Decision Support for National Development Strategies and Policy Dialog in the CAREC Region

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Central Asia's Economic Opportunities:

Economic Corridors and Global Value Chains

Inaugural Knowledge Sharing Workshop of the CAREC Institute

Urumqi, People's Republic of China, 2–3 March 2015

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Overview

➢ Regional economic integration is accelerating in Central Asia, significantly because of determined national and international commitments to infrastructure and other investments.

➢ This has been complemented by substantial progress on the institutional side, promoting a more open multilateral trade and investment environment.

➢ In a rapidly evolving regional economy, however, decision makers need support for more evidence-based strategic planning and engagement.

➢ This project develops a new generation of decision tools for economic assessment and policy dialog, nationally, regionally, and with international development partners.

Information Sharing

At our last ADB meeting on this subject, an expert group proposed a four-part information services strategy:

1. Host an online data portal covering trade, infrastructure, and related economic activity.

2. Develop indicators related to trade, corridors, and infrastructure generally.

3. Develop decision tools that make effective use of the first two resources.

4. Disseminate these data, indicators, and decision tools across the regional policy community, with emphasis on capacity building.

Monitoring:
Indicators and Metrics

System performance - how effective are regional commitments/investments?

- ➤ Public Agency: Metrics and indicators
  - – Trade Facilitation
  - – Infrastructure and logistics performance
- ➤ Private Agency: Investment climate, standards and indicators
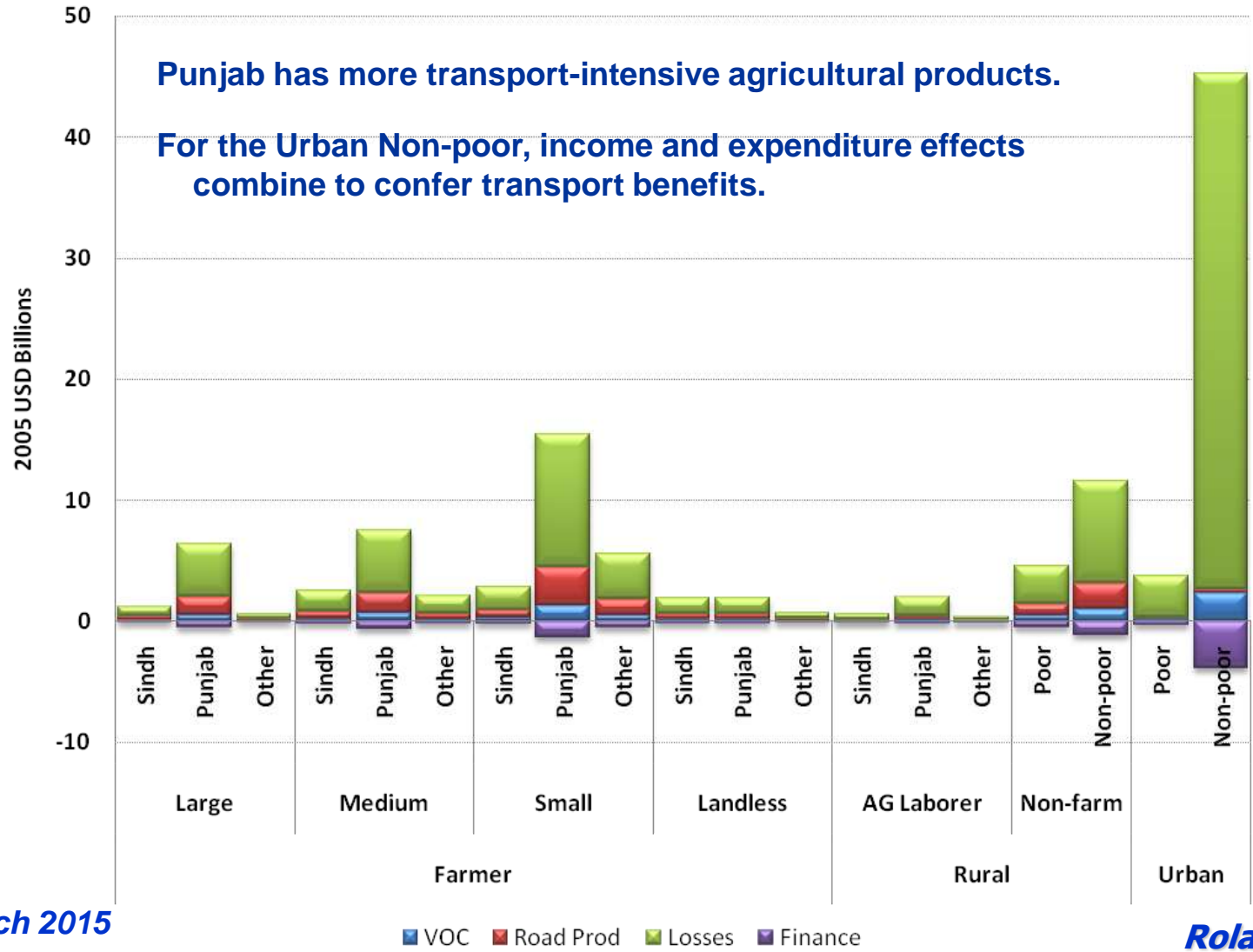
Impact Evaluation

How are economic activities and livelihoods changed by regional integration?

