

- S. Kumagai, I. Isono, T. Gokan,  
K. Hayakawa, S. Keola and K. Tsubota      IDE-JETRO

# IDE - GSM: Geographical Simulation model meets China-Kyrgyzstan- Uzbekistan Railway.

# IDE-GSM

- IDE-GSM is a simulation model based on **Spatial Economics**, and **New Economic Geography**.
  - To simulate the dynamics of **population** and **industries** for long-term
  - To analyze the effects of **infrastructure projects** and **customs facilitation** on the economic activities at **prefecture level**: not nation but *region*.

# GSM is NOT for Ordinary Cost/Benefit Analysis

Cost Benefit Analysis for Transport Infrastructure

## **Costs:**

Appropriation of Land, Construction and Maintenance, etc.

## **Benefits**

**Private** : Toll/Fare

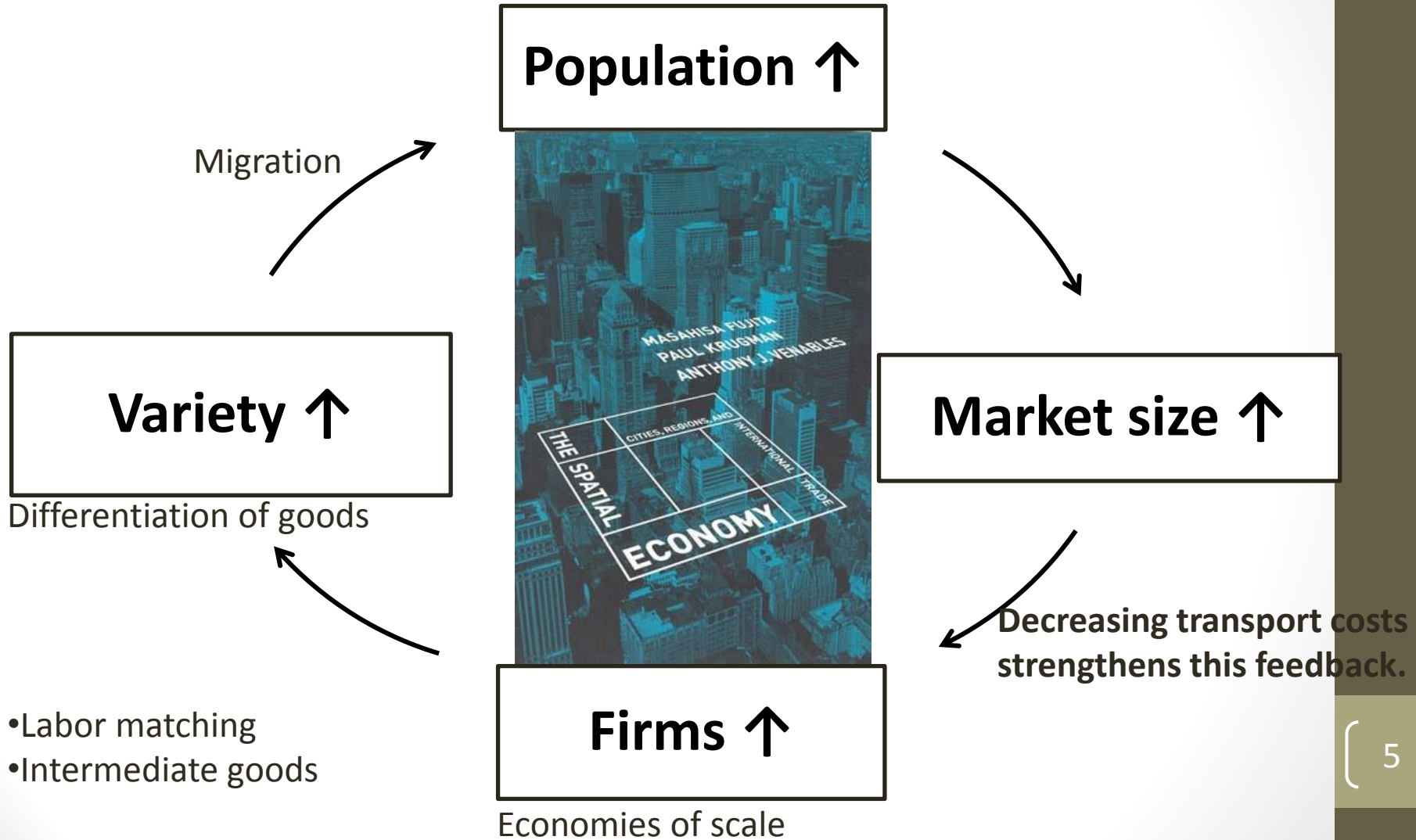
**Social (Direct)**: Reduction in Time and Money Cost of Transport  
Reduction in Traffic Accident

