"Export options of Kazakh hydrocarbon resources"

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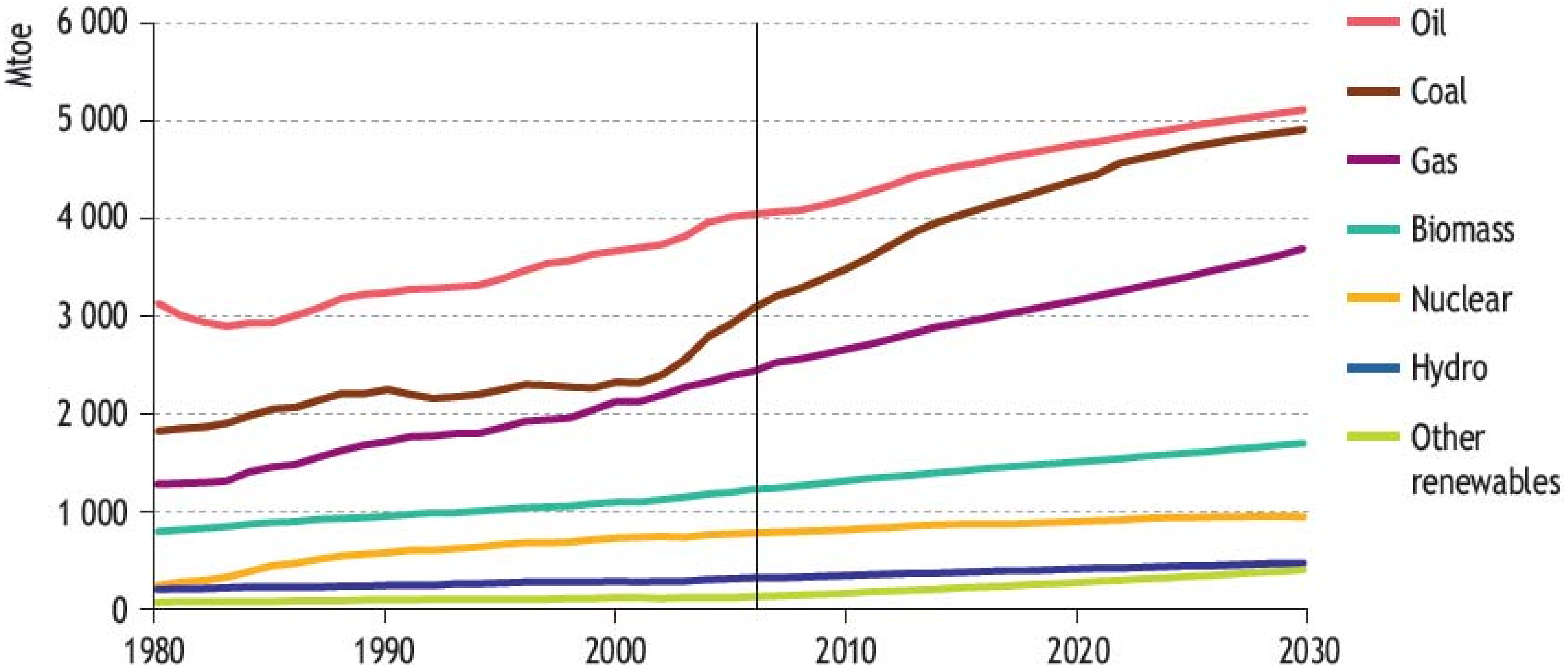
Oil as an important part of the world energy system

- The world is facing an increase in energy demand
- Oil demand could raise by 1%/year, from 4029 Mtoe in 2006 to 5109 Mtoe in 2030 (82,3 mb/day to 103,8 mb/day)

