

# Central and South Asia Carbon Pricing Suitability

-Economic and Political Factors' Impact on Carbon Pricing Implementation

## Introduction

Five years ago, Henry Jacoby, an economist at the MIT business school, claimed that there is a one-page policy solution to climate change during an interview with the National Public Radio (NPR). This solution is carbon pricing. The basic idea of carbon pricing is to correct the market externality of emission by raising the price of carbon-emitting resources such as coal, oil, and natural gas.

Carbon pricing can be implemented in two major ways at the macro level. The first way is the carbon tax, which will incentivize reduction of fossil fuels consumption and the transition to renewable energy by setting a price on per ton of carbon emission. The other way is Emission Trading System (ETS). This system allows the governing body to place a cap on total emission and allocate emission permits accordingly. Companies can trade permits with each other, the demand and supply of which generate a market price for emission. Though more complicated than a carbon tax, the ETS, in theory, should have the similar effect with a carbon tax.

However, implementing a carbon price is not as easy as it may appear, as there are only fifty-one carbon pricing initiatives around the world. Among all, forty-five of the initiatives are on the national level, and twenty-five of them are on the regional level. A much larger number of countries need to take action in order to control the human-made climate change collectively.

This project seeks to investigate the key factors predicting a country's suitability for carbon pricing legislation, with a particular focus on Central and South Asia. This region is chosen because it houses emerging economies with relative political stability. It also contains one of the world's largest emitter, India; and one country which already established its ETS market in 2013, Kazakhstan.

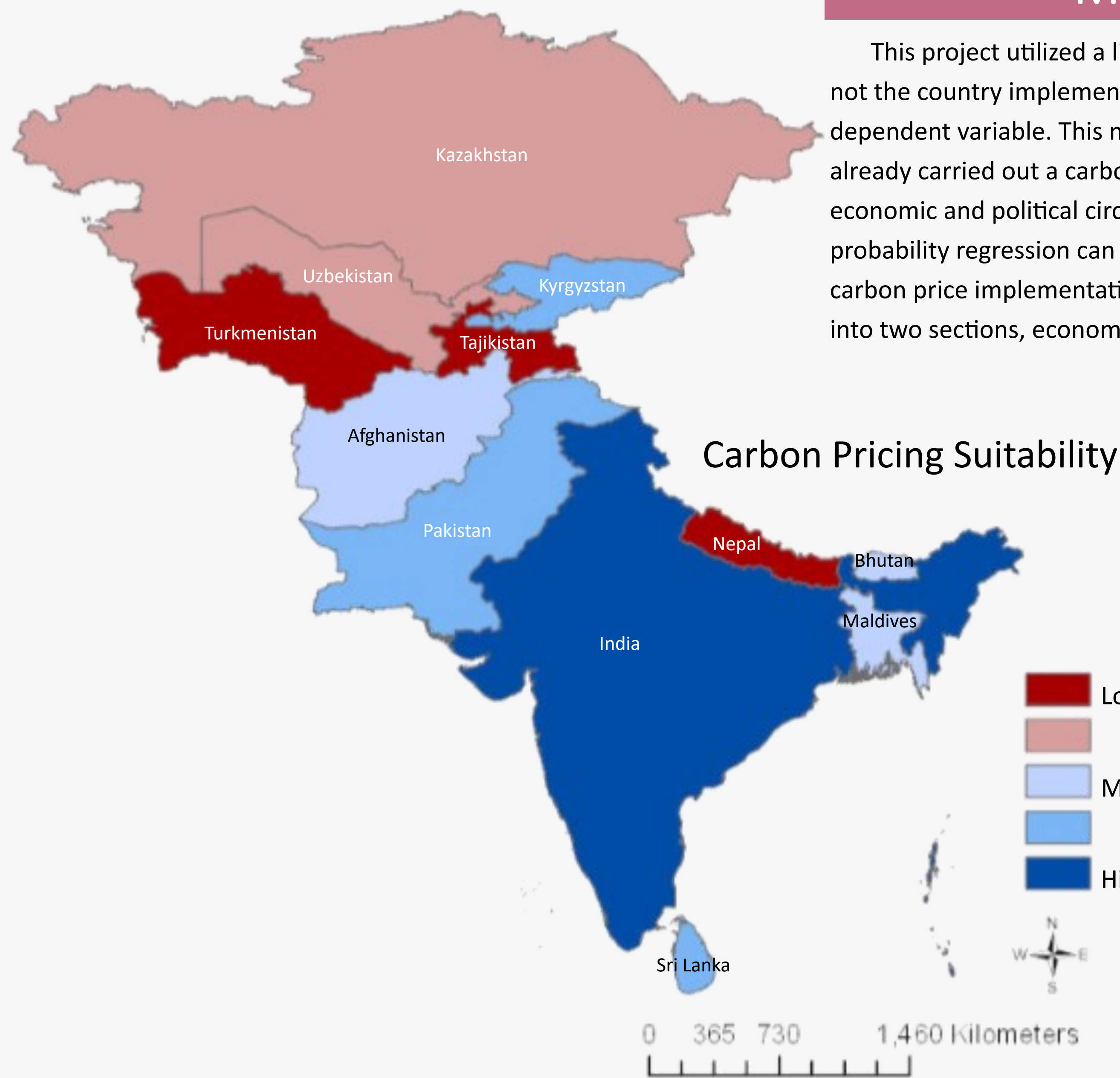
This project will also assess what is lacking for these countries to adopt carbon pricing policy, which translates into developmental prerequisites and policy suggestions in the discussion part.