➢ Need to capture heterogeneity and net benefits across diverse stakeholder groups

➢ Beyond macro aggregates - Explicitly spatial and more detailed

➢ Beyond point estimates - Need to recognize and estimate the role of risk and uncertainty
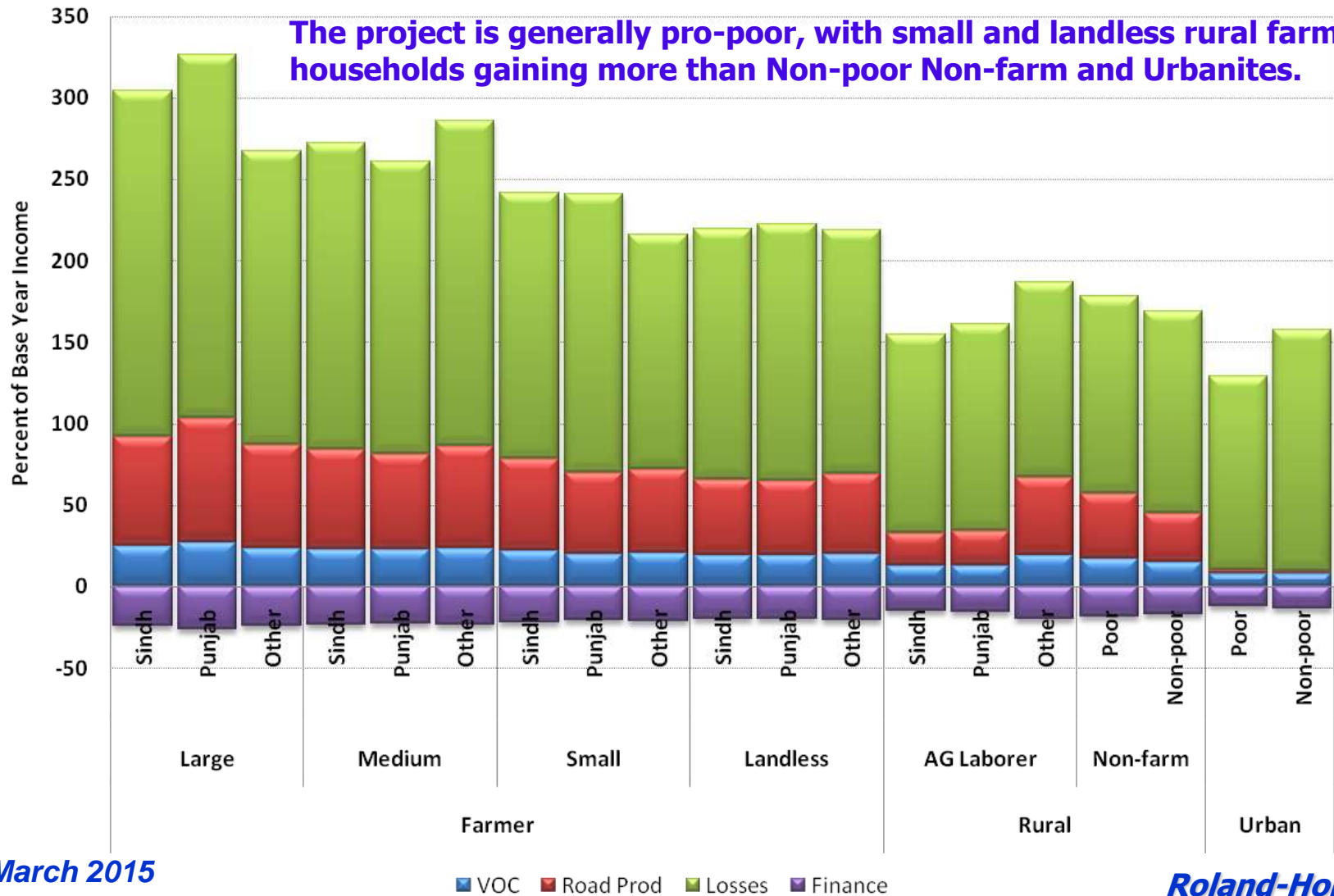
Example 1: Pakistan Northern Corridor
Household Total Real Income Growth
Cumulative Over Baseline, 2006-2030

Punjab has more transport-intensive agricultural products.

For the Urban Non-poor, income and expenditure effects combine to confer transport benefits.

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Household Income Growth as a Percentof 2006 Income

