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Evaluating Farm Size Change as an Expression of Preferential Alignment in the Corporate Food Regime

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USING FOOD REGIME THEORY TO UNDERSTAND FARM SIZE CHANGE AS AN EXPRESSION OF PREFERENTIAL ALIGNMENT IN THE CORPORATE FOOD REGIME

Rachael Carpenter

Research Question

Using Food Regime Theory as a conceptual framework, can development status be used to predict farm size change?

Relevance

Food system awareness is increasingly prevalent in international development and relations. In particular, the impact of food systems on climate change, and the impact of climate change on the capacity of production form a feedback loop that has the potential to have severe impact on the future. Whether this contribution will be positive or negative hangs in the balance, but the window of opportunity for forming and implementing such policies may be closing. In many ways, this understanding of food as a fundamental force in shaping the lives of people, particularly those who will be severely impacted and faced disproportionately negative consequences, is the basis of the concept of food justice, which the UN and other international bodies have recently prioritized as essential to Human Rights.

Understanding the nexus of state power, economic activity, social preference, and food systems is important to both forming these policies and, even more significantly, to the effective public presentation and implementation of such policies. Food Regime Theory takes a multi-disciplinary approach to understanding the base ideologies and institutions that form the prevailing tendencies of states toward food policy. As such, it has the potential to be used as a framework for understanding how to address some of the most pressing problems of the modern age.

Hypothesis

There will be an increasingly positive correlation between development and farm size change.

This research attempts to apply Food Regime Theory to understanding the aggregate effect of political, economic, and social activity on the food system at scale. It makes the basic assumption, that because FRT is a systems-based approach, it can help us assess this net effect, the prevalent ideological alignment preference, without the need to evaluate all of the possible causal factors of a specific food system outcome. The assumption is that the specific policies and conditional factors that lead to these outcomes are themselves a result of this prevailing preference in response to the specific food system tension of a given regime. In this specific study, we look at farm size change as an expression of this preference. Farm size change was selected as an available data point which covered many entities/states over a reasonably large time scale, and which has been shown to have a notable effect on the uptake of sustainable farming practices which are representative of the “reformist” trend of the current, Corporate Food Regime, often designated the Third Food Regime (Liebert et al., 2022). We additionally use GDP per Capita, PPP in International \$ to represent general development status as an expression of World-Systems Theory’s assumptions regarding the capitalist world economy in which the nature of industries will push them to locate within and influence the behavior of states according to their development status, which largely contribute to or arise from their ability to provide private-property rights protection thereby facilitating the quasi-monopolistic power necessary for increased capital accumulation.

Data Sources

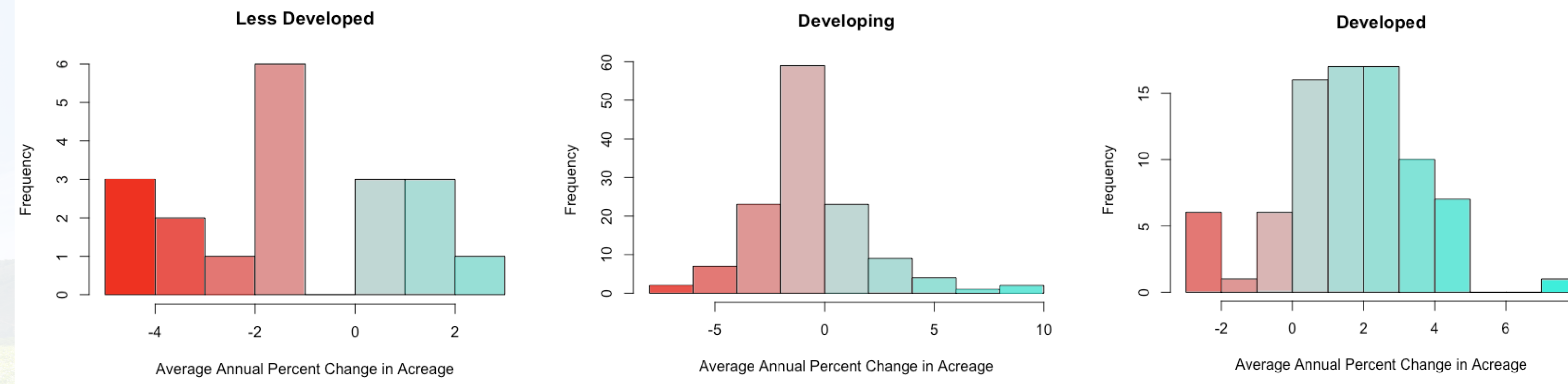
- Farm Size Change
 - Ritchie, H. & Roser, M. (2022). Farm Size and Productivity. Our World In Data. Retrieved from <https://ourworldindata.org/farm-size>
 - Lowder, S. K., Skoet, J., & Raney, T. (2016). The number, size, and distribution of farms, smallholder farms, and family farms worldwide. World Development, 87, 16-29. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0305750X15002703>
- Development Status
 - United Nations (2022). Statistical Annex. Retrieved from <https://www.un.org/development/desa/dpad/wp-content/uploads/2022/04/2022-StatAnnex.pdf>
- GDP per Capita
 - World Bank Data Development Indicators Dataset, Selected or All Countries, 2020, GDP per Capita, PPP (constant 2017 International \$) Retrieved from <https://databank.worldbank.org/source/world-development-indicators>

