MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

The Indian Green Revolution: how American expertise contributed to Indian nation-building in the second half of the twentieth century.

verfasst von / submitted by

Maite Van den Borre

angestrebter akademischer Grad / academic degree aspired

Master (MA)

Wien, 2023 / Vienna, 2023

Studienkennzahl lt. Studienblatt/ degree programme code as it appears on the student record sheet:	UA 067 805
Studienrichtung lt. Studienblatt/ degree programme as it appears on the student record sheet:	Individuelles Masterstudium Globalgeschichte
Betreut von/Supervisor:	Mag. Dr. Rolf Bauer

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

The Indian Green Revolution: how American expertise contributed to Indian nation-building in the second half of the twentieth century.

verfasst von / submitted by

Maite Van den Borre

angestrebter akademischer Grad / academic degree aspired

Master (MA)

Wien, 2023 / Vienna, 2023

Studienkennzahl lt. Studienblatt/ degree programme code as it appears on the student record sheet:	UA 067 805
Studienrichtung lt. Studienblatt/ degree programme as it appears on the student record sheet:	Individuelles Masterstudium Globalgeschichte
Betreut von/Supervisor:	Mag. Dr. Rolf Bauer

TABLE OF CONTENTS

ABSTRACT (ENGLISH) 5

ABSTRACT (GERMAN) 5

LIST OF ABBREVIATIONS 6

INTRODUCTION 7

PROBLEM STATEMENT 7

Context, scope and objective 7

Question formulation 10

METHODOLOGY AND SOURCE SELECTION 19

LAYOUT 20

CHAPTER 1 CONTEXTUALIZATION 22

1.1. BEFORE THE REVOLUTION 22

1.1.1. India's planning economy 22

1.1.2. Indo-US relations 29

1.1.3. PL 480 or the Food for Peace Programme 34

1.2. THE START OF THE 'GREEN REVOLUTION' IN THE GLOBAL SOUTH 38

1.2.1. The Rockefeller Foundation in Mexico 38

1.2.2. The Rockefeller and Ford Foundation's efforts in India 42

1.2.3. The US government's efforts in India 44

1.3. CONCLUSION 45

CHAPTER 2 THE IMPACT OF AMERICAN SCIENCE, EXPERTS AND TECHNOLOGY. 47

2.1. THE ROLE OF AMERICAN UNIVERSITIES 48

2.2. CONSTITUENTS OF THE GREEN REVOLUTION IN INDIA AND THE US' INVOLVEMENT IN THEM 55

2.2.1. High-Yielding seeds 56

2.2.2. Fertilizer 58

2.2.3. Water *61*

2.2.4. Plant protection materials *63*

2.3. CONCLUSION 64

CHAPTER 3 THE POLITICS OF THE GREEN REVOLUTION **66**

3.1. INDIAN POLITICAL DISCOURSE IN PARLIAMENTARY DEBATES ON AMERICAN AID 66

3.1.1. Technological self-reliance *68*

3.1.2. Race *70*

3.1.3. Strings attached *71*

3.1.4. Gratitude *75*

3.2. THE IMPACT OF AMERICAN EXPERTISE ON POWER INEQUALITIES BETWEEN INDIA AND THE US . 77

3.3.1. Policy priorities *82*

3.3.2. The creation of new political tensions *85*

3.4. CONCLUSION 89

CHAPTER 4 THE ROLE OF THE GREEN REVOLUTION IN THE INDIAN NATION-BUILDING PROJECT **91**

4.1. THE INDIAN GREEN REVOLUTION AS A SYMBOL OF INDIAN MODERNIZATION AND DEVELOPMENT 91

4.2. THE ROLE OF THE GREEN REVOLUTION IN INDIA'S POSTCOLONIAL NATIONALISM 94

4.3. CONCLUSION 98

CONCLUSION **100**

BIBLIOGRAPHY **105**

LITERATURE 105

PRIMARY SOURCES 111

Abstract (English)

55 years ago, the largest democracy in the world experienced an agricultural revolution, also known as the Green Revolution. With the help of high-yielding seed varieties, chemical fertilizers, mechanized farm tools, etc. India managed to become more self-sufficient in food production and this contributed to India's nation-building process. However, criticism on the implementation of the revolution is widespread and academic literature on the topic remains divided on its success. One such point of critique is built around the American involvement in the revolution and multiple academics have touched upon this topic. Nevertheless, a gap in literature still exists for the nexus between India's nation-building project and the use of American expertise in the Green Revolution. Therefore, my research will provide an answer to the question: "How was American expertise implicated in the process of nation-building through the Green Revolution in India". In order to formulate an answer, I will use the theoretical framework of the modernization theory and the concept of postcolonial nationalism.