**Social (Indirect)**: Enhancing Economic Activities

# Spatial configuration of economic activity

- The balance between centrifugal force and dispersion force determines the spread of economic activity.
  - Centrifugal force: good infrastructure, varieties of inputs, thick labor forces, knowledge externality
  - Dispersion force: specific local inputs, immobile workers, congestion.

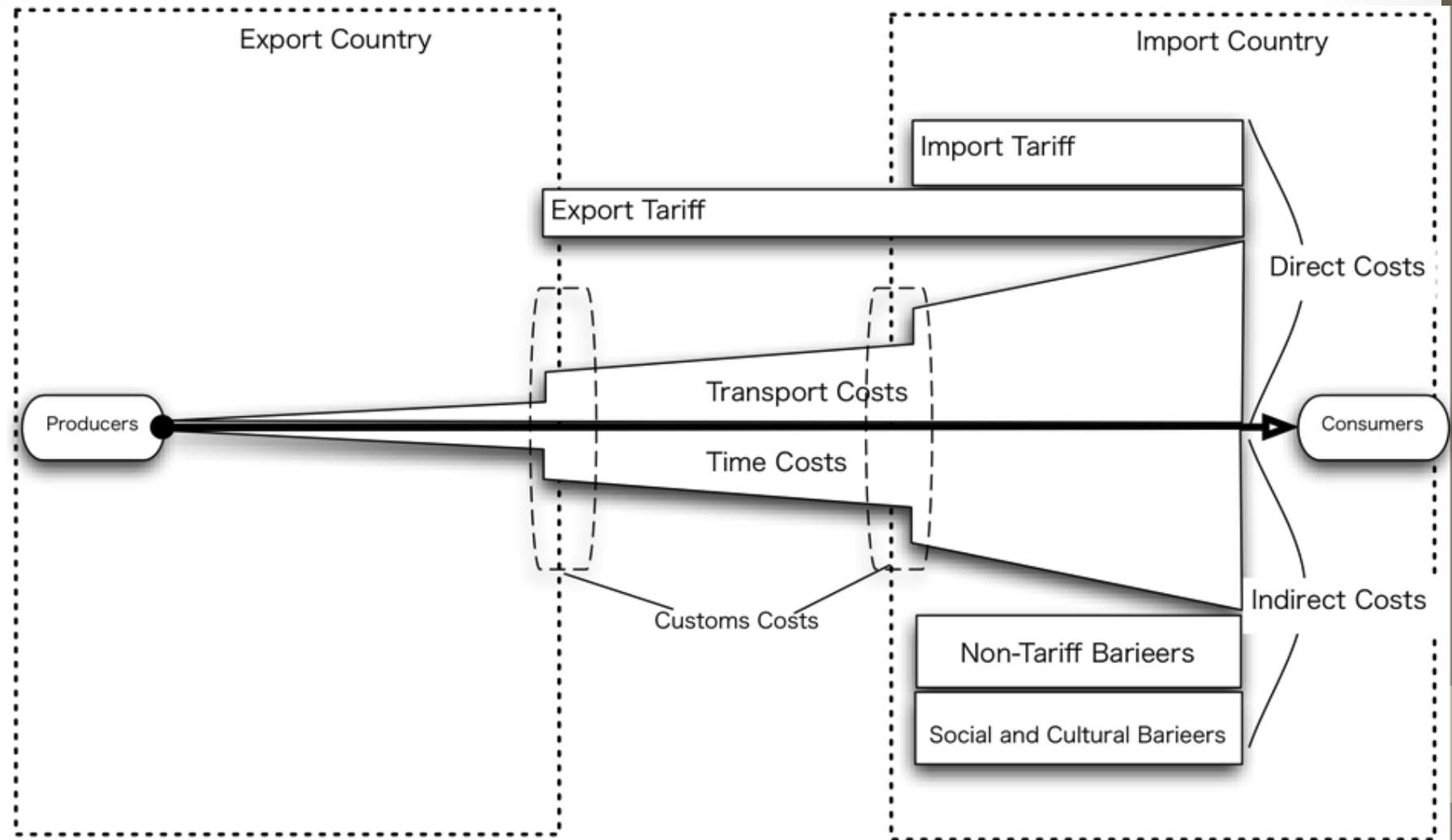
# Source of agglomeration: Positive feedback