Transformation of Farm Size to AAPC

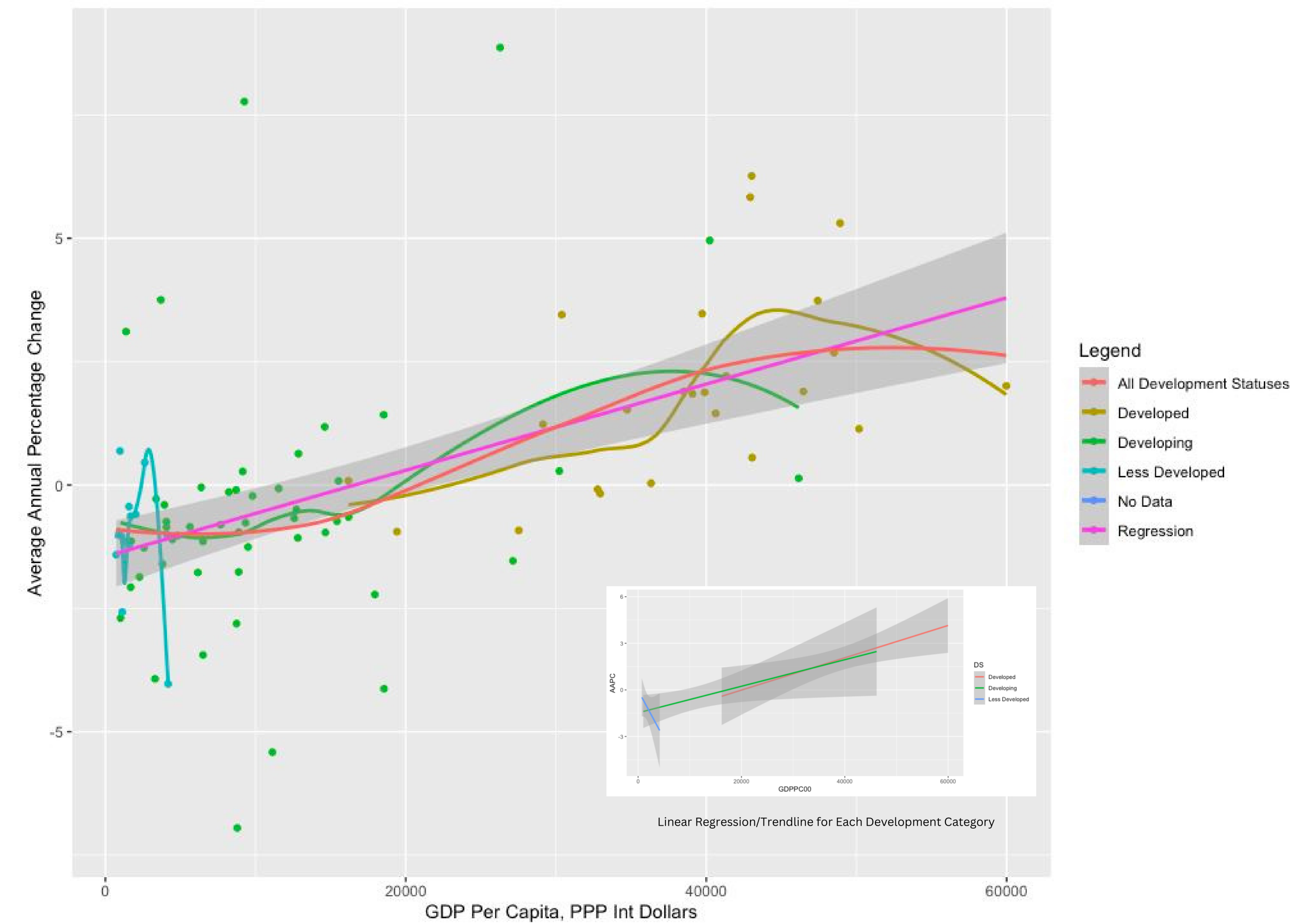
- In order to normalize the data for land endowment and other preceding factors, Average Annual Percentage Change (AAPC) was calculated using the following formula:

$$\left(\frac{Fs_2 - Fs_1}{Fs_1}\right) * \left(\frac{1}{T_2 - T_1}\right) * 100$$

Where Fs2 is the more recent farm size, Fs1 is the farm size associated with the oldest data, T2 is the most recent data, and T1 is the oldest date. This calculation was made for all decades as AAPC by period, for date ranges of 1960-1980 as AAPC2, and for 1970-2000 as AAPC3. In cases in which the date range would only calculate for a period of 1970-1980, results were not included and the inclusion of this date range in both regime periods was intentional as this decade was considered a transition period between regimes, reflective of both.