Abstract (German)

Vor 55 Jahren erlebte die größte Demokratie der Welt eine landwirtschaftliche Revolution, die auch als Grüne Revolution bekannt ist. Mit Hilfe von ertragreichen Saatgutsorten, chemischen Düngemitteln, mechanisierten landwirtschaftlichen Geräten usw. gelang es Indien, in der Lebensmittelproduktion selbstständiger zu werden, was zur nation-building-Prozess Indiens beitrug. Allerdings gibt es weit verbreitete Kritik an der Umsetzung der Revolution, und die wissenschaftliche Literatur zum Thema ist in Bezug auf ihren Erfolg gespalten. Ein solcher Kritikpunkt bezieht sich auf die amerikanische Beteiligung an der Revolution, und mehrere Akademiker haben dieses Thema angesprochen. Dennoch besteht eine Lücke in der Literatur hinsichtlich des Zusammenhangs zwischen dem nation-building-Projekt Indiens und der Verwendung amerikanischer Expertise in der Grünen Revolution. Daher wird meine Forschung eine Antwort auf die Frage liefern: "Wie war amerikanische Expertise in den Prozess des nation-building durch die Grüne Revolution in Indien involviert?" Um eine Antwort zu formulieren, werde ich den theoretischen Rahmen der Modernisierungstheorie und das Konzept des postkolonialen Nationalismus verwenden.

List of abbreviations

APP	Agricultural Production Programme
CDP	Community Development Programme
CIA	Central Intelligence Agency
HYV	High-Yielding Varieties
HYVP	High-Yielding Varieties Programme
IADP	Intensive Agricultural District Programme
IARI	Indian Agricultural Research Institute
ICAR	Indian Council for Agricultural Research
IFFCO	Indian Farmers Fertilizer Cooperative
MAP	Mexican Agriculture Programme
NPC	National Planning Committee
OECD	The Organization for Economic Cooperation and Development
PL 480	Public Law 480
US	United States
USAID	United States Agency for International Development
USSR	Union of Soviet Socialist Republics

INTRODUCTION

Problem statement

Context, scope and objective

55 years ago, the largest democracy in the world experienced a major agricultural revolution, also known as the Indian Green Revolution. While this revolution consisted of many different things, all the changes were driven by the need to enhance the livelihood security of the Indian population and to improve the economic conditions of the country.[1] The ultimate goal of these broad agricultural changes was food self-sufficiency. Whether the revolution succeeded in achieving this goal remains a point of debate, broadly discussed in academic literature.[2] Although a lot of people are familiar with the term 'green revolution' and a lot of ink has already been spilled on the topic of the Indian one, the global implications and connections of this revolution remain underexposed.

More specifically, the Indian green revolution started in 1965 and while an explicit end date cannot be specified, multiple scholars argue that it started to lose momentum in the 1980s due to a variety of factors such as the emergence of diseases.[3] The revolution was the product of long-standing research, development, innovation and technology transfer. Their cumulative result not only brought large-scale agricultural changes to India, but other countries that were considered developing countries in the second half of the 20th century experienced green revolutions as well, although not all of them at the same time.[4] All of these green revolutions essentially consisted of agricultural technological development that increased plant yields. The key building blocks of these agricultural changes were among others; fertilizers, new irrigation techniques and high-yielding seeds. What all these green revolutions thus have in common is

[1] Biplab Dasgupta, "India's Green Revolution," *Economic and Political Weekly* 12, no. 6/8 (1977): 241.
[2] Francine Frankel, *India's Green Revolution: economic gains and political costs* (Princeton: Princeton University Press, 2015); Robert Chambers, "Beyond the Green Revolution: a selective essay," in *Understanding Green Revolutions: agrarian change and development planning in South Asia*, ed. T.Bayliss-Smith and S. Wanmali (Cambridge: Cambridge University Press); Akina Venkateswarly, *Political economy of agricultural development in India* (Milton: Taylor and Francis, 2021).
[3] Frankel, *India's Green Revolution*, 5.
[4] Jashandeep Singh Sandhu, "Green Revolution: a case study of Punjab," *Proceedings of the Indian History Congress* 75 (2014): 1192.