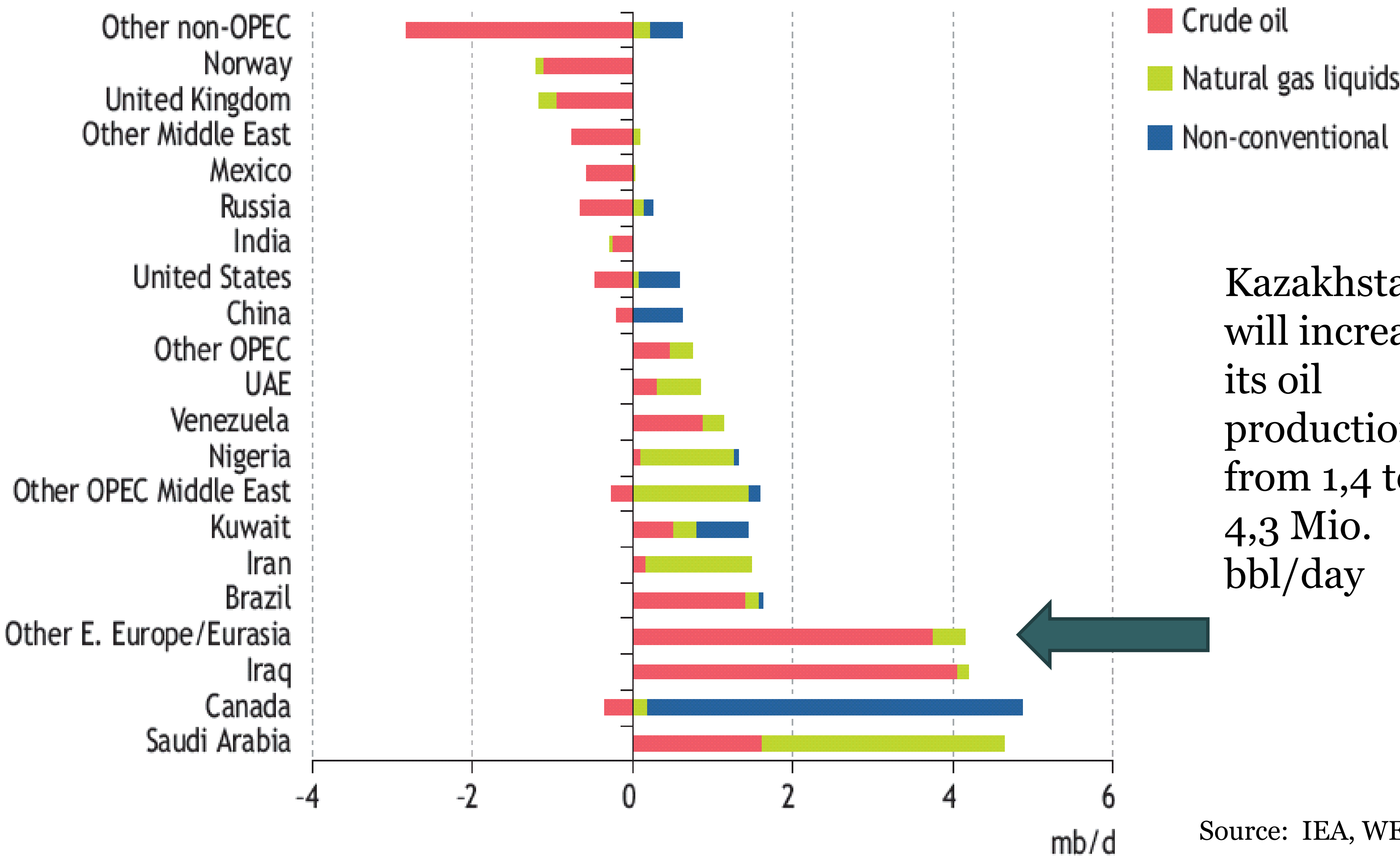


Source: IEA, WEO 2008

Importance of Central Asia

- IEA: CA is seen as a key region for alternative oil and gas supplies helping increase global energy security (Chart 2)
- Since 1990, for Oil&Gas majors CA was one of the last regions where major fields could still be found and where access was granted (Chart 3)
- Kazakhstan is the most important oil producer and the single relevant oil exporter in CA

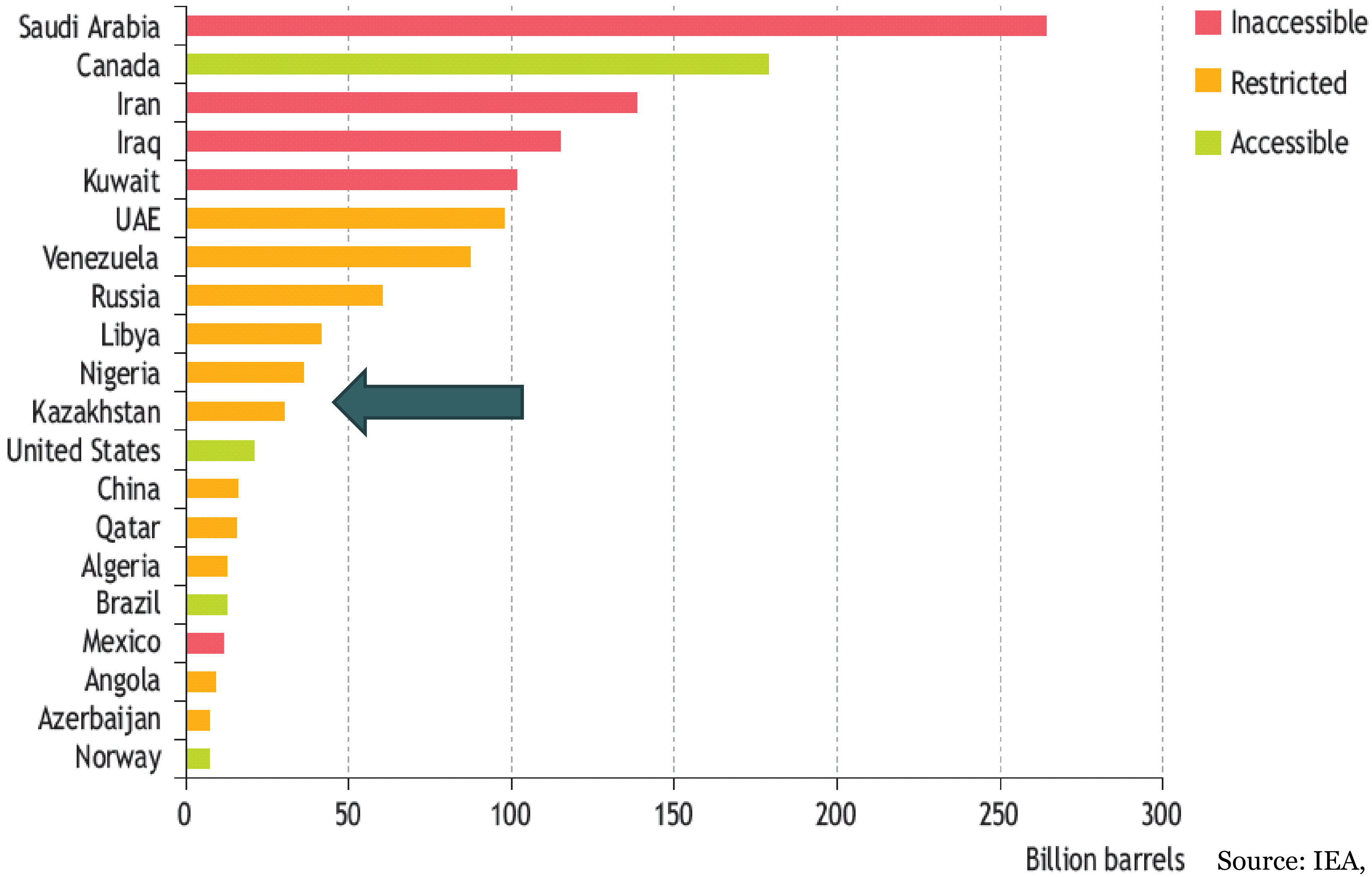
Change in oil production by country/ region, 2007-2030