The Effect of Development Status on Farm Size



Results

Estimate	Std. Error	t value	Pr(> t)
-1.39e+00	3.29e-01	-4.24	5.7e-05 ***
8.36e-05	1.28e-05	6.55	4.1e-09 ***

- In general, the findings support the original hypothesis that there would be a positive correlation between development and farm size change. In the model of GDP against AAPC, we get a p-value of 0.4052e-09 in the linear regression model summary, indicating a significant correlation.
- Similarly, we see the frequency of farm size increase increasing along with development status in the skewness in histograms of AAPC by Development Status
- We also see an increasing trend in this behavior from the time period of the Second Food Regime to the Third Food Regime, reflected in the data by decade and the composite indicators for each regime.
- The trend within Less Developed countries is a negative correlation between GDP per capita and Farm Size Change. Though a large variance in increasing and decreasing farm size within this category was expected, the severity of the trend at higher incomes was unexpected but the overall effect matches the expectations of FRT in which Less Developed nations would tend towards “reformist” alignments rather than “neoliberal.”

Regime	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
2 nd	-6.9	-1.3	-0.3	0.1	1.7	8.1	48
3 rd	-5.41	-1.39	-0.17	0.27	1.45	8.86	21

Conclusions

- Food Regime Theory may help *categorize and understand the prevailing overall goals of societies* and their “relationship between capitalism, the state, and agriculture” (Tilzey, 2019).
- The correlation of farm size change, and development status/GDP provides a means of *positive analysis of the prevailing food system ideology* alignments within nations.
- Balancing the needs of increasing production to meet the growing demand of population expansion while simultaneously reducing the harmful impacts of food systems is a key component to *moving towards a sustainable future*.
- Food Regime Theory may allow policy makers an opportunity to frame decision making within the overall values and goals of society, which has the potential to *increase successful implementation of such policies*.

Next Steps

- Better Data

The ongoing and pervasive issue of inadequate data to study issues internationally has been a notable limitation in this study. Using more granular data for both farm size change and GDP or Development Status with a wider scope both in number of entities and included time periods would allow a more precise understanding of the relationship between prevailing Food Regime Theory alignment and farm size change. It is also likely that a better fit for understanding the general concept of development and economic status could be found, perhaps by creating a variable that encapsulates multiple factors. Additionally, evaluating the extent and direction of farm size change within each given entity would be useful in understanding the polarity and characteristics of ideological alignment within the entity and the level of fragmentation that exists.

- Different Data

Additionally, there are many other variables that would be useful in understanding the overall concept of Food Regime Theory and its potential to help clarify and predict prevailing food system ideology and preference. Most immediately, it is very likely that the number of workers employed in agrarian work, the division of labor between industrial and agrarian work, is an even more significant factor that overall GDP/capita. While the two are often related, such a difference might indicate that familiarity with and participation in, or via tangential relationships, food production is the more significant underlying causal factor in alignment. Such information might lead us to understanding how to increase uptake of specific, desirable practices and help manage production levels through awareness campaigns and education rather than more direct policy.

It would also be interesting to look at and quantify protests and political violence related to food systems as a means of understanding the specifics of the “relationship between capitalism, the state, and agriculture” (Tilzey, 2019, p.230). In particular, the 2020 Indian Farmer Protests of neoliberal policy reforms, the 1999 Seattle WTO Protest, and the ongoing efforts of La Via Campesina may be fruitful starting points. Particularly in light of the many warnings of potential future food crisis and growing interest of food system reform as a key factor in addressing climate change and social justice issues worldwide.

- Clarification and Expansion of Food Regime Theory

Finally, there is much work to be done within Food Regime Theory itself. Contemporary scholars that work on the theory tend to be interested primarily in international rural development and peasant studies and largely from the “Reformist” perspective by scholars working to promote food justice and sustainable practice uptake. And the UN, has clearly adopted this approach to the future of food systems, as outlined in Olivier De Schutter’s official report in his role as the Special Rapporteur on the right to food (2010). Of particular note, Mark Tilzey proposed six distinct regimes spanning 1750 to present, and Eric Holt Giminez and Annie Shattuck outlined a framework for categorization of the specific movements and their alignments within the current regime, both of which provide distinct approaches which could be applied to reevaluation of this project

• De Schutter, O. (2010). Report Submitted by the Special Rapporteur on the right to food. Retrieved from <https://digitallibrary.un.org/record/704716?ln=en>
 • Tilzey, M. (2019, April). Food Regimes, Capital, State, and Class: Friedmann and McMichael Revisited. Sociologia Ruralis Volume 59:2- 93-117. DOI: 10.1111/soru.12237