the fact that they brought an increase in the production of food grains, making the countries experiencing the revolution more self-reliant and less vulnerable to fluctuations in global food pricing. A second common aspect is the amount of critique these agricultural developments have generated. Together with the food output, concerns and critical voices surrounding the amounts of fertilizers, pesticides and other chemicals needed to achieve these high yields, grew. Furthermore, academics and activists have pointed out that these green revolutions failed to raise the living conditions of the whole of the population, due to the fact that these agricultural changes were often expensive and thus not accessible to all. This shows how, although the green revolution did bring about transformative change, it remains a hotly debated topic that is often criticized.

Despite the criticism, India was and is still very proud of the results achieved in this revolution. Some even claim that without the green revolution, India would not have been the confident nation it is today.[5] By increasing yields, India managed to become less reliant on other global actors which strengthened its position in relation to them in the international arena. Furthermore, this progress was integral to Indian nation-building at the time since economic development and food security contribute positively to the image a nation has of herself.

In the case of India, research conducted by American experts and American research institutes proved to be vital for the implementation of the revolution. The American model of agriculture was transferred to India through private American institutions such as the Rockefeller and the Ford Foundation, through the United States' (US) government and through the World Bank.[6] This demonstrates how the Indian Green Revolution for a large part had its origins in the US. This American influence was enhanced further by the presence of American scientists and researchers on Indian territory starting from the 1950s onwards. In addition, these American institutions and the government also provided financial contributions.[7] Therefore, it's safe to say that without American assistance, the Indian Green Revolution could have turned out a completely different way.

[5] Siraj Hussain, "India's food security is thanks to the Green Revolution. Let us not deny it," *The Wire*, consulted 15.05.2023, https://thewire.in/agriculture/food-security-green-revolution.
[6] Sandhu, "Green Revolution: a case study of Punjab," 1192.
[7] Sandhu, "Green Revolution: a case study of Punjab," 1193.

It is precisely the intersection between that American assistance, knowledge, products etc. on the one hand and India's nation-building process on the other, that forms the topic of this research. The analysis will focus on the way in which American expertise through the Indian Green Revolution contributed to Indian nation-building in the second half of the twentieth century. By doing this, this research will shed a new light on the involvement of American expertise in the Indian Green Revolution. A lot of academics have already devoted their attention to the Indian Green Revolution, India's nation-building project and its postcolonial nationalism but research on the role of the Americans in all of this remains scarce.[8] So even though multiple works touch upon the US' influence, most of them fail to provide a detailed analysis of the significance of this influence for India as a nation.

I argue that this is problematic because in order to really write a complete history of this green revolution, a framework/dialogue is needed in which the local-global nexus is discussed. According to Prakash Humar, a reoccurring problem of histories of the Green Revolution is that the global and regional scholarship talk past each other, thereby neglecting the linkages between the two that are vital in understanding these revolutionary processes.[9] A 'new history' of the Indian Green Revolution would then also address the interlinkage between US' view on modernity and their influence in this agricultural transformation. By placing the regional green revolution within a broader framework this research could also contribute to the history of the more global Green Revolution. Furthermore, by tracing the influence of American expertise a contribution is made to the history of technopolitics and how the latter can structure global relations in a more discrete way. This will in turn demonstrate how changes in agricultural policy in the Global South cannot be seen as completely separate from changes in the Global North and vice versa. Overall, this analysis should be considered an attempt at writing a new history of the Indian Green revolution in which the interlinkages between the local and the global receive much needed attention. Finally, in a world where technology and science are evolving more and more rapidly and are increasingly becoming connected to fields such as politics, economics, warfare, etc. this thesis can help build awareness as to how science is not always objective and neutral.

[8] Prakash Kumar et al., "Roundtable: new narratives of the Green Revolution," *Agricultural History* 91, no. 3 (2017): 401.
[9] Kumar et al., "Roundtable: new narratives of the Green Revolution," 400.

Question formulation

The main question in which this analysis will be based, is the following: "How was American expertise implicated in India's nation-building project and India's postcolonial nationalism through the Green Revolution?" Several sub questions follow from this, namely: How was the Green Revolution instrumentalized in Indian postcolonial nationalist discourse? How important was American expertise in the implementation of the revolution and what did the Americans gain by this? Did technology and science deepen power inequalities between the US and India?

Current literature

Considering the importance of the Green Revolution for the economic development of India it comes as no surprise that a considerable number of works have already been dedicated to this topic. Furthermore, the topic of history of the Indian nation after its independence has also generated a lot of research that will be used in this thesis to contextualize the findings. By placing previous works in a broader framework, I ensure thoroughness in my research and avoid reiterating extensively explored topics.

The Indian Green Revolution has been studied from historical socio-economic and political perspective by multiple academics. While the revolution has also been studied from a purely scientific perspective, this thesis will operate from a historical perspective and findings from the field of natural sciences will not be incorporated.

Most works on the Indian Green Revolution focus on the direct and indirect effects the changes in the agricultural field had on the Indian population and economy. Not all academics agree on the extent to which the revolution should be considered a successful one. Some academics claim that it was indeed a success because on a national scale, the economy improved and food insecurity went down.[10] Meanwhile, other academics describe the package of agricultural changes as being very beneficial to some parts of the Indian population, while other parts saw their livelihood stagnate or even decrease because of all the changes. Their main critique is that some regions thrived because of the revolution while other regions were

[10] M.S. Swaminathan*, Combating hunger and achieving food security* (Cambridge: Cambridge University Press, 2015); Norman Borlaug, "The Green Revolution: for bread and peace," *Bulletin of the Atomic Scientists* 27, no. 4 (1971): 7.

'forgotten'. According to them, this proves that the Green Revolution cannot be labelled an overall success since it did not advance the livelihoods of every Indian.[11] There is thus no general academic consensus on how the results of the Indian Green Revolution should be interpreted, making sure that the debate is kept alive.

Focusing on the revolution itself is the book by Francine Frankel named *India's Green Revolution: economic gains and political costs*. This work is an analysis of the impact of the revolution on both India's economy and society. She argues that the Green Revolution indeed produced economic benefits but that it also produced social tensions and strengthened inequalities. This book sheds light on the unintended consequences of the revolution and how it has impacted India's political structure and political stability. Frankel thus takes a stance in the middle of the debate as explained above: she states that there were certain economic benefits but that these were not distributed equally across society.[12] This work bundles a lot of information but as it is a rather general work, it doesn't provide a lot of detailed information on the role of the Americans in all of this. However, by gathering information on the effect of the revolution, I will get a better idea as to how the latter was instrumentalized for the Indian nation-building project.

A second, very important work that has the Indian Green Revolution as its sole topic is Govindan Parayil's paper. It focuses on the technological aspect behind the revolution: the transfer of technology, diffusion of knowledge and the institutionalization of a successful agricultural research system.[13] Although the publication is rather old, it was written in 1992, it is still crucial for this research because it highlights certain aspects that are key components in this thesis as well. This is due to the fact that the whole scientific, technological and research framework behind the revolution was gravely influenced by American research and knowledge.

It is crucial to acknowledge that the Indian Green Revolution did not occur in a vacuum, and therefore, it is necessary to examine the historical context in which this revolution took place.

---

[11] Chambers, "Beyond the Green Revolution: a selective essay," 363; Francine Frankel, *India's Green Revolution: economic gains and political costs* (Princeton: Princeton University Press, 1971), 7; Mia Basucci, "The Green Revolution: socioeconomic insecurity and agricultural displacement in India," *Refuge: Canada's Journal on Refugees* 16, no. 3 (1997): 23.

[12] Frankel, *India's Green Revolution: economic gains and political costs.*

[13] Govindan Parayil, "The Green Revolution in India: a case study of technological change," *Technology and Culture* 33, no. 4 (1992): 737-56.

For this purpose, a number of key works will be used, the first one being a book written by Ramachandra Guha named *India after Ghandi: the history of the world's largest democracy*. This book covers the history of India beginning from its independence from the British until the early 2000s. The author divided the book into five different sections, each section covering a different part of Indian history.[14] Especially the second and third part, focusing on the 50s, 60s, and 70s will be useful in order to contextualize the Indian Green Revolution and India's political economy at the time. A second work on Indian history that provides a broad overview is *A history of India*, of which Hermann Kulke and Dietmar Rothermund are the authors. This work discusses Indian history from antiquity to the present, thus making it a general work of which only small parts will be used for the necessary contextualization of the revolution.[15]

A third aspect of this thesis will be more theoretical, focusing on modernization theory and nation-building. *Mandarins of the future: modernization theory in Cold War America*, focusing on the history of modernization theory as used by the US in the second half of the twentieth century, will be one of the works used to analyse the instrumentalization of this theory. In this book, multiple key persons and their take on modernization theory are discussed, such as Walt Whitman Rostow, Talcott Parsons, Gabriel Almond and Edward Shils. Further in the book, the author focuses on how the modernization theory was exploited in order to stop the communist spread throughout the so-called third world.[16] This specific book is of interest to me because it links the modernization theory to America's foreign policy, explaining why the economic development of countries such as India were of strategic interest to the US. Secondly, the infamous book by Rostow will be used, which is considered one of the most important canonical works on modernization theory and served as the basis for certain American policies at the time. The book suggests that modernization can be achieved by combining certain government policies with foreign aid and private investment.[17] However, Rostow's approach has also been criticized for being too simplistic and focused on the West. It is because it has influenced American foreign policy and aid that it's of importance for this thesis. However, it's

[14] Ramachandra Guha, *India after Gandhi: the history of the world's largest democracy* (London: Macmillan, 2007).
[15] Hermann Kulke and Dietmar Rothermund, *A history of India* (London: Routledge, 2016).
[16] Nils Gilman, *Mandarins of the future: modernization theory in Cold War America* (Baltimore: Johns Hopkins University Press, 2003), 72.
[17] Walt W. Rostow, *The stages of economic growth: a non-communist manifesto* (Cambridge: Cambridge University Press, 1968).

important to note that the modernization theory will not be instrumentalized as the objective truth, it will be analysed in order to contextualize American and Indian policy with regards to the Indian Green Revolution and Indian nation-building.

In short, there are a multitude of academic works that focus on Indian history and the place of the Green Revolution in the latter and all of these have their own perspective and academical methods making the range of secondary sources very diverse. In a number of these works, the importance of the American influence is also acknowledged. However, what is currently lacking in the academic field concerning Indian history is research towards the nexus between India's nation-building project in the second half of the twentieth century and the use of American expertise in the Green Revolution. This specific research will try to bridge the current existing gap in the literature.

Central concepts and theoretical framework

The analysis of the American involvement in India's Green Revolution and its relationship with India's nation-building project and postcolonial nationalism hinges upon the utilization of the modernization theory. Rather than treating the modernization theory as a guiding or framing theory, this study examines how the theory has influenced the shaping of the Green Revolution and provided impetus for its implementation. By exploring the impact of the modernization theory on the Green Revolution, including the facilitation of American knowledge sharing and technology transfer, we can gain insights into the motives behind its adoption. Moreover, the theory also forms the background of the nexus between the Green Revolution and the Indian nation-building project. Thus, the modernization theory serves as a lens through which the intricate relationship between these elements can be explored and understood.

Modernization theory emerged in the 1950s as a direct reaction to the decolonization wave that continued in the 1960s. It was a theory constructed to grapple with the problems recent decolonized countries, and the area which was then called the 'third world', faced after their formal independence.[18] According to academic Nils Gilman, it was American sociologist Shils

[18] Gilman, *Mandarins of the future*, 72.

who placed 'modernity' at the centre of the development question in 1959.[19] It was the latter who claimed that modernity is inherently scientific and entails the progress of a country based on rational technology and scientific knowledge. Shils further claimed that a country could never be modern without it being advanced economically. A last important aspect of his definition was the following: *"'Modern' means being western without the onus of following the West. It is the model of the West detached in some way from its geographical origins and locus."* This quote exposes a very important aspect of the modernization theory, namely the idea that the West was the one model to follow. Hence, in order for countries to become truly modern and developed, they had to mimic the Western policy measures and programmes. Modernization thus became Westernization. Since Shils was a very influential academic at the time, his notion of modernity and what it means to be "modern" became widespread.[20] From then onwards, what was coined as the modernization theory became the dominant way of thinking about how to achieve structural change in postcolonial countries. Development came to be defined by economic, technological, etc. progress.[21] Crucial to this theory was the idea that there was only one path towards modernity and full development and that every country had to follow it in order to escape their 'traditional' nature.[22]

These notions of modernity and development inspired many leading academics at the time, such as Parsons who became one of the most important modernization theorists. In his work the latter focused on how societies evolve from a traditional state to a modern state. Parsons' conclusion on how this evolution came about