The project is generally pro-poor, with small and landless rural farm households gaining more than Non-poor Non-farm and Urbanites.
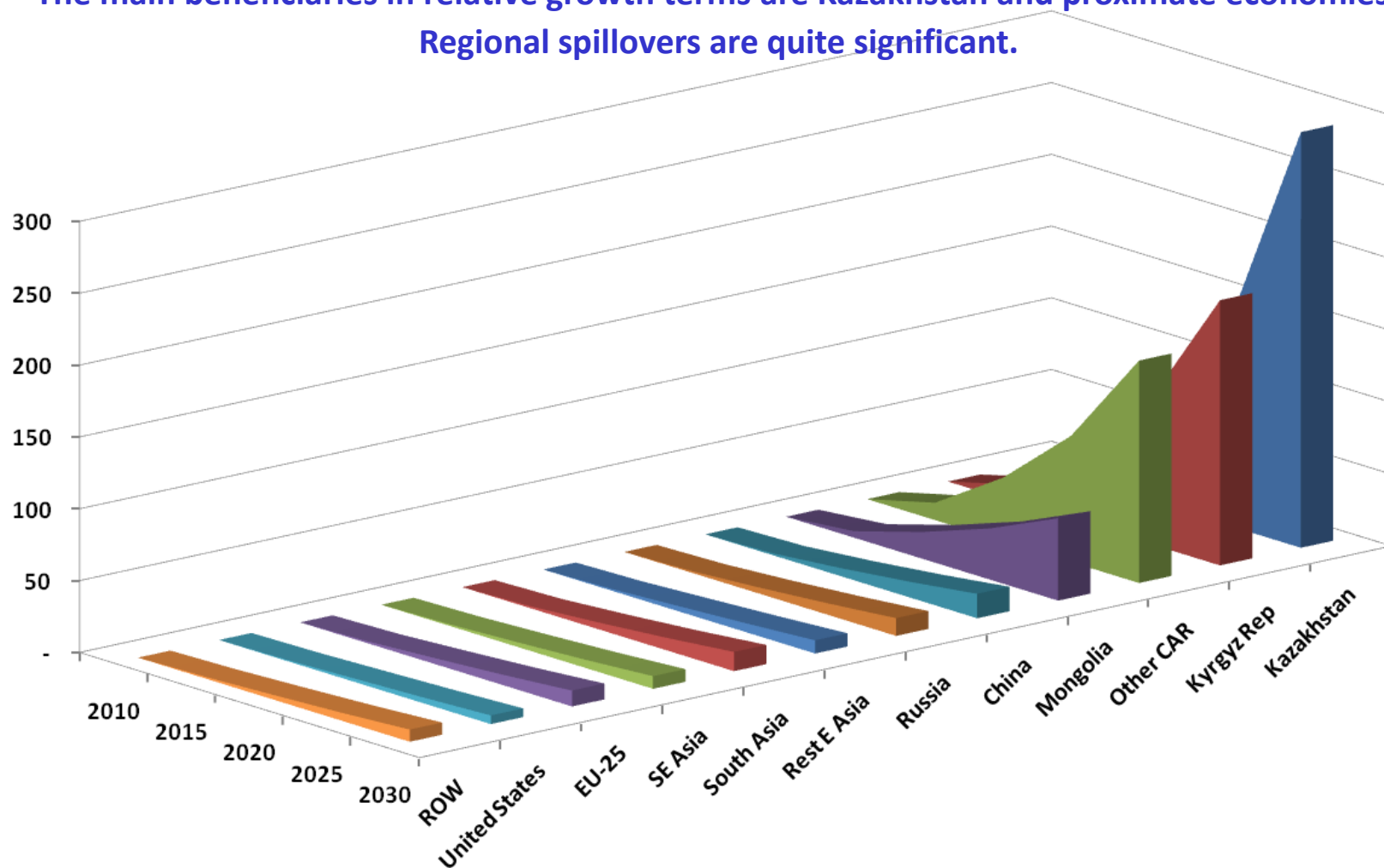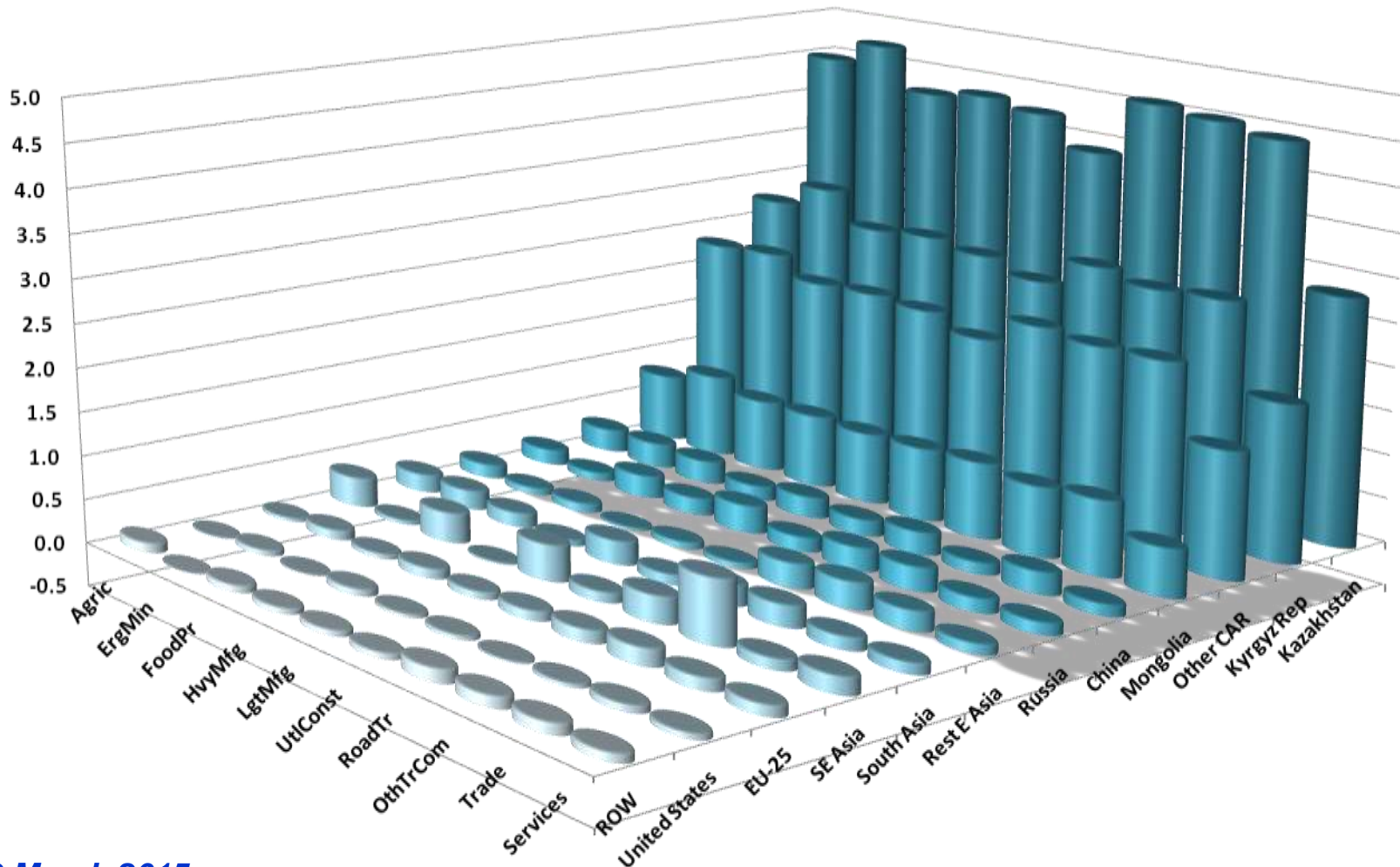
Example 2: Kazakhstan Corridor