Kazakhstan will increase its oil production from 1,4 to 4,3 Mio. bbl/day

Source: IEA, WEO 2008

Foreign company access to proven oil reserves (end 2007)

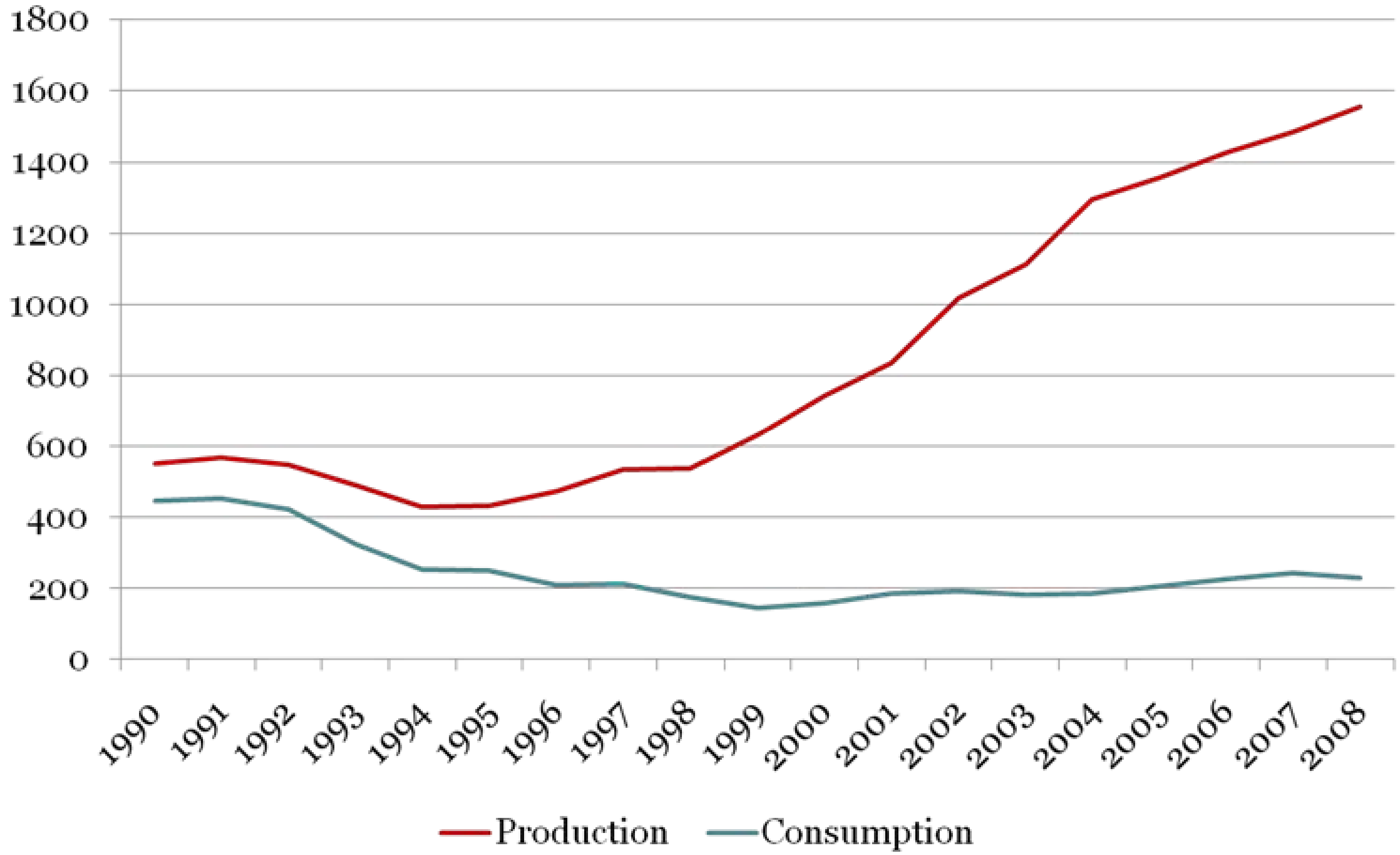


Source: IEA, WEO 2008

Importance of oil&gas for Kazakhstan

- Fast growing transition economy
- Oil&Gas sector:
  - Roughly 30% of GDP
  - Over 50% of export revenues
  - 40% of government revenues
  - Future social and infrastructural development programs are based on expected revenues from the extractive industry