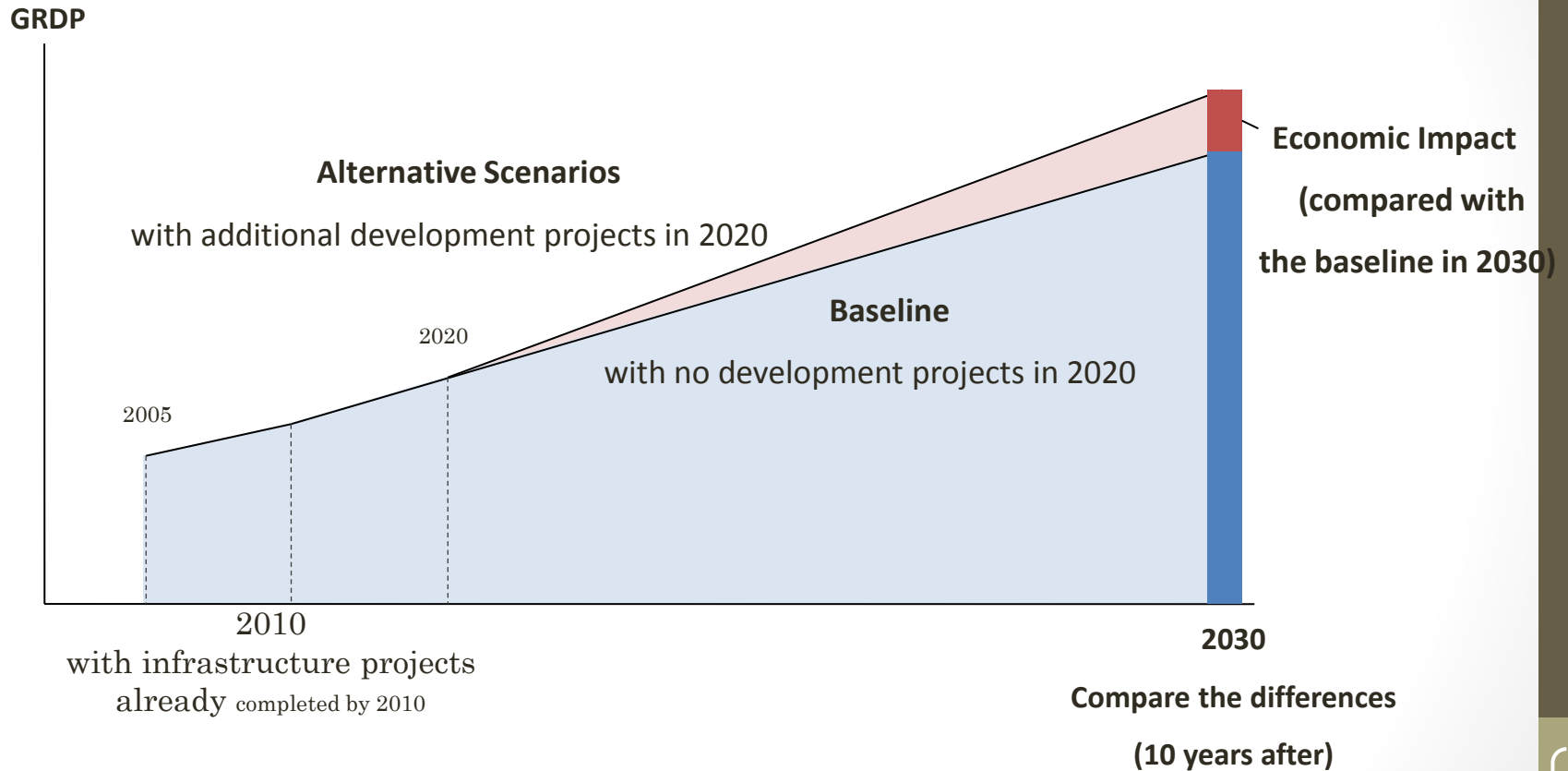
# The world of GSM

- *2063 region in 89 countries;*
- *12116 routes in road, maritime, flights and trains;*
- *longitude and latitude*