Real GDP Growth
(Percent of 2010, annual with respect to Baseline)

The main beneficiaries in relative growth terms are Kazakhstan and proximate economies. Regional spillovers are quite significant.
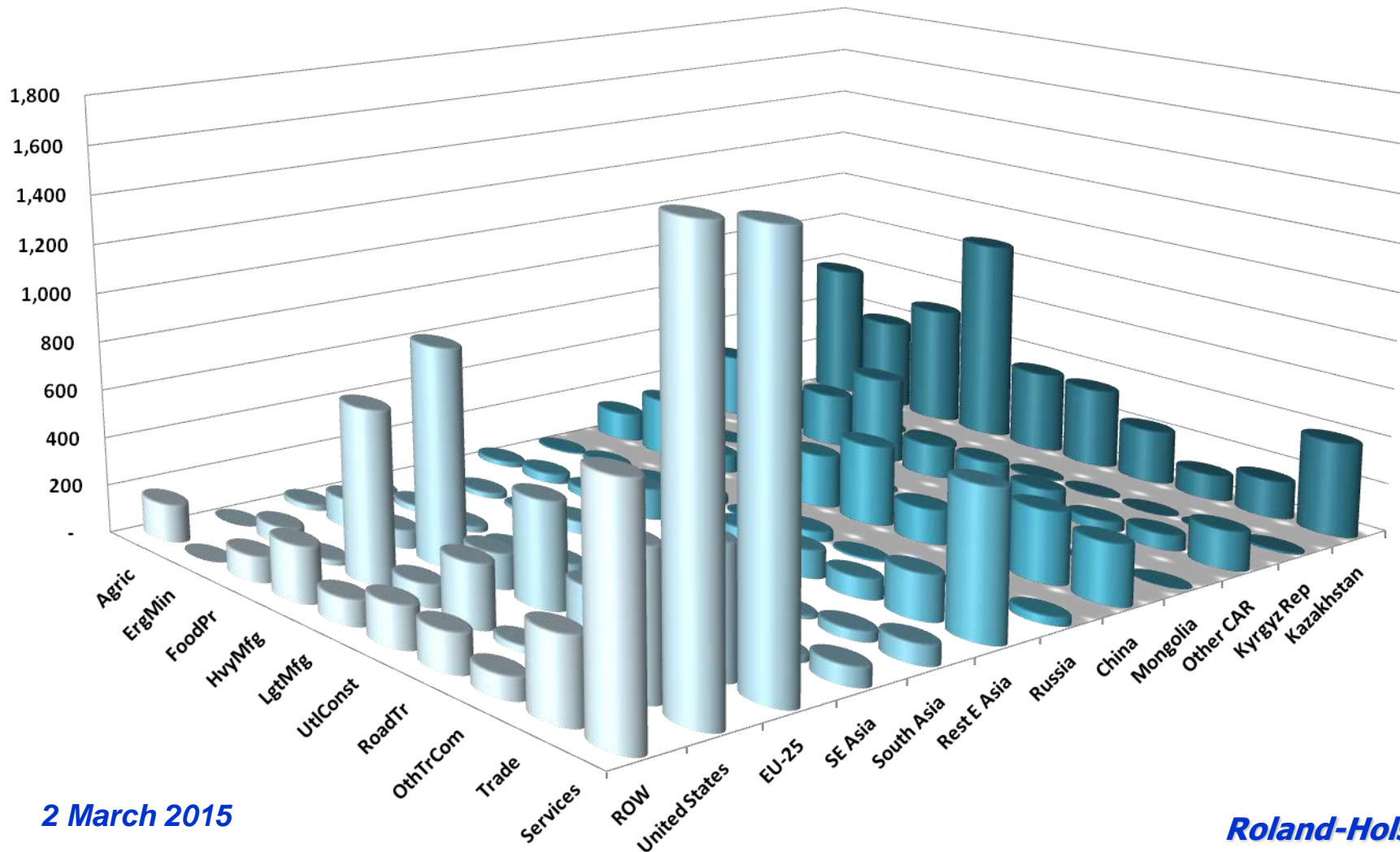
Sectoral Output Growth
(Multiple of Baseline in 2030)

Sectoral benefits are relativey uniform for local economies, more varied for trading partners.