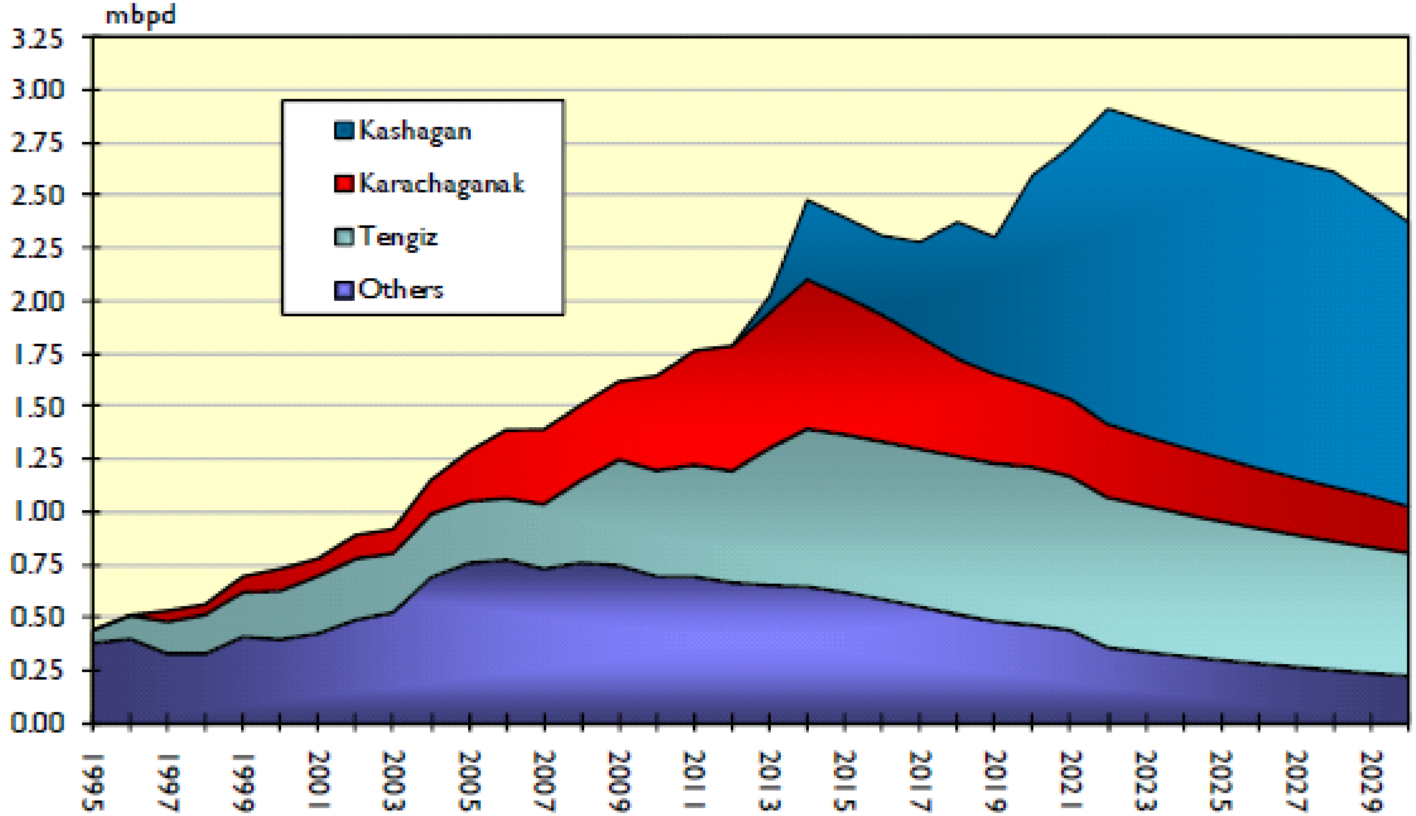
Kazakh oil production (1000 bbl/day)



