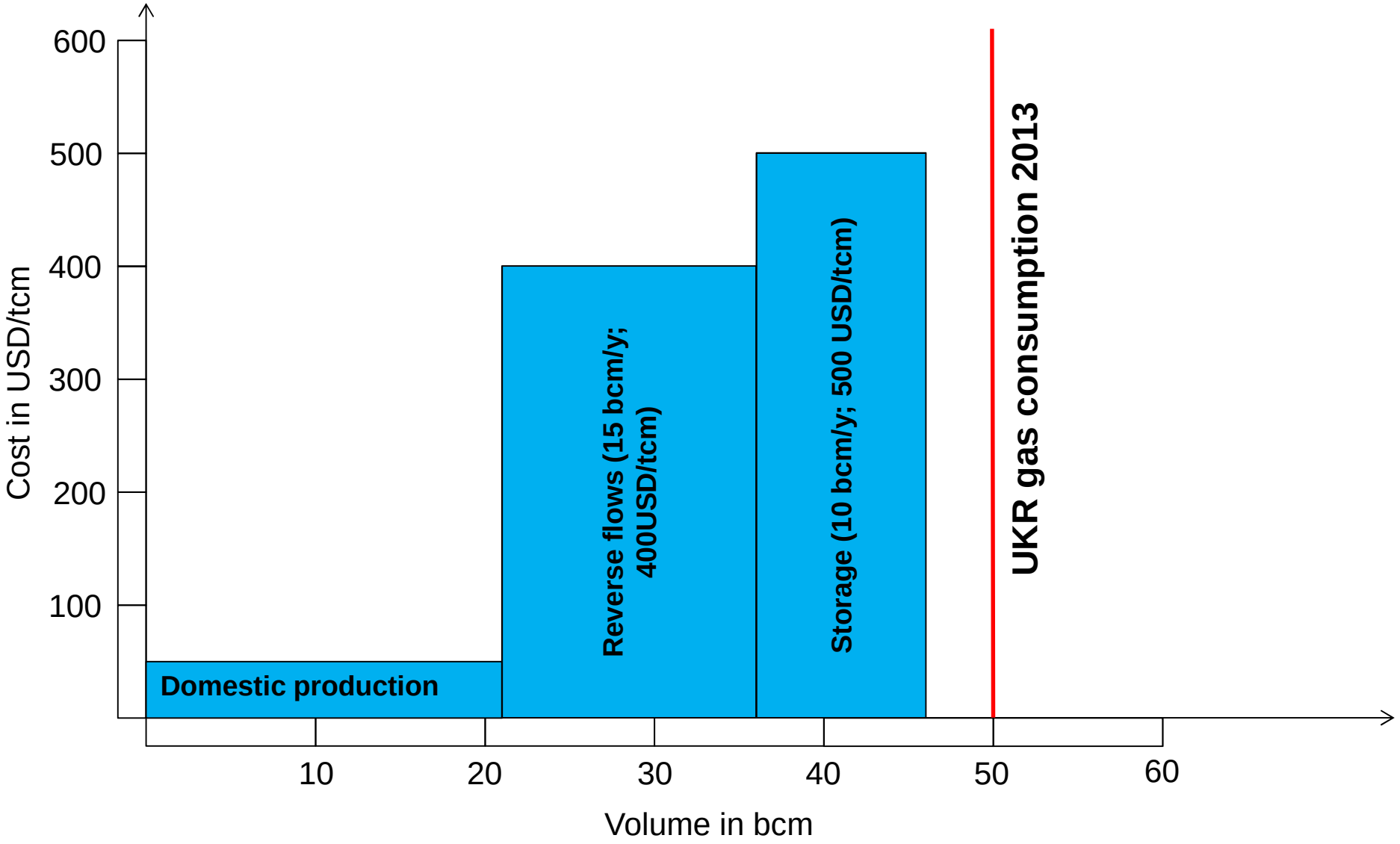


Source: gie

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Short-term gas supply without Russia