# Transport costs in GSM

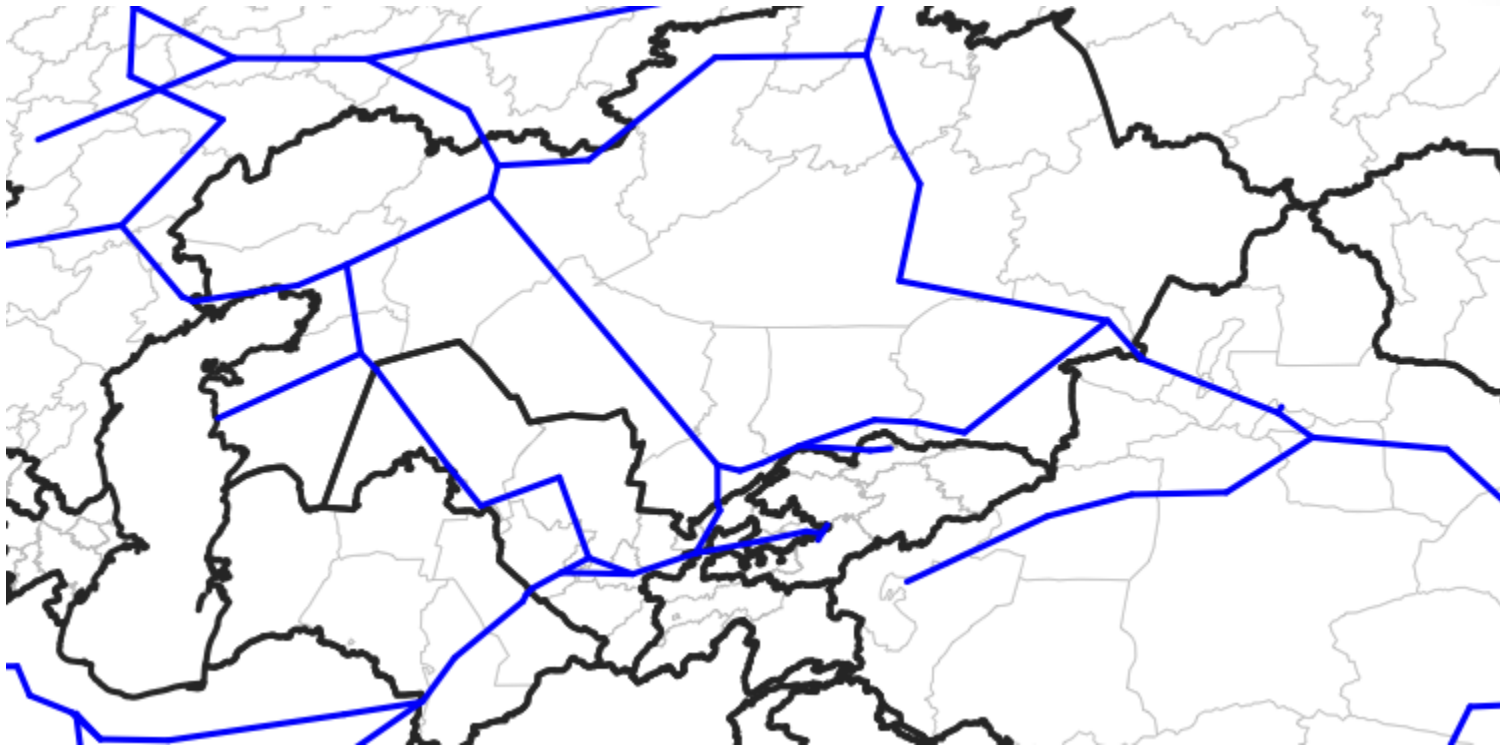


# How to Estimate the Impacts?





# Railway Networks in Central Asia



Data for designing the transport route, distance and times are based on *Euro-Asian Transport linkages*:  
*Paving the way for a more efficient Euro-Asian transport*,  
UN Economic Commission for Europe

# Questions

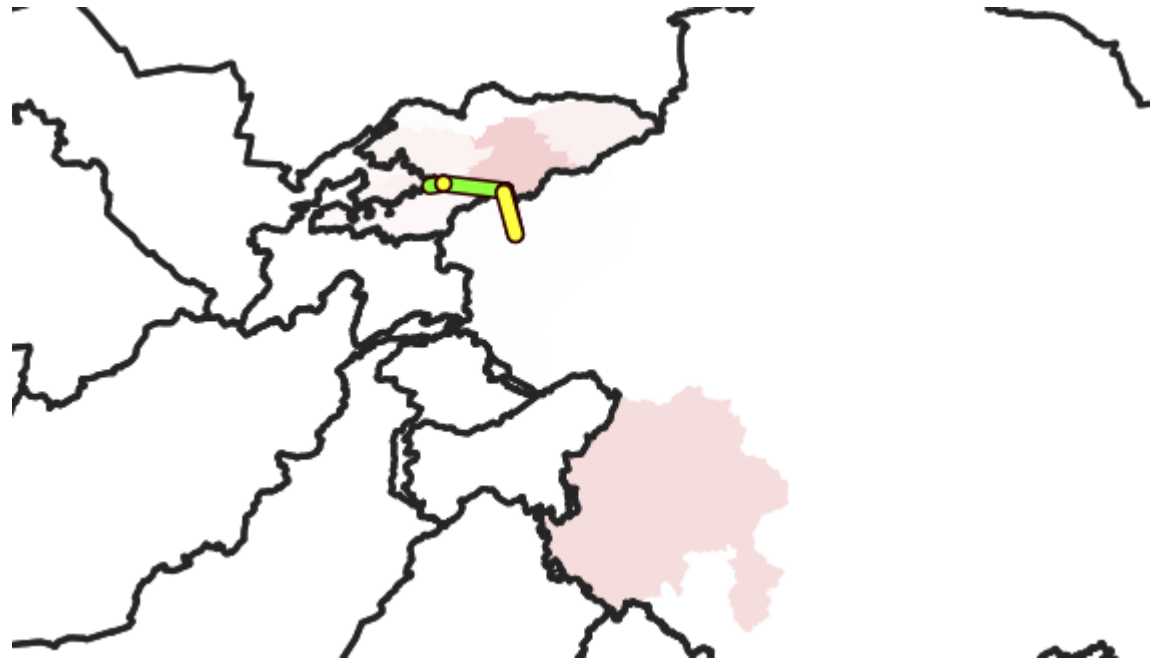
- ***This will divide the country, not unite it*** in “The China-Kyrgyzstan-Uzbekistan railway project”, Foreign Office research analyst papers, <https://www.gov.uk/government/publications/the-china-kyrgyzstan-uzbekistan-railway-project> June 2014
- ***This railway project will weaken Russia’s regional and perhaps global influence.*** Eurasia Daily Monitor volume: 12 Issue 199 November 3, 2015 [http://www.jamestown.org/programs/edm/single/?tx\\_ttnews%5Btt\\_news%5D=44562#.V-ZdddFf0eg](http://www.jamestown.org/programs/edm/single/?tx_ttnews%5Btt_news%5D=44562#.V-ZdddFf0eg)