Source: BP, 2009

Production outlook

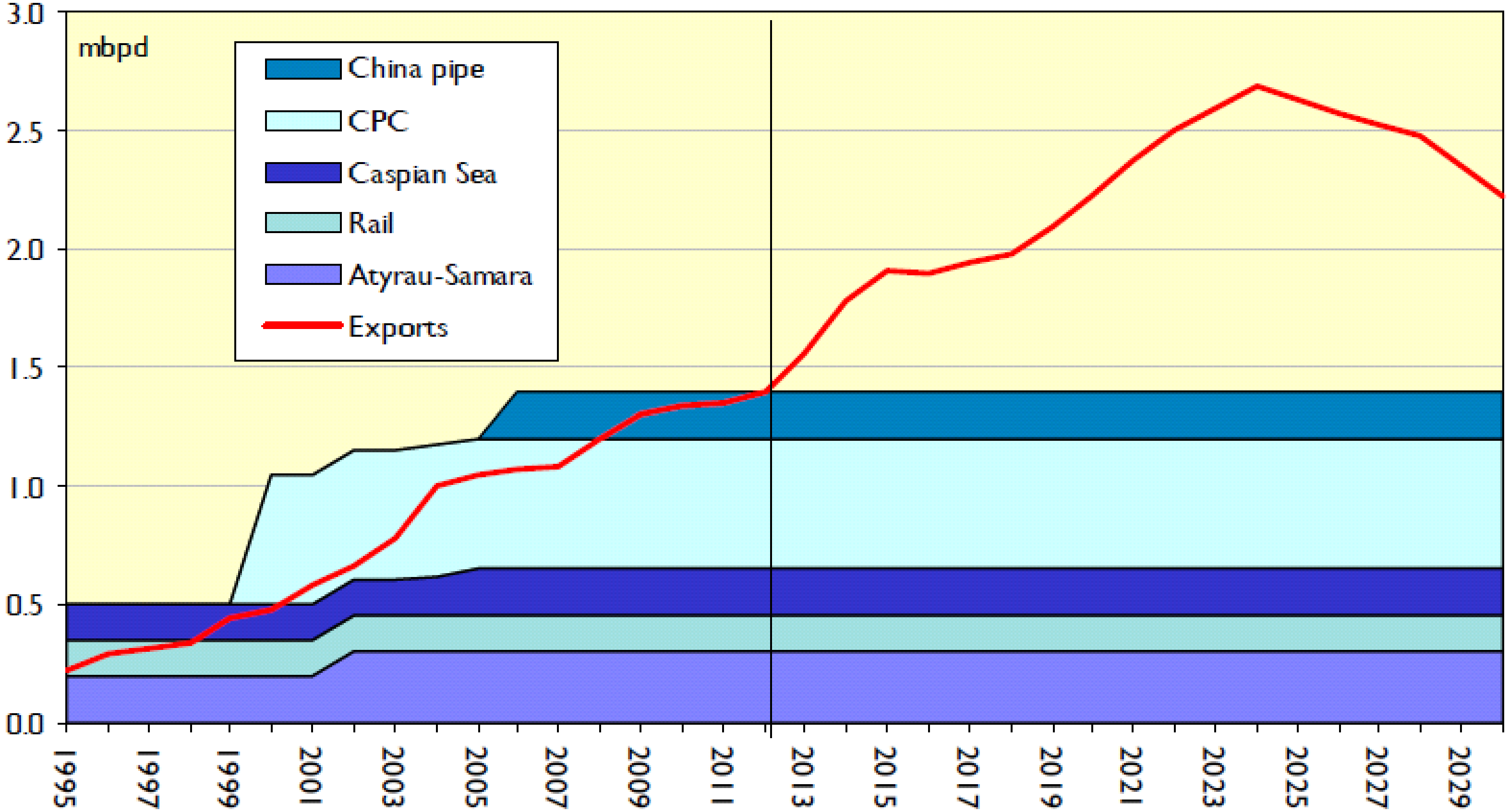
Kazakhstan expects a significant production increase in the upcoming years, as its major oil fields will get online or expand production



Source: CGES

Existing export capacity

- Main challenge for future production plans is the insufficient export capacity



Source: CGES

Main problems

- Land locked state - dependence on transit countries
- Soviet infrastructural legacy
- Corruption, changing investment and legal conditions
- Attempts to strengthen the role of the state in oil and gas sector - renationalization
- High number of involved private and state actors complicates decision making
- Rent-seeking behavior connected with transportation
- Foreign powers interests

- Kazakhstan is trying to pursue a „multi-vector energy diplomacy“ = building up a diversified export infrastructure & participation of multiple investors
  - Decreases dependence on a single country
  - Increases bargaining power
  - Success of this policy strongly dependents on external actors behavior, which cannot be influenced by Kazakhstan itself

Caspian region oil pipelines

Source: IEA

Route	kb/d	mt/y	Sources of Oil
Tengiz – Novorossiysk (CPC)	652	32,6	Kazakhstan (25,6) Russia (7,0)
Baku – Tbilisi – Ceyhan (BTC)	1000	50	Azerbaijan Kazakhstan (5)
Atyrau – Samara	320	16	Kazakhstan
Baku – Batumi	136	6,8	Azerbaijan (4,4) Kazakhstan (2,4)
Baku – Novorossiysk	134	6,7	Azerbaijan (2,3) Kazakhstan (4,4)
Baku - Supsa	145	7,5	Supsa terminal is not used for Kazakh oil
Neka (delivery by barge)	112	5,6	Turkmenistan (3,5) Kazakhstan (2,1)
Tengiz – Odessa (Rail)	100	5	Kazakhstan
Kenkyak - Orsk	130	6,5	Kazakhstan
Makhachkala – Druzba System	100	5	Kazakhstan
Atasu - Alashankou	200	10	Kazakhstan Russia

Transport costs

	USD/tonne
Atasu-Alanshankou	16,1
Aktau-Neka	24,5
Aktau – BTC (shareholder)	29,1
CPC	30,8
Aktau-Baku-Batumi	37,6
Aktau – BTC (non-shareholder)	37,9
Rail (Iran)	48,0
Atyrau-Samara-Novorossiysk	61,7
Aktau-Makhachkala-Novorossiysk	70,3
Atyrau-Samara-Primorsk	71,7
Atyrau-Samara-Odessa	78,8
Rail (Atyrau-Europe)	93,1

1 t = 7,33 bbl

Source: PFC Energy, 2006

	Kashagan	Karachaganak	Tengiz	BTC	CPC
BG Group		32,50%			2,00%
ExxonMobil	16,81%		25,00%		7,50%
Lukoil		15,00%	2,70%		6,75%
Shell	16,81%				3,68%
Total	16,81%			5,00%	
ConocoPhillips	8,40%			2,50%	
Inpex	7,55%			2,50%	
BP			2,30%	30,10%	5,75%
Chevron		20,00%	50,00%	8,90%	15,00%
ENI	16,81%	32,50%		5,00%	2,00%
StatoilHydro				8,71%	
TPAO				6,53%	
Itochu				3,40%	
Rosneft					3,82%
KazMunaiGaz	16,81%		20,00%		20,75%
SOCAR				25,00%	
Russia					31,00%
Others				2,36%	1,75%