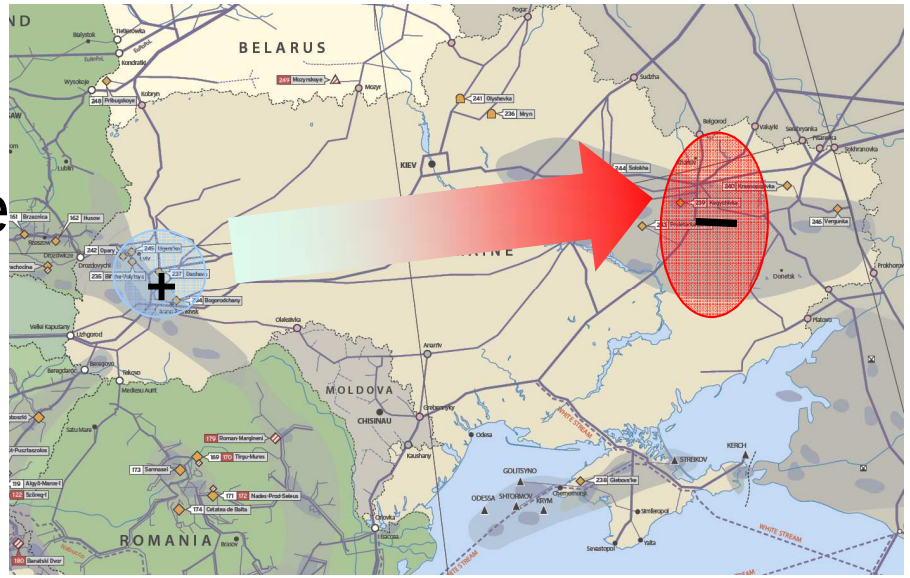


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Adapt gas transport system to changing flow patterns

- Reverse flows and tapping into West Ukrainian storages requires to bring the gas to the East
- In case of continued transit –> swap volumes
- In case of no volumes at the Russian border -> domestic physical reverse flows
  - Theoretically technically feasible
  - But, requires testing



Source:gie

=> Ukrtransgas needs to prepare

Ramp-up production



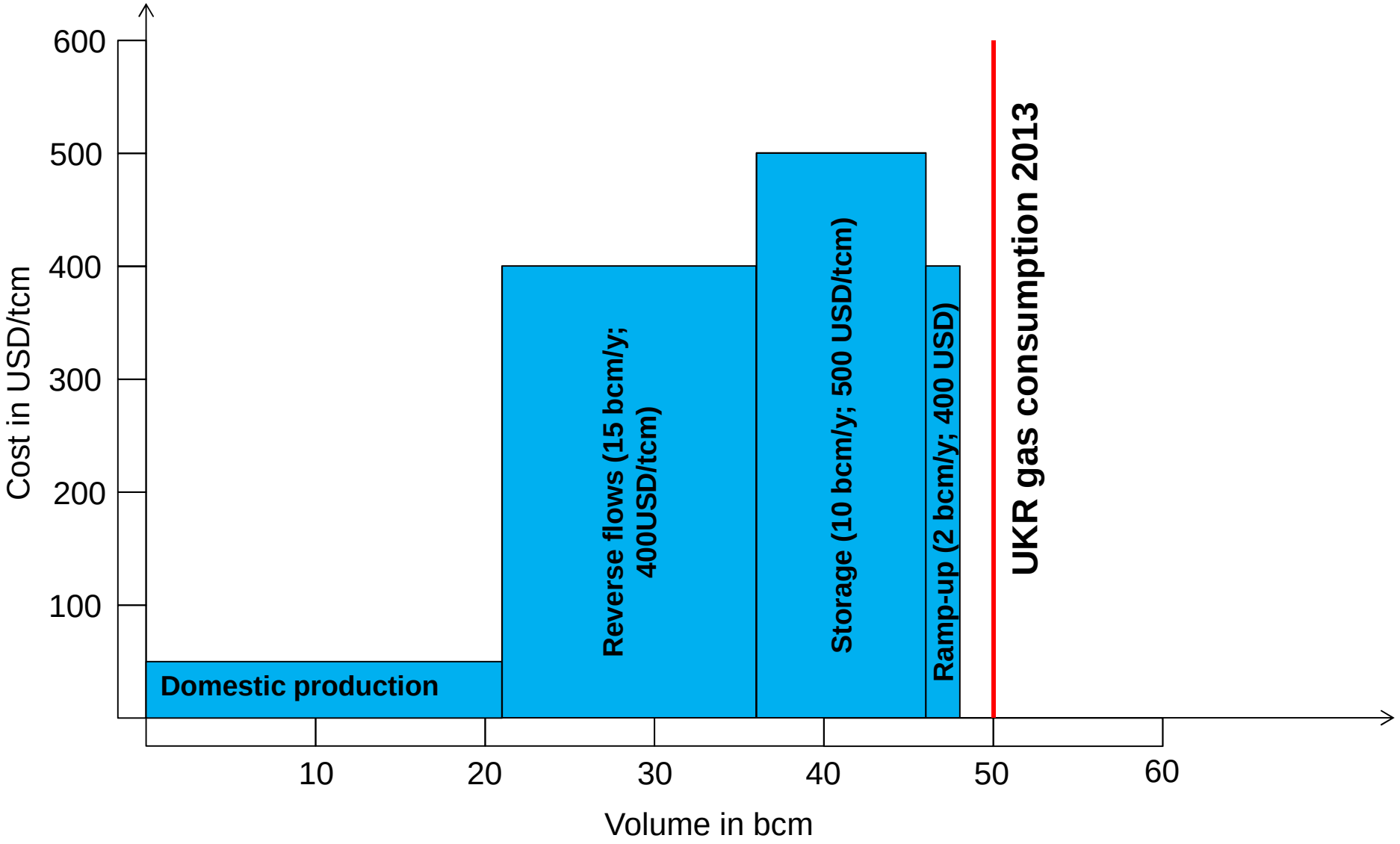
Source: IHS CERA.