Sectoral Output Growth
(USD 2010 Millions wrt Baseline in 2030)

Nominal gains are much more varied, depending on initial scale and trade shares.

How evidence-based forecasting can help policy

- ➢ Ex ante perspective: look before you leap
- ➢ Identify/quantify real impacts: - how much and for whom?
  - – Reduced costs (TTT, VOC, time, etc.)
  - – Expanded investment horizons
  - – Larger markets
- ➢ Transport vs. <u>Development</u> – capture <u>integrated,</u> <u>indirect</u>, and <u>longer term</u> impacts
- ➢ Second-generation infrastructure – find the next level
- ➢ Adjustment assistance
  - – Identify adjustment needs <u>before</u> they lead to problems
- ➢ Support dialog
  - – Public: local, national, regional coherence/coordination
  - – Private: arouse private stakeholders to complete the Commitment Game

CARGO:
Central Asian Policy Simulation Model

➤ The basic architecture of this regional modeling facility is based on a global prototype designed at the University of California, Berkeley.

➤ This combines a multi-country Computable General Equilibrium (CGE) forecasting model with an interactive, user-friendly, browser-based "dashboard" for decision makers.

➤ These tools are designed to be implemented on local computers/tablets with a browser interface.

Basic CARGO Ingredients

Like all good economic policy, CARGO stands on two legs, highest quality data and analytical methods:

➢ Data: A country-by-country, integrated database for assessing economic linkages, policy and market outcomes, energy flows, and environmental impacts

- – Calibrated to GTAP-8, plus estimated Social Accounting Matrices for other CAREC economies
- – Up to 57 sectors/commodities
- – Annual projections to 2050

➢ Model: A state-of-the-art, economic scenario forecasting tool – downscaled from a global CGE developed at UC Berkeley

Regional Modeling Capacity

- ➤ A new CAREC regional model has been developed as part of TA-8259, Assisting The Central Asia Regional Economic Cooperation Institute Knowledge Program
- ➤ The most advanced, up-to-date, and detailed model of its kind.
- ➤ The current version has 19 countries/regions, up to 57 sectors
- ➤ Could be decomposed into individual member country models (e.g. TA-8259, Phase II)
- ➤ Results communication takes two forms:
  - – Traditional technical reporting
  - – A user-friendly data/results browsing app for dissemination to decision makers

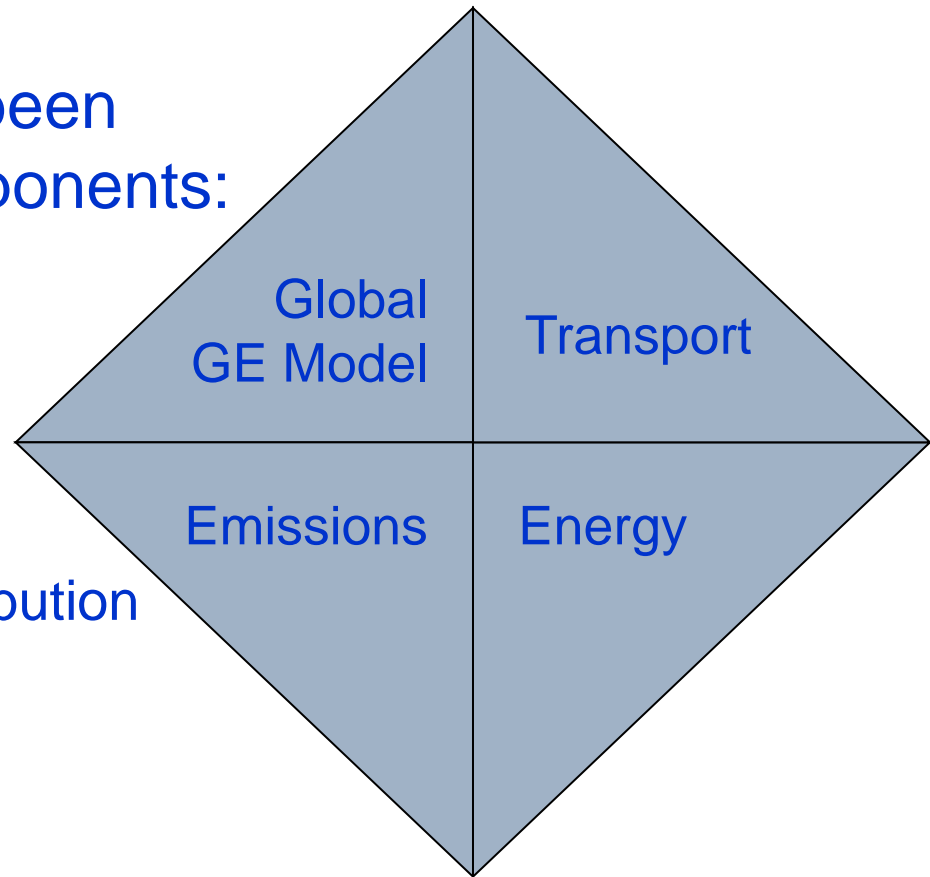# Central Asian Regional General equilibrium mOdel (CARGO)