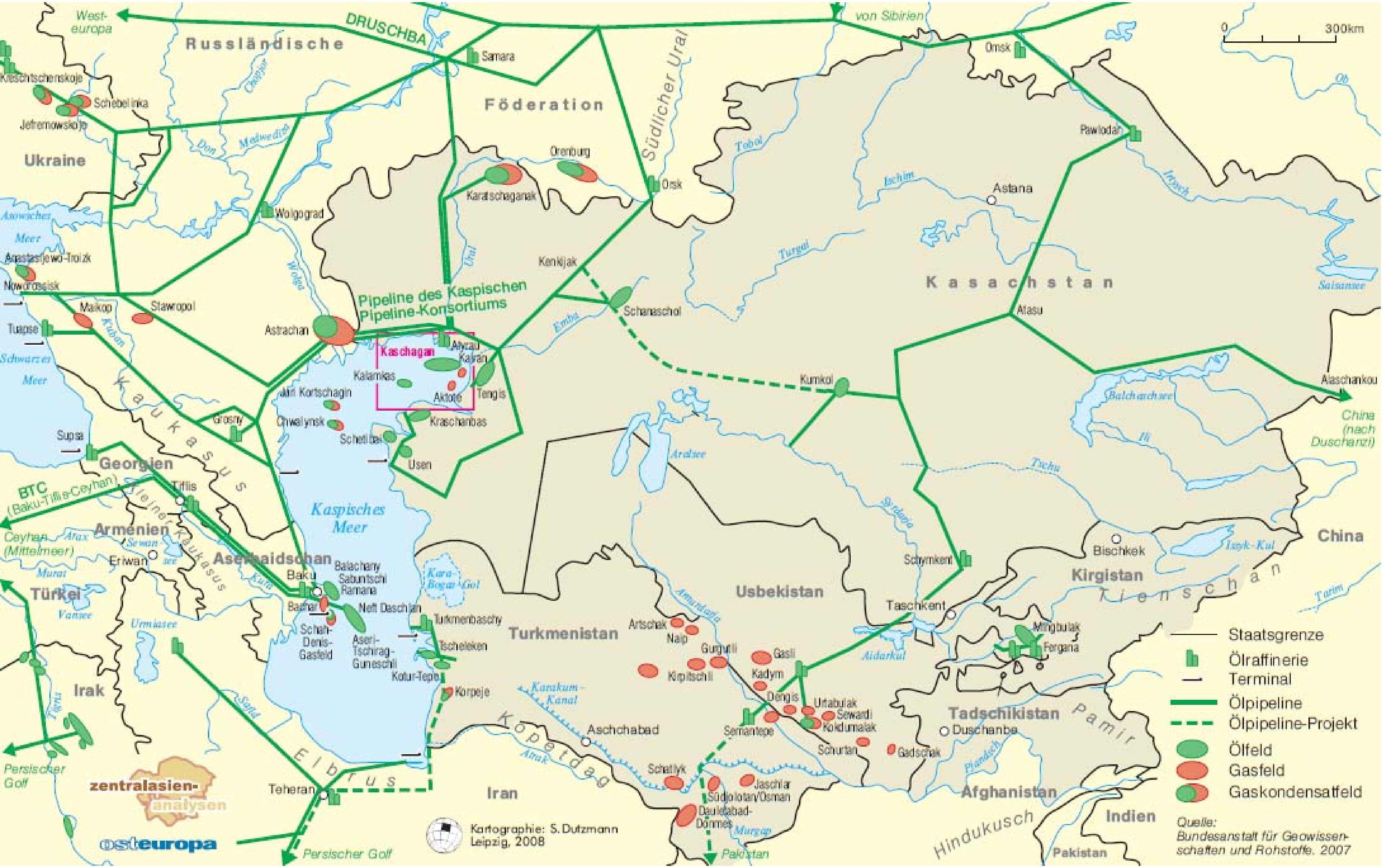
Existing and potential routes

Russian routes

- Atyrau –Saransk – Samara
  - Currently 17 mt/y ; expansion to 26 mt/y until 2015 was agreed
- Kenkyak-Orsk Pipeline – 130 kb/d (6,5 mt/y) – crude is destined for the Orsk refinery
- Aktau – Makhachkala – Novorossiysk (by barge, 4,5 mt in 2008)
- Railway transport to Russia/Ukraine (2,8 mt in 2007)
- CPC (32,5 mt/y, expansion to 1,34 mt/y is negotiated; not part of Transneft system)
  - Currently 32,5 mt/y; agreement about expansion to 67 mt/y by mid 2014 is expected until 2010

Chinese route

- Kazakhstan – China
  - 10 mt/y or 200 kb/d; sources: CNPC´s Aktobe field + CNPC´s and KMG Kumkol fields + Russian oil (Gazpromneft and TNK-BP)
  - Possible expansion to 400 kb/d by 2010/11
  - Problem: monopsony position of China (PetroChina), lower netbakcs



