

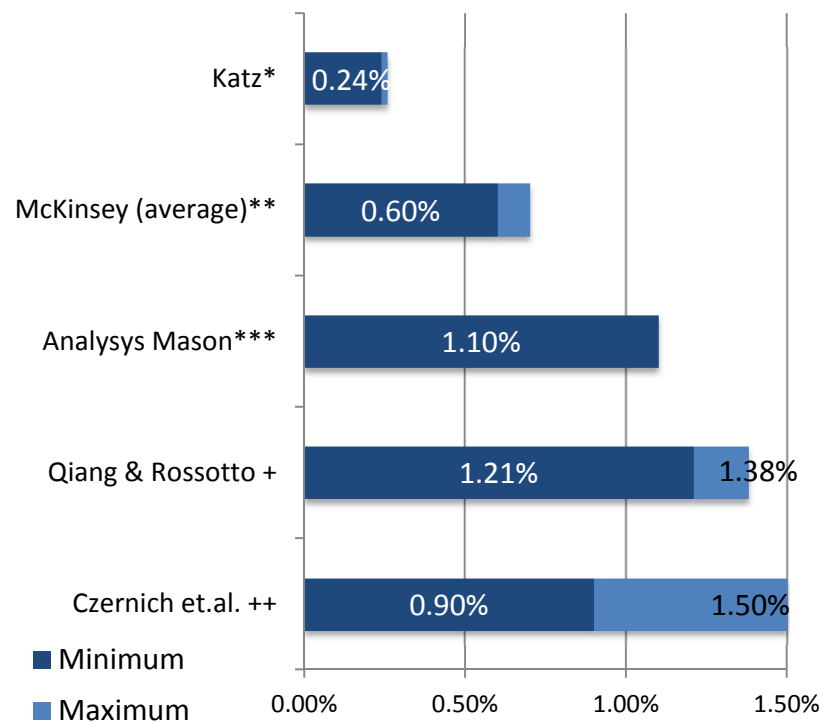
# Broadband: Key Infrastructure for Central Asia's Competitiveness and Access to Markets

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# Broadband drives growth and jobs and opens up new opportunities

## Impact on GDP of an increase of 10% in broadband penetration



Source: Katz (2010); Analysys Mason (2010); Qiang & Rossotto (2009); and Czernich et.al. (2009)

\* Only includes Germany. \*\* Average of 5 country studies, including the UK, Australia, New Zealand, Malaysia, and a Middle Eastern country, from various sources (2003 and 2004) and Qiang and Rossotto 2009 study; \*\*\* Limited to mobile broadband impact in India; + various countries, upper range applies to developing countries and lower range to developed countries; ++ sample of 20 OECD countries.

## Estimated broadband employment creation multipliers

Study	Year	Scope	Type I	Type II	Network Effect
Crandall et.al.	2003	US	...	2.17	...
Katz et.al.	2008	CH	1.4	...	...
Atkinson et.al.	2009	US	...	3.60	1.7
Katz et.al.	2009a	US	1.83	3.43	...
Libenau et.al.	2009	UK	...	2.76	...
Katz et.al.	2009b	DE	1.45	1.93	...