## Methods

This project utilized a linear probability model with whether or not the country implemented a carbon pricing policy as the binary dependent variable. This model assumes that the countries which already carried out a carbon pricing scheme have a proper economic and political circumstance to do so. Hence, a linear probability regression can predict the essential factors influencing carbon price implementation. Dependent variables are divided into two sections, economic variables, and political variables.

The panel data is acquired through the World Bank's World Development Indicators, World Governance Indicators and the Carbon Pricing Dashboard.

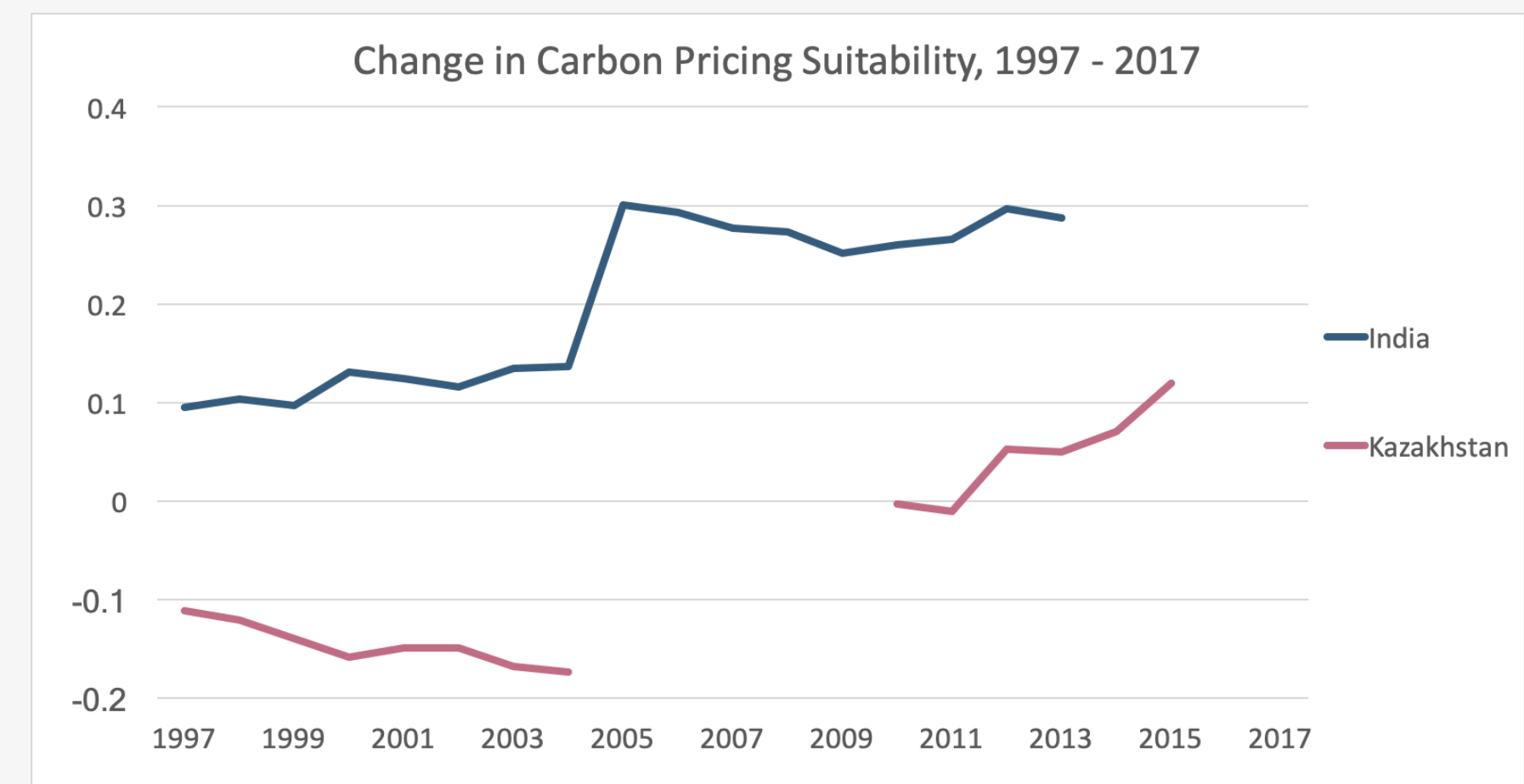
The initial Regression is carried out for all the countries across the period of 1997-2017. Then, fitted values were calculated for Central and South Asia countries base on the average of their predictor variables across the 20 year period. Several key significant variables are also sorted out to be shown on maps.



## Results

The regression result suggested that the Central and South Asia countries vary in their suitability for carbon pricing policy. For those countries that are low in suitability level, they generally consume less renewable energy and have a more massive industrial production. Politically, these countries' government lacks accountability and control of corruption.

The case of India and Kazakhstan is particularly interesting. From the line chart on the left, it is observed that India has a higher suitability score than Kazakhstan throughout the 20 year. Yet, they are not able to implement a carbon price. For Kazakhstan, they implemented their ETS in 2013, right after their predicted suitability score became positive.