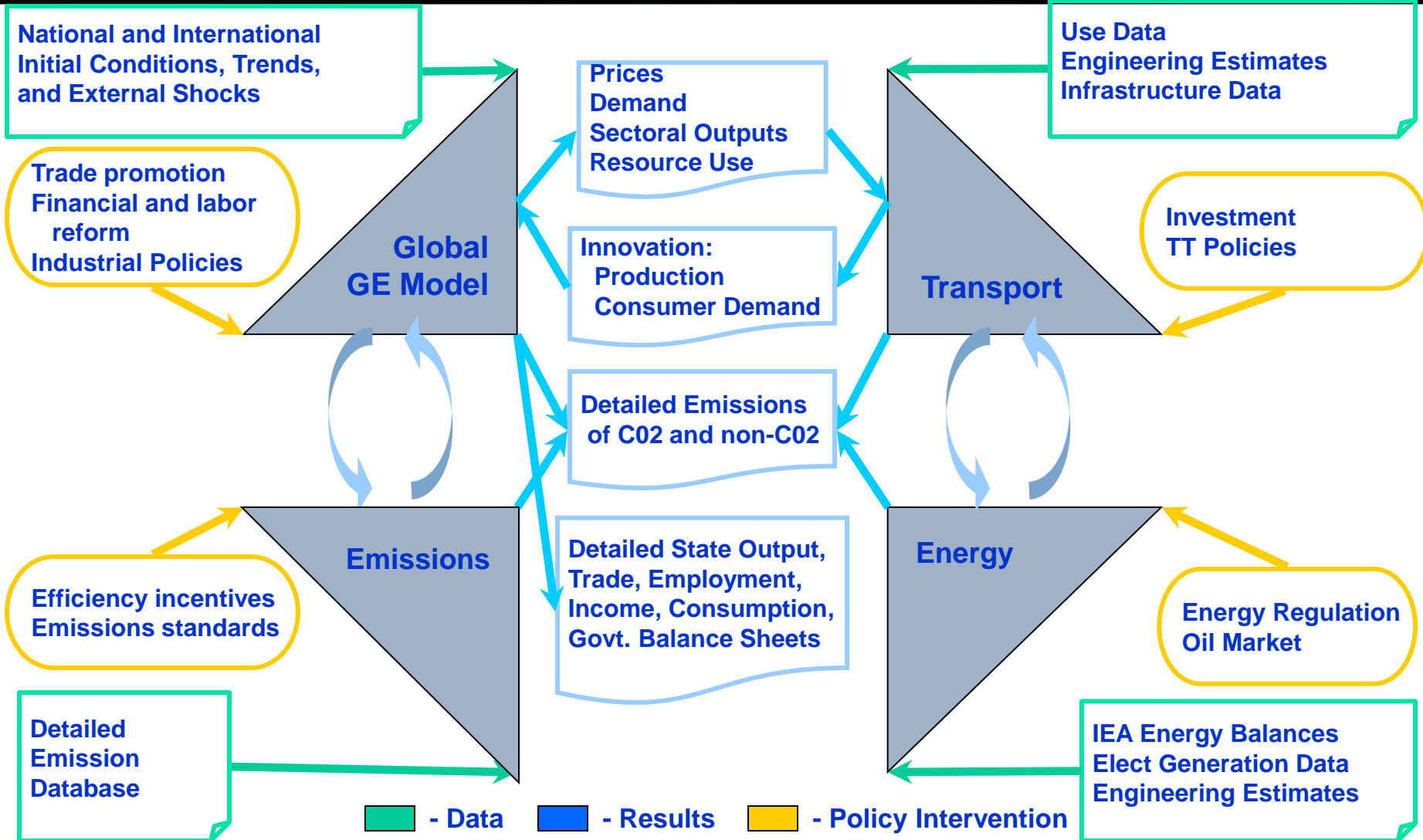|	Countries/Regions		Sectors
1	Afghanistan	1	Crops
2	Azerbaijan	2	Livestock and Fishery
3	Kazakhstan	3	Coal
4	Kyrgyzstan	4	Oil
5	Mongolia	5	Gas
6	Pakistan	6	Processed Food
7	Xinjiang/PRC	7	Textiles and Apparel
8	Tajikistan	8	Light Manufacturing
9	Turkmenistan	9	Heavy Manufacturing
10	Uzbekistan	10	Transport
11	Rest of PRC	11	Services
12	Russian Federation		
13	India		
14	High Income Asia		
15	Rest of Asia		
16	EU		
17	United States		
18	Other Americas		
19	Rest of World		

How we Forecast

The CARGO model has been
developed in four components:

1. Core Economic model

2. Transport module

3. Energy production/distribution

4. Emissions module

Global GE Model	Transport
Emissions	Energy

Detailed CARGO Framework

National and International Initial Conditions, Trends, and External Shocks

Trade promotion Financial and labor reform Industrial Policies

Global GE Model

Prices Demand Sectoral Outputs Resource Use

Innovation: Production Consumer Demand

Detailed Emissions of C02 and non-C02

Detailed State Output, Trade, Employment, Income, Consumption, Govt. Balance Sheets

Use Data Engineering Estimates Infrastructure Data

Investment TT Policies

Transport

Emissions

Energy

Efficiency incentives Emissions standards

Detailed Emission Database

Energy Regulation Oil Market

IEA Energy Balances Elect Generation Data Engineering Estimates

- Data   - Results   - Policy Intervention

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CARGO System Architecture

Regional Model

National Models

Graphic User Interface

CAREC

Afghanistan

Xinjiang

ADB

National Capitals

Policy Makers

Sample Model Inputs:
CAREC Modeling Scenarios

Transport and Infrastructure Policies

Regional corridor schemes for national, regional, and global perspectives

Regional implications of national investments

Motorization and urbanization

Trade Facilitation and Trade Policies

Asian regional integration – national, regional, and global implications

Bilateral and regional TT measures

Integrated Trade Facilitation

Energy Policies

Strategy for Regional Cooperation in the Energy Sector

Energy Action Plan Framework

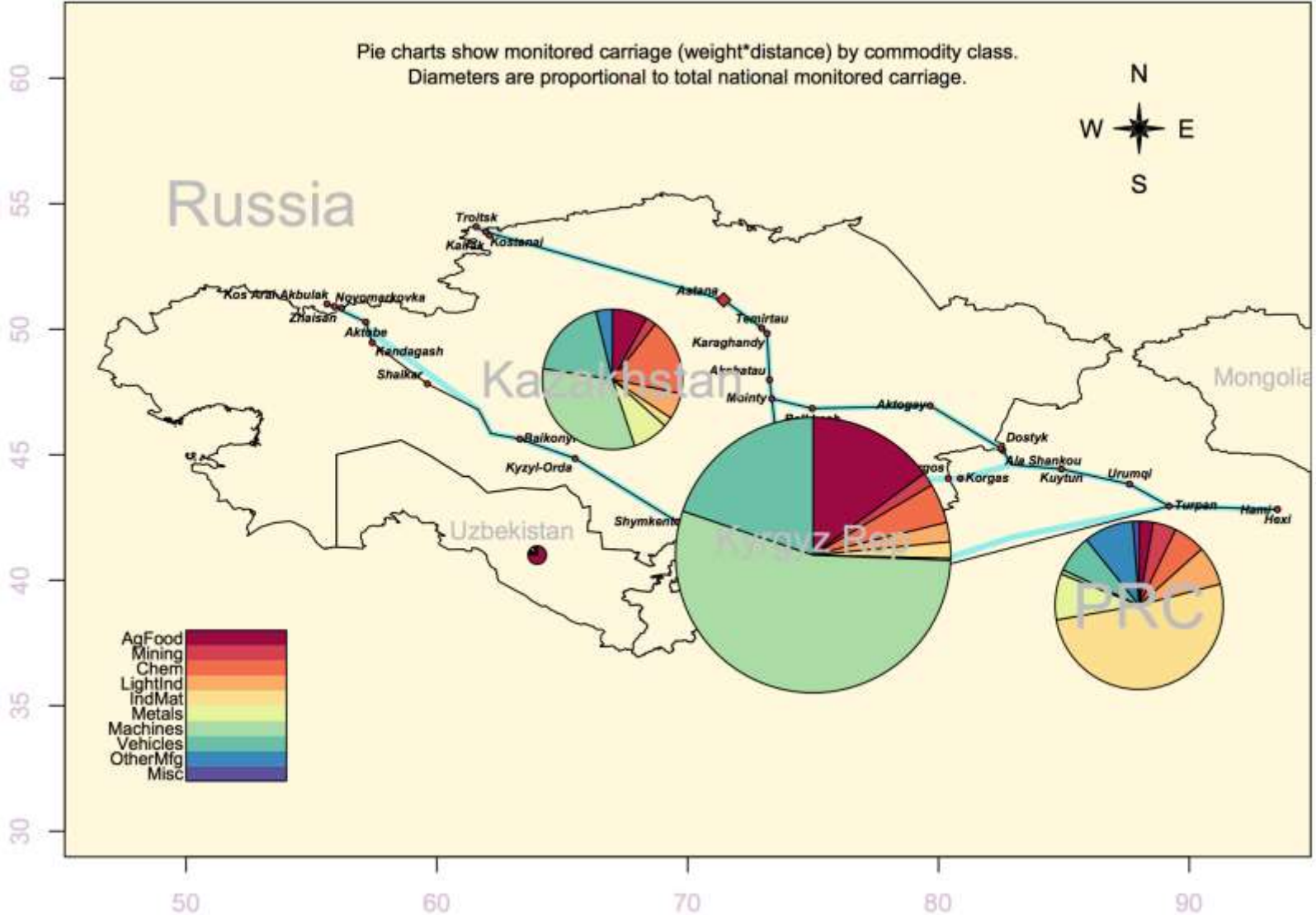Regional energy security

Sample Model Outputs:
What we forecast

Category	Variables
Economic Structure	Sectoral output, demand, imports, and exports for each country.
Income	Total and per capita GDP by region Value added and employment by sector and country Household income by household category
Employment	Total employment by sector and country Employment rates by household category
Energy	Total energy use by sector and country Energy trade, production and usage mix by country Energy use by household type
Emissions	GHG emissions (CO_2, CH_4, N_2O) by source, use, and region