West-europa
DRUSCHBA
Russländische Föderation
Samara
von Sibirien
Omsk
Ob
0 300km
Südlicher Ural
Schebelinka
Jefremowskoje
Ukraine
Don
Medwediza
Orenburg
Karatschaganak
Orsk
Tobol
Pawlodar
Ischim
Irtysch
Astana
Wolgograd
Asowsches Meer
Anastasjewo-Troizk
Noworossijsk
Wolga
Ural
Kenkijak
Turgai
Kasachstan
Salsansee
Pipeline des Kaspischen Pipeline-Konsortiums
Schanaschol
Atasu
Maikop
Stawropol
Astrachan
Tuapse
Kuban
Emba
Kaschagan
Atyrau
Kairan
Kalamkas
Tengis
Aktote
Kumkol
Alaschankou
Schwarzes Meer
Kaukasus
Balchaschsee
Juri Kortschagin
Chwalynsk
Kraschanbas
Grosny
Schetibai
Usen
China (nach Duschanzi)
Ili
Supsa
Georgien
Aralsee
Tschu
Tiflis
BTC (Baku-Tiflis-Ceyhan)
Kaspisches Meer
Syrdarja
Kleiner Kaukasus
Armenien
Ceyhan (Mittelmeer)
Sewan-see
Eriwan
Aserbaidschan
Balachany Sabuntschi Ramana
Kara-Bogas-Gol
Bischkek
Issyk-Kul
China
Murat
Baku
Kura
Amudarja
Usbekistan
Kirgistan
Tienschan
Tarim
Türkei
Bachar
Neft Daschlari
Turkmenbaschy
Taschkent
Schymkent
Vansee
Urmiasee
Schah-Denis-Gasfeld
Aseri-Tschirag-Guneschli
Tscheleken
Turkmenistan
Artschak
Naip
Gurgutli
Gasli
Kadym
Kirpitschli
Aidarkul
Mingbulak
Fergana
Kotur-Tepe
Korpeje
Karakum-Kanal
Dengis
Urtabulak
Sewardi
Kokdumalak
Semantepe
Schurtan
Gadschak
Tadschikistan
Duschanbe
Pamir
Irak
Tigris
Safid
Kopetdag
Aschchabad
Atrak
Persischer Golf
Elbrus
Teheran
Iran
Schatlyk
Jaschlar
Südjolotan/Osman
Dauletabad-Dönmes
Murgap
Pjandsch
Afghanistan
Indien
Hindukusch
Pakistan
Staatsgrenze
Ölraffinerie
Terminal
Ölpipeline
Ölpipeline-Projekt
Ölfeld
Gasfeld
Gaskondensatfeld
zentralasien-analysen
osteuropa
Kartographie: S. Dutzmann Leipzig, 2008
Quelle: Bundesanstalt für Geowissenschaften und Rohstoffe. 2007

Caucasus routes

- Baku – Batumi (140 kb/d)
- Baku – Novorossyisk (Transneft system) (100 kb/d)
- Rail to Batumi, Kulevi and Poti (200 kb/d)
- Aktau – Baku – BTC (current volumes 98 kb/d)
- Planned: Kazakhstan-Caucasus-Transport-System (KCTS) in combination with BTC or other routes via Azerbaijan (initial 500 kb/d, later up to 1,2 or 1,8 mb/d)

Other routes

- Aktau – Neka (ca. 4 mt by barge, swap)
- Proposed: Kazakhstan – Turkmenistan – Iran
  - 1 mb/d; 1,2 bn USD – US sanctions hinder materialization
- Possible: Kazakhstan–Turkmenistan–Afghanistan–Pakistan (-India)
  - Missing political stability


RUSSIA
KIEV
Karachaganak
Boundary representation is not necessarily authoritative.
Yuzhnyy-Brody
180,000 to 240,000 b/d
Karachaganak-Atyrau
(planned) 180,000 b/d
Atyrau-Samara
300,000 b/d
KAZAKHSTAN
MOLDOVA
CHISINAU
UKRAINE
Caspian Pipeline
Consortium (CPC) Project
560,000 b/d (first stage)
Atyrau
Kazakhstan-China
(proposed)
ROMANIA
Sea of
Azov
Tikhoretsk
Kashagan
Tengiz
Aral
Sea
BUL.
Novorossiysk
Northern Early
100,000 b/d
Aqtau
(Aktau)
UZBEKISTAN
Black Sea
Western Early
115,000 b/d
Makhachkala
Caspian
Sea
GEORGIA
Major crude oil export pipeline
Oil pipeline planned, proposed, or under construction
Oil, gas, and condensate field
Sup'sa
T'BILISI
Baku-T'bilisi-Ceyhan
(planned) 1 million b/d
ARMENIA
AZERBAIJAN
BAKU
Guneshli
Deep
Chirag
Azeri
TURKMENISTAN
YEREVAN
Erzurum
Horasan
Kazakhstan-Iran
(proposed)
0 100 200 Kilometers
0 100 200 Miles
TURKEY
Ceyhan
Neka Port
Neka-Tehran
50,000 b/d
(first stage)
SYRIA
IRAQ
IRAN
TEHRAN

Source: EIA

Interests of main actors

- Russia
  - Commercial:
    - limit non-Russian supplies moving east to China at a price lower than an acceptable Russian negotiated price
    - evolution of alternative routes to the western markets - prevent competition on consumer markets and lower the volumes of own sales
    - postpone development of cost intensive fields (Barents and Kara Seas)
    - Competition at the Bosporus
  - Geopolitical: CA is perceived as Russian zone of influence; energy cooperation is seen as an instrument of political integration in the post-soviet area
- China – covering its energy needs (global geopolitical context – imports by tankers pass the Indian Sea and the Strait of Malacca which are controlled by US-navy)
- USA – support the independence of the CA states as part of its politics toward Russia (geopolitics)
  - Securing contracts for its own companies
  - Strongly preferring the Azerbaijan-Georgia route, financial support for port facilities at Aktau and Dubendi (Azerbaijan)
  - Paradoxically the US interference in Caucasus (Georgia) to support and strengthen the regime independence leads to counter actions from Moscow, which in the end lower stability and increase risks for transport routes crossing the Caucasus