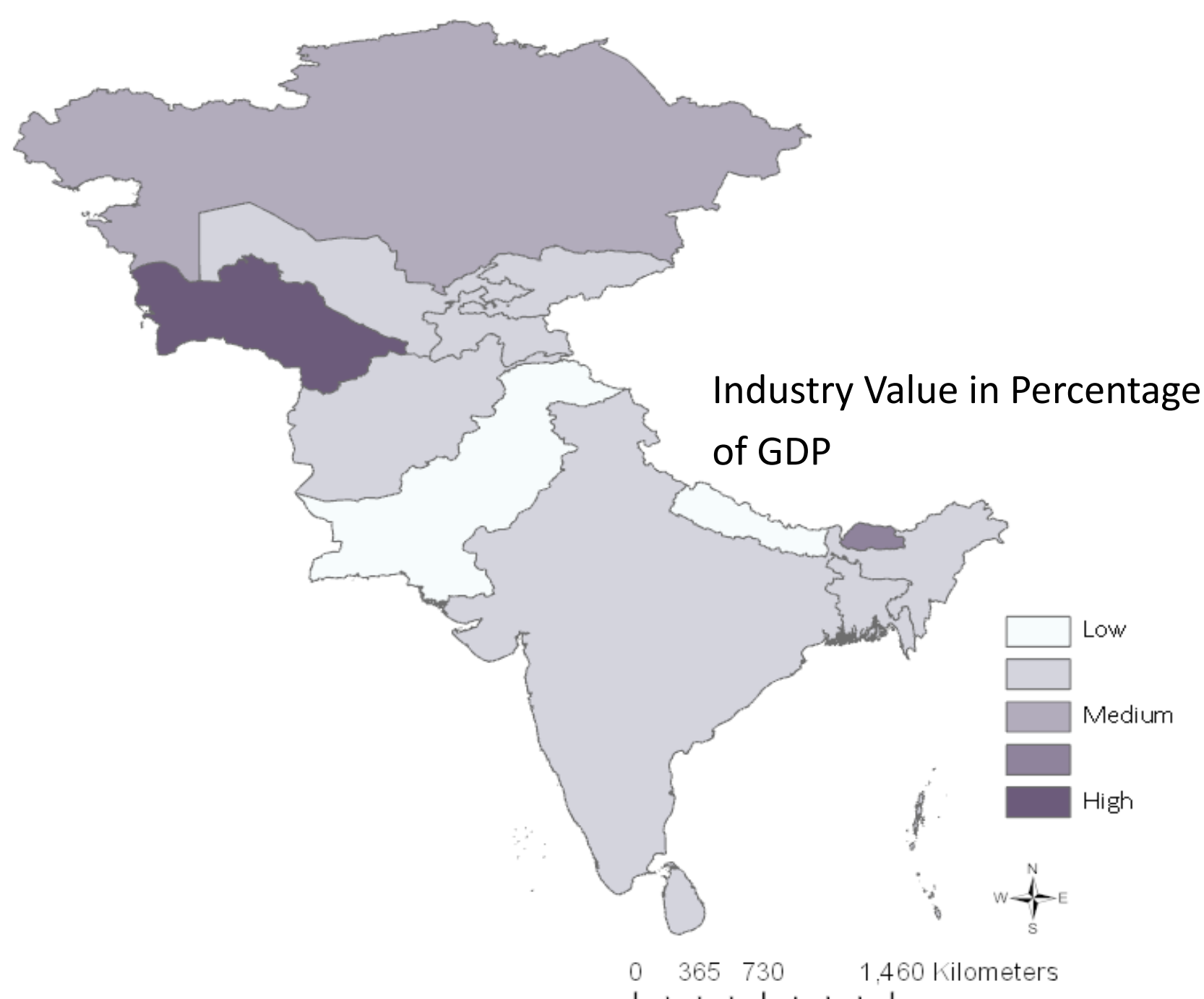
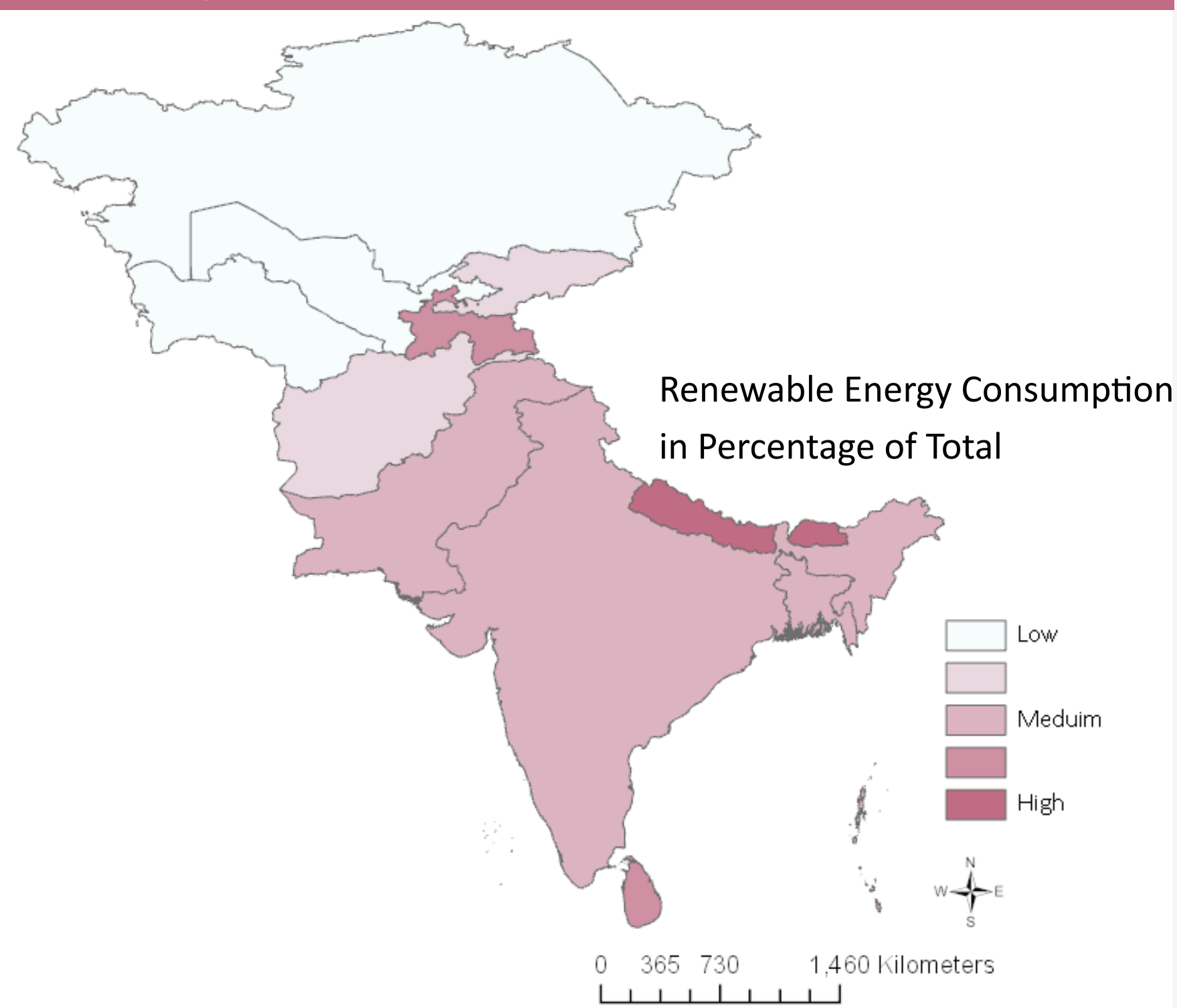
## Discussion and Conclusion

This analysis shows that many Central and South Asia countries still lack the proper economic and political circumstances to implement a carbon price. Even though the regression pointed out several key significant predictors, country-specific factors still play a critical role. The most prominent example is India. Despite having the highest predicted suitability, the social and industrial environment in India stopped them to address climate change on the national level. The issue with India might also apply to countries like Pakistan and Kyrgyzstan, where high predicted suitability didn't translate into legislative action.

For those countries with lower suitability, they may want to focus on developing their renewable energy portfolio. Since for some countries, reducing industry value might not be accomplishable in the near future, they can focus on developing a more suitable political environment for carbon pricing policies. Once they have a favorable political condition, they should start experimenting carbon price which will further promote renewable energy use and transform their industry sector to a cleaner one.

Moving forward, the regression model can be refined using logistic regression, so that the predicted score will be limited to 0 and 1. This regression analysis can be accompanied by qualitative research on specific countries. These case studies will be able to aid the understanding of how the world can be better prepared to implement a carbon pricing policy fully. And ultimately, mitigate the human-made climate change.

## Key Economic Predictors



## Key Political Predictors