Extensions

1. Regional assessment of trade and investment potential.
2. Transport pathways: Detailed regional impact evaluation.
3. Energy pathways: Detailed regional impact evaluation.
4. Dynamics of regional growth and poverty reduction.
5. Policy impacts on development indicators, MDG's, etc.
6. Trends in urbanization and rural development.
7. Resource development, public investment, and fiscal impacts.
8. Demographic assessment, including migration, labor force development and employment patterns, and other socioeconomic trends.
9. More detailed agent-based GIS modeling to improve policy targeting and impact evaluation.
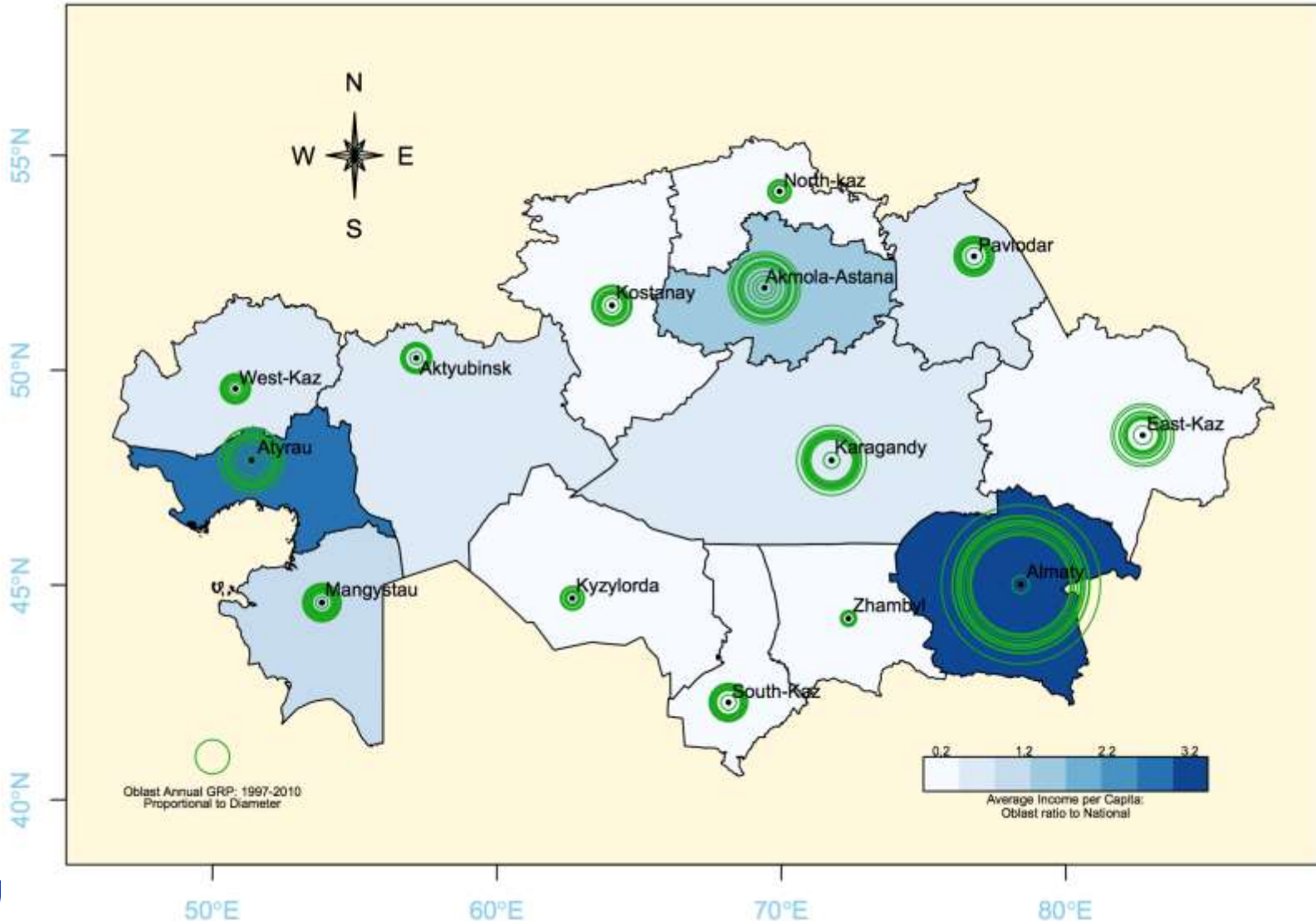
Sample CARGO Map 1:
CAREC Corridor Shipments by Country and Commodity

Pie charts show monitored carriage (weight*distance) by commodity class.
Diameters are proportional to total national monitored carriage.

The Policy Dashboard

- CARGO represents a new generation of policy simulation models, combining
    - Detailed structural data
    - State-of-the-art forecasting model

- The Policy Dashboard is a user-friendly, graphic interface that allows visualization of policy impacts.

Demonstration

> ➢ Now we switch to a browser.

Thank you