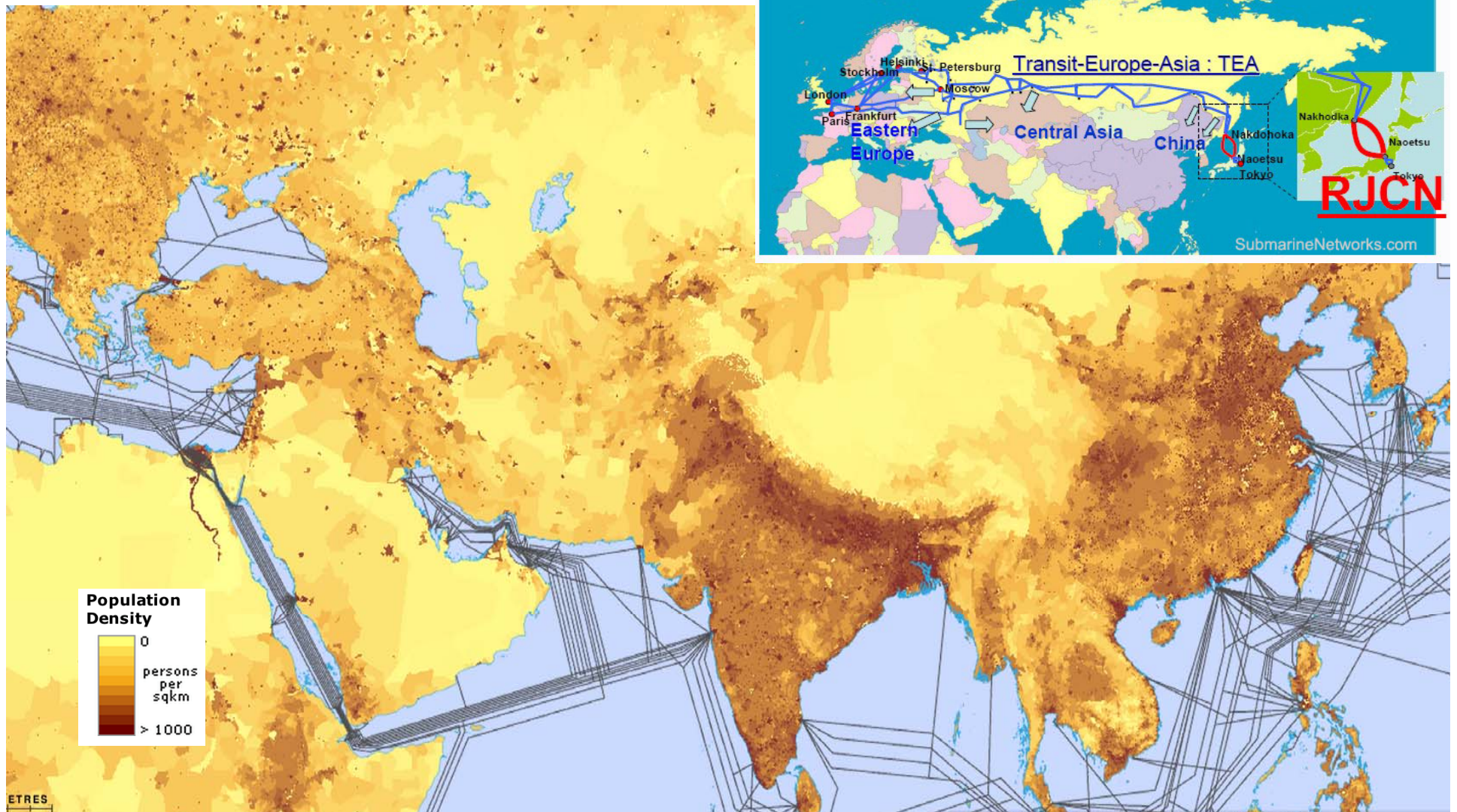
### Impact of BB investment is well established.

- 10% annual broadband penetration increases annual GDP growth by 0.24-1.5 p. p., and creates 1.5 to 4.5 indirect jobs for each job created.

Source: Katz (2009), citing Crandall et.al. (2003); Katz et.al. (2008); Atkinson et.al. (2009); Katz et.al. (2009a); Libenau et.al. (2009); and Katz et.al. (2009b)

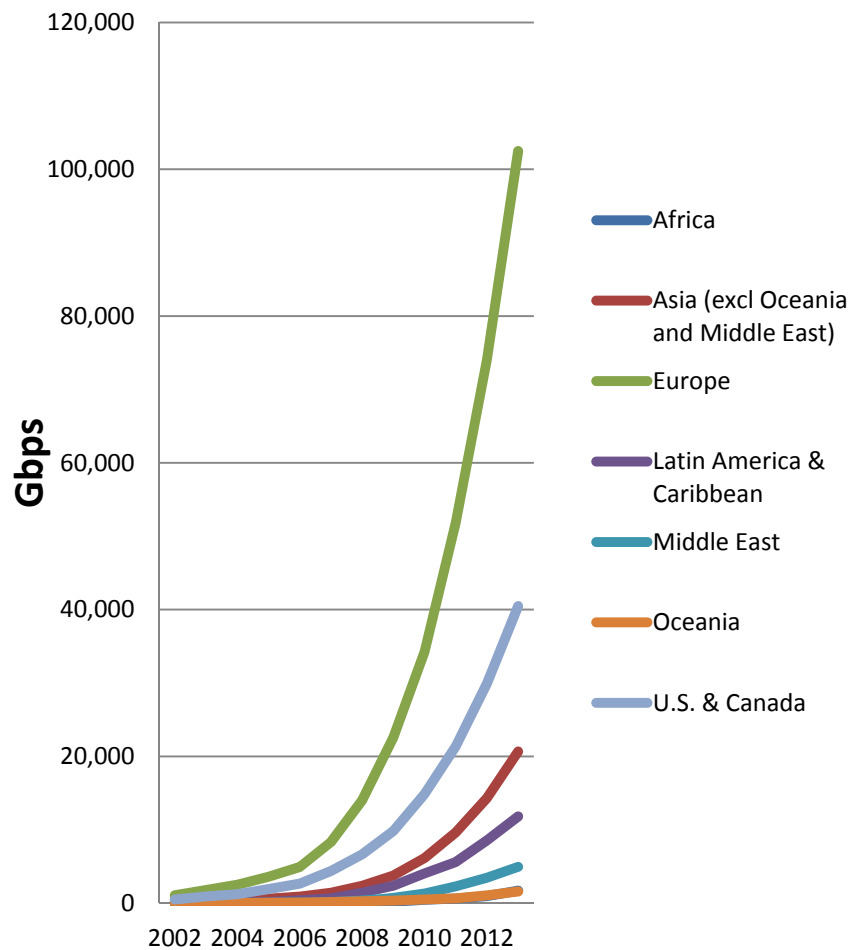
Note: Type I (Direct+Indirect)/Direct; Type II (Direct+Indirect+Induced)/Direct

International connectivity to the region is provided through submarine cables



# Europe-Asia data transit flow is the fastest growing data market

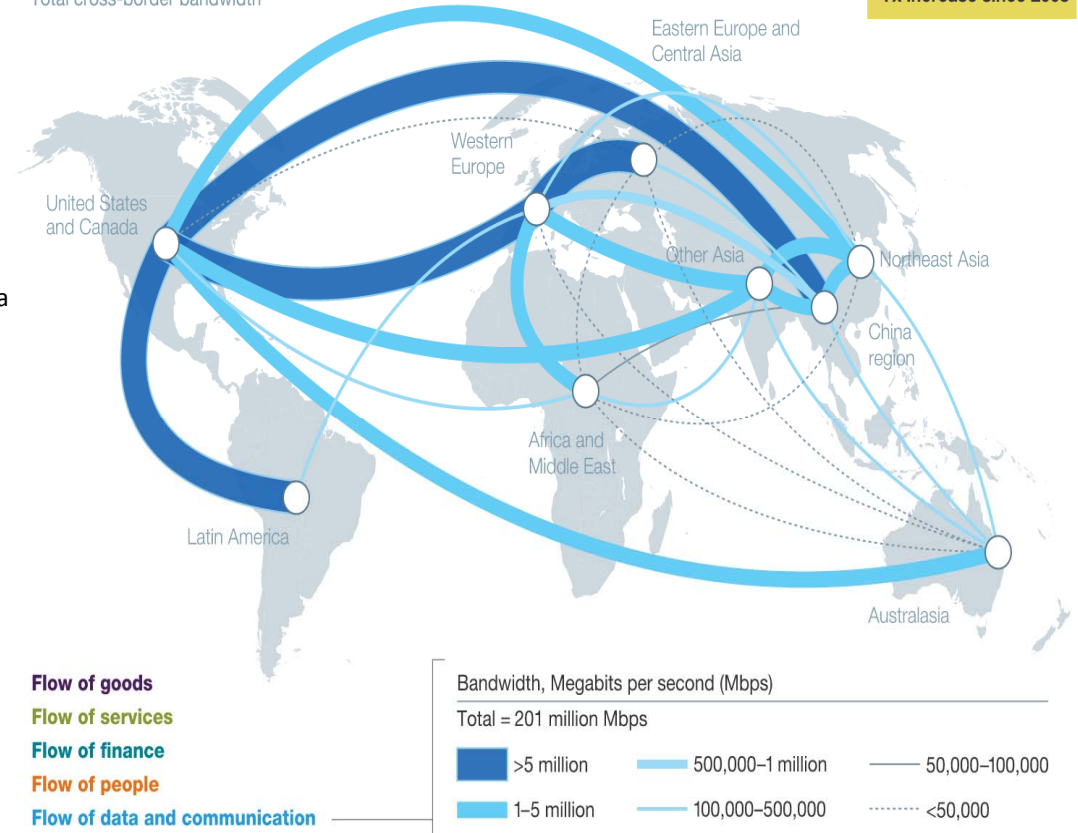
International Bandwidth Usage by Region, 2003-2013



Flow of data and communication in 2013

Total cross-border bandwidth

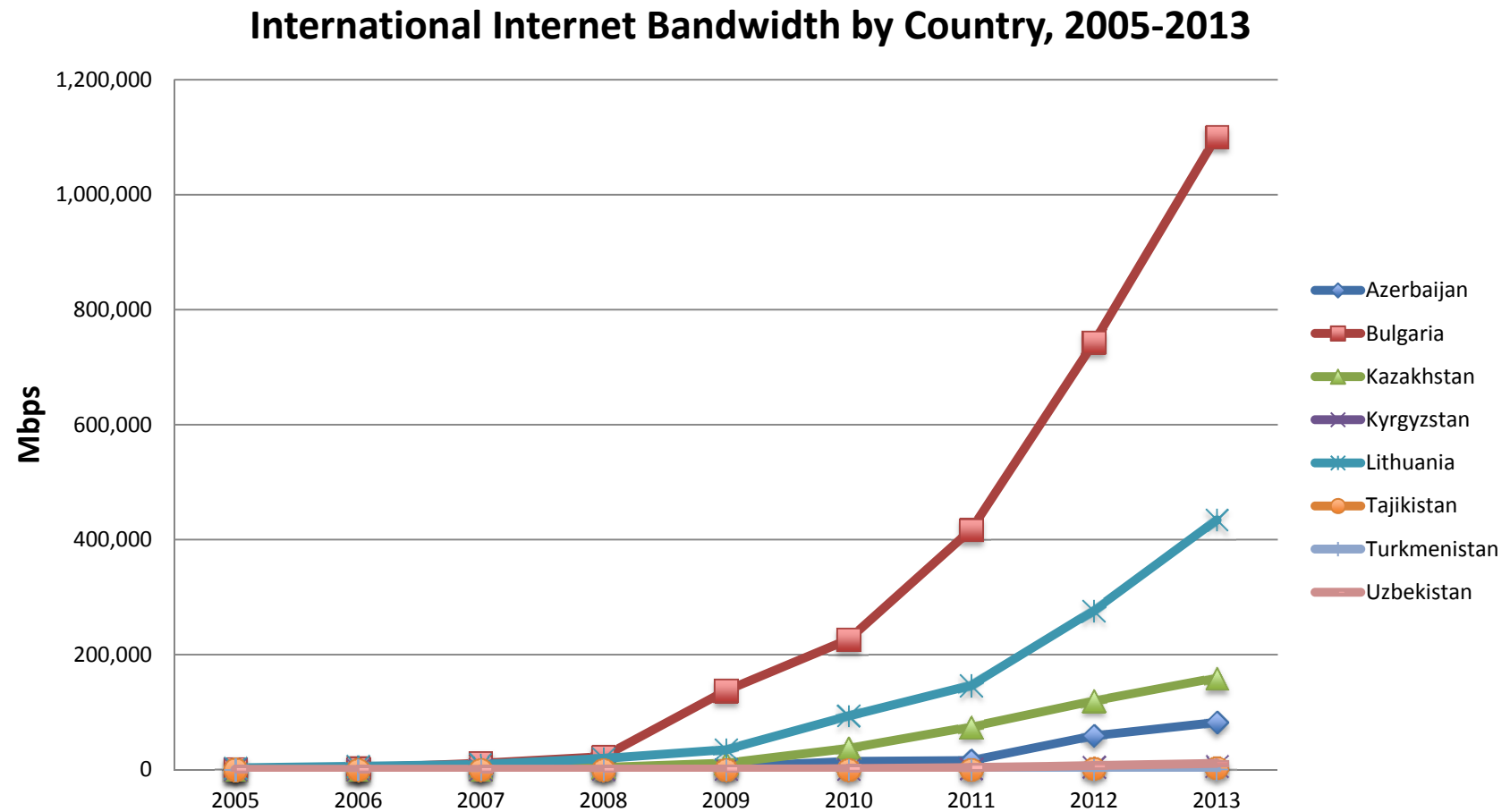
7x increase since 2008



Source: TeleGeography; World Trade Organization; McKinsey Global Institute analysis



# Central Asia significantly lags behind Eastern European countries in terms of international Internet capacity



[https://www.yunbaogao.cn/report/index/report?reportId=5\\_5435](https://www.yunbaogao.cn/report/index/report?reportId=5_5435)

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# Penetration is the key driver of broadband adoption growth and price reduction

## Penetration in case of fixed and mobile broadband, 2014 (ITU)