# Scenario

- No.1 Connecting Kashgar, Trougart, Uzgen and Karasuu by train **without** Customs Facilitation Measures at national border between China and Kyrgyzstan
- No.2 Connecting Kashgar, Trougart, Uzgen and Karasuu by train **with** Customs Facilitation Measures at national border between China and Kyrgyzstan

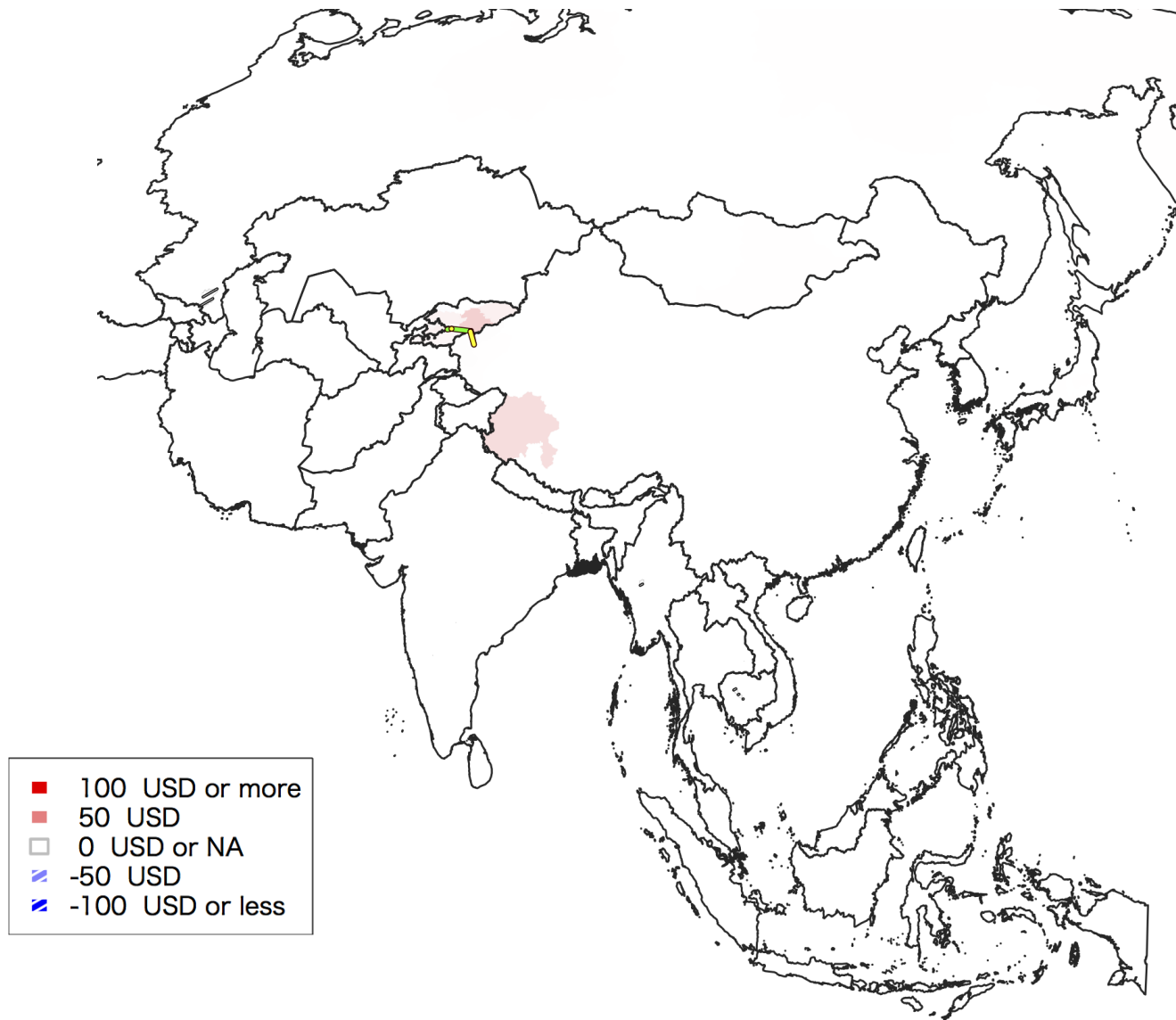
Data for designing this scenario is based on EU-TACIS Feasibility Study of New Rail Links between the Ferghanan Valley, Bishkek and Kashgar, Final report 2003