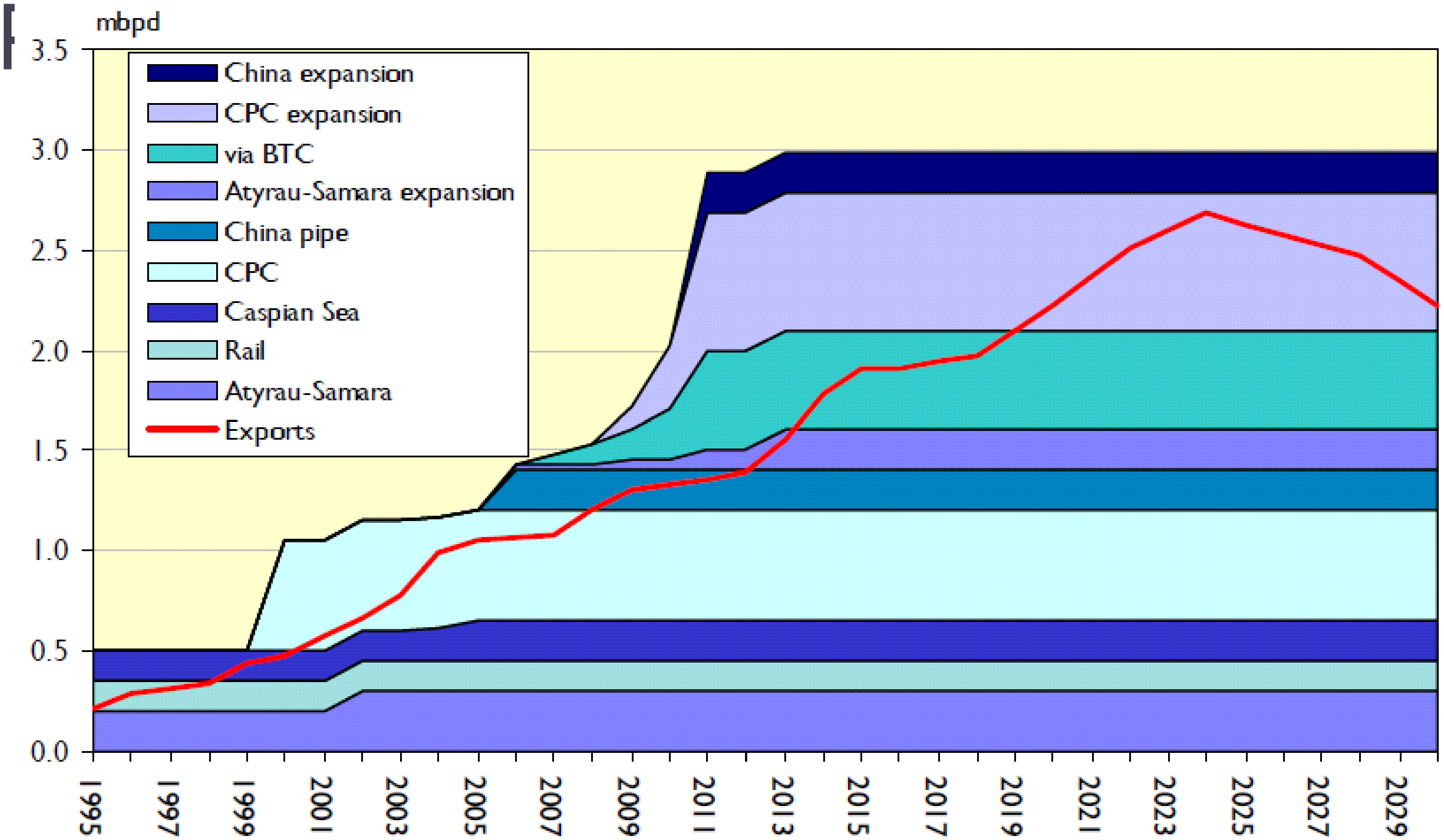
Struggle among partners?

- Competition between Azerbaijan and Kazakhstan for the control of the Caspian-Caucasus route for Kazakh oil exports
  - Aktau-Baku-Black Sea (Batumi, Poti, Kulevi)
- Competition on sea between Kazakh and Azeri shipping companies
  - KazMorTransFlot vs. Caspar and Cross Caspian Oil and Gas
  - Discriminatory tariffs for Kazakhstani vessels (36 000 vs. 12500 USD)
  - Companies try to prevent third party access = higher transport tariffs
- Rail operators have an intransparent ownership structure and are linked to then Azerbaijani elite
- Competition among terminals in Georgia
  - Batumi belongs to KMG
  - Kulevi belongs to SOCAR

Concluding remarks

- Kazakh oil will play an important role for future oil supply
- Securing sufficient export capacity is a priority challenge
- High number of involved state and private actors complicates effective decision making
- Competition exists also on secondary routes
- CPC expansion and the creation of the KCTS should constitute main future export channels – this is also in accordance with the multi-vector energy diplomacy of Kazakhstan and leads to more energy security

Thank you for attention


mbpd
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
China expansion
CPC expansion
via BTC
Atyrau-Samara expansion
China pipe
CPC
Caspian Sea
Rail
Atyrau-Samara
Exports
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029

Source:
CGES