- Price for domestic production ~ 50 USD/tcm
- Some technologies for ramp-up of existing fields available
  - Enhanced gas recovery (nitrogen injection)
  - End of field life techniques (foam injection, velocity strings, fresh water injection, jet pumps, plunger lift and mobile well head compressors)
- At 400 USD/tcm some 0-5 bcm/ might be deployable

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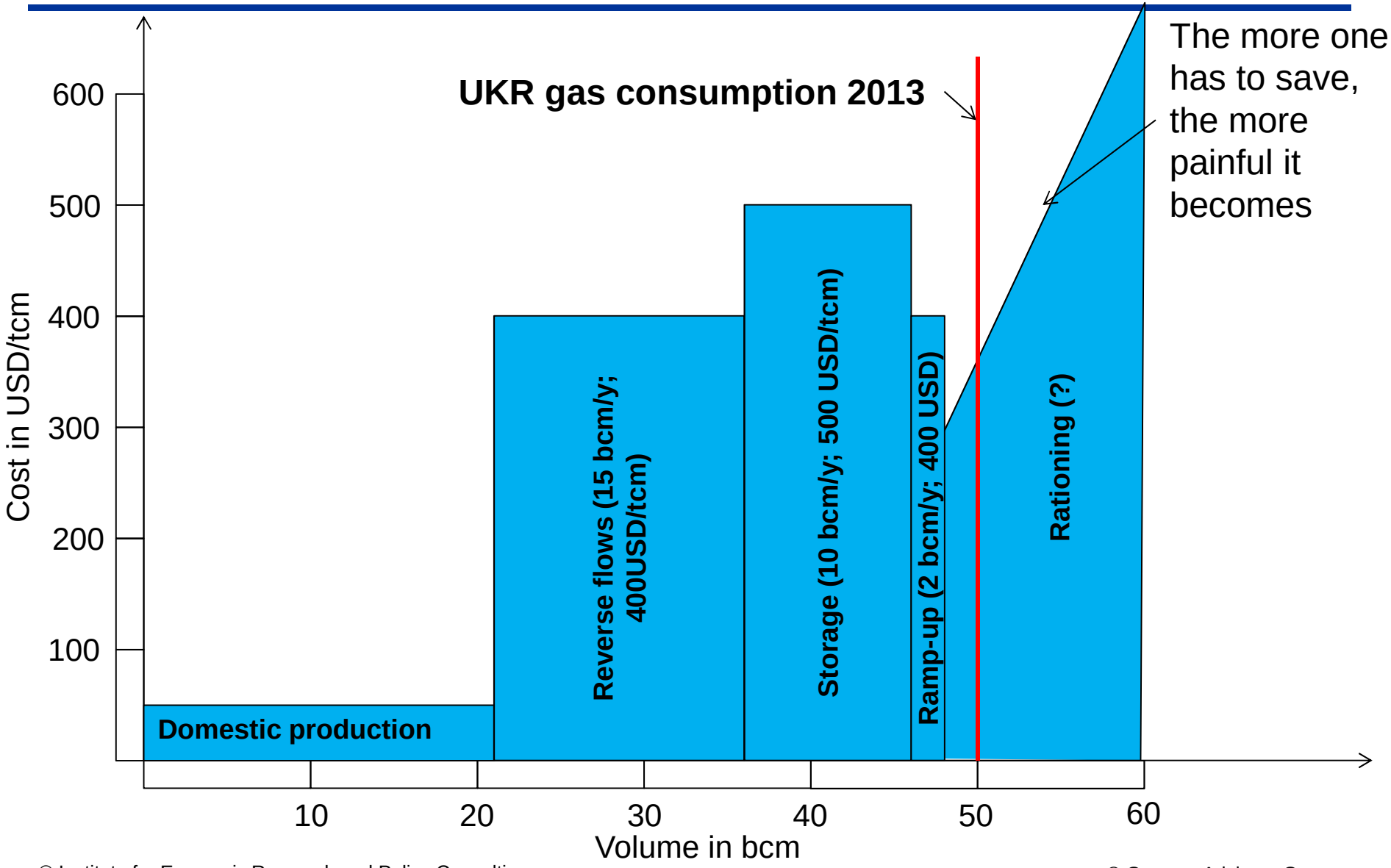
Prepare efficient rationing plans

- Shortfall of gas not impossible
- Emergency plan is important – also to know the own vulnerability
- Some gas-intensive industries (e.g., chemicals ~8 bcm) generate little or no value added at gas prices of > 400 USD/tcm

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Short-term gas supply without Russia

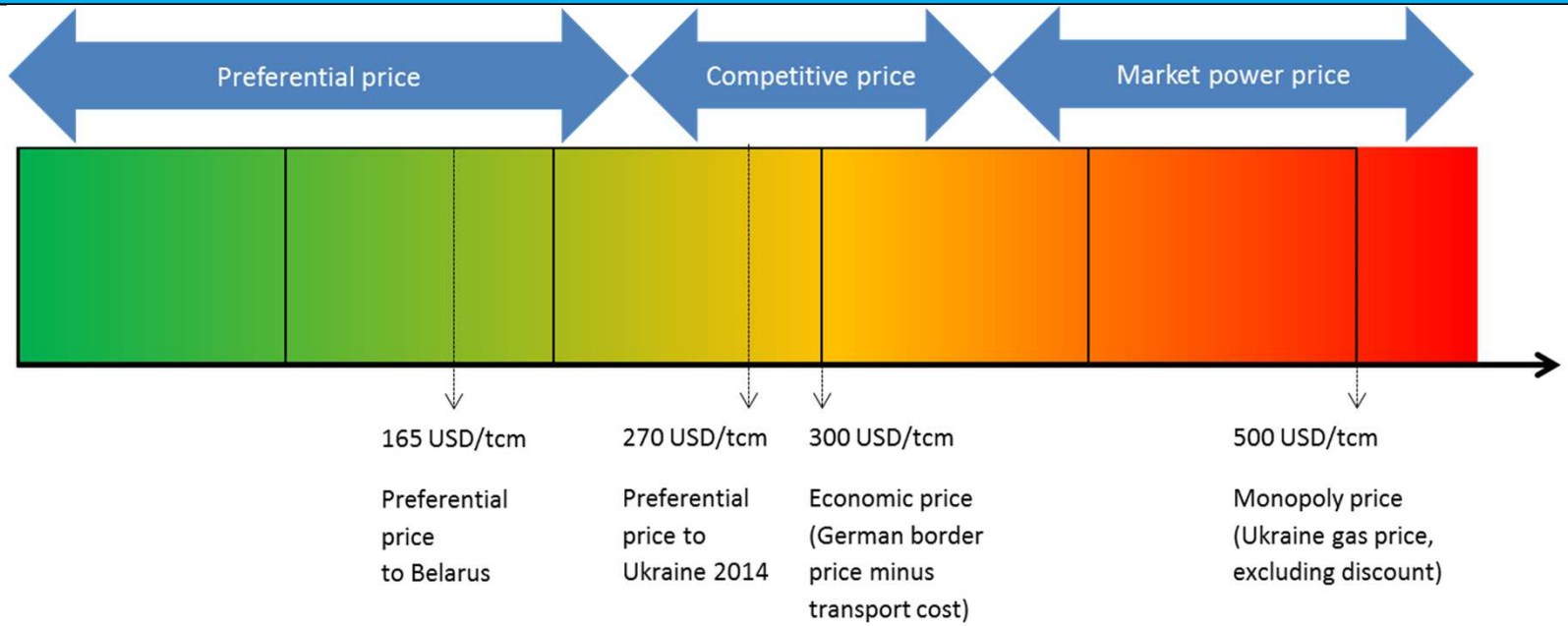


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But what about Russian gas?

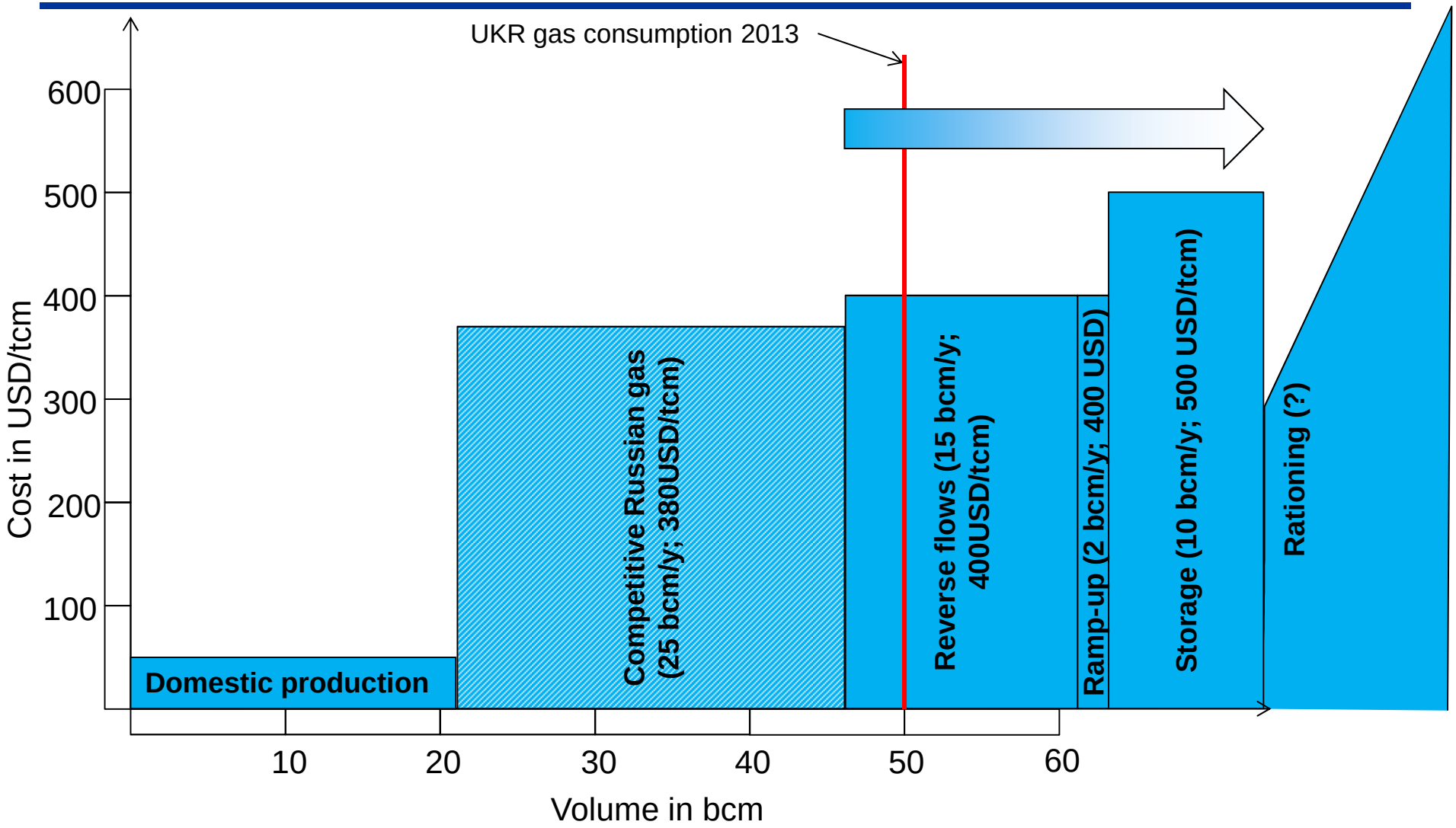
- If Russia agrees to deliver at 380 USD/tcm, many options are not commercial
- But Russia would only accept such a price if the options are available
- UKR should invest in the options, but not necessarily use them



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Short-term gas supply with Russia



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Digression: Option contracts

- If Russian gas price is sufficiently low, reverse flows make no commercial sense
- But, Ukraine will only get low prices if it can show it has alternatives
- Ukraine might need guarantees from Western suppliers that, they would deliver a certain volume at a certain price in certain circumstances (e.g., 10 bcm/y at 400 $/tcm if Russian price >450$/tcm)
- This might involve to pay the potential supplier an option premium for keeping supplies available
- Such option contracts can be competitively tendered

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Conclusion

- **If properly prepared**, Ukraine can get over the winter without Russian gas
- Cheapest approach: importing from Russia at a good price – but maintaining sufficient alternative options at a tolerable price -> **Paying for insurance!**
- In the medium to long-term additional cheaper options can be made available
- **Questions:**
- Is provoking a gas-transit-stop a good idea?

- A recent study on the supply options is available at: www.beratergruppe-ukraine.de/download/Beraterpapiere/2014/PP_01_2014_en.pdf

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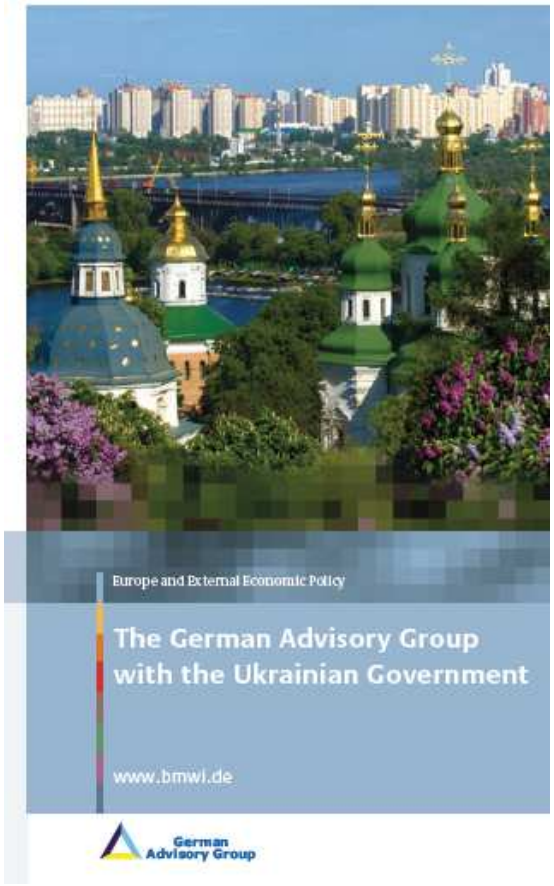
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