# Scenario No. 1: Rise and fall of per capita GDP

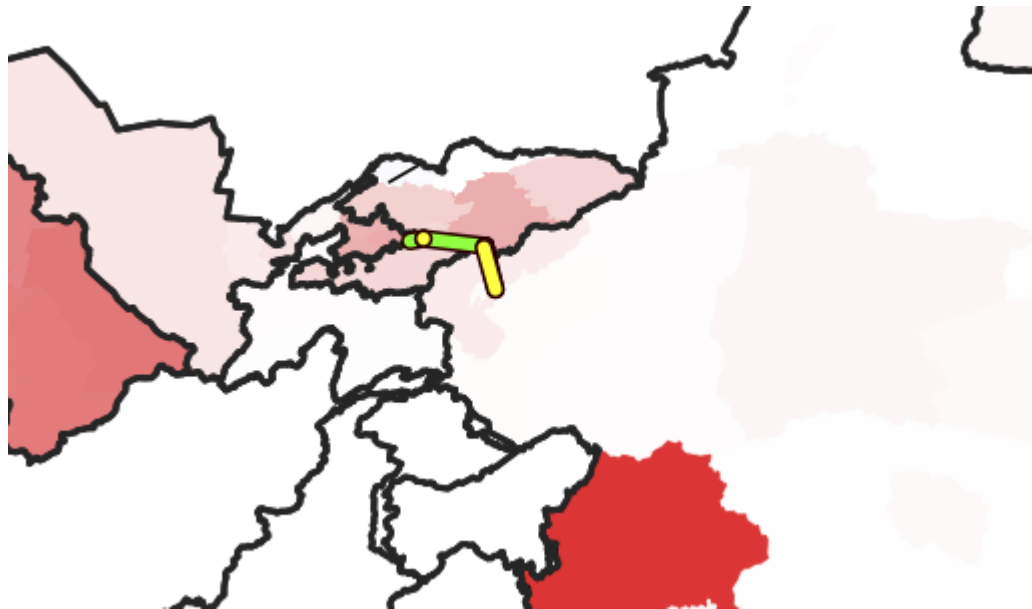


- 100 USD or more
- 50 USD
- 0 USD or NA
- ▨ -50 USD
- ▨ -100 USD or less

# Scenario No. 1: Rise and fall of per capita GDP



# Scenario No. 2: Rise and fall of per capita GDP

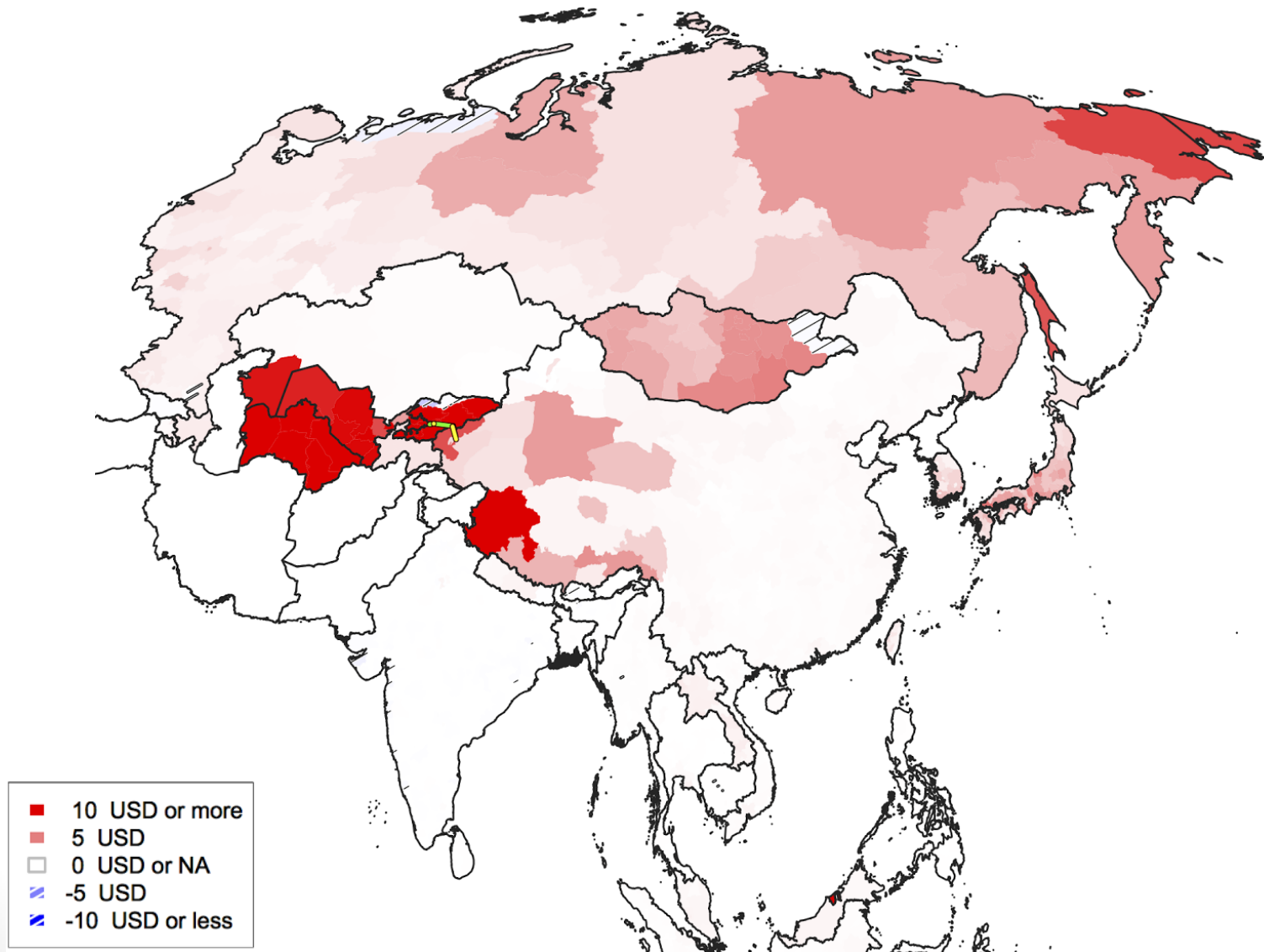


- 100 USD or more
- 50 USD
- 0 USD or NA
- ▨ -50 USD
- ▨ -100 USD or less

# Scenario No. 2: Rise and fall of per capita GDP



# Scenario No. 2: Rise and fall of per capita GDP





# Findings

- Railway connection has a positive impact in southern Kyrgyzstan whereas a negative impact in northern Kyrgyzstan.
- Almost all regions of Russia may enjoy the positive impact of the railway if passing the border between China and Kyrgyzstan becomes simple, although the amount of the impacts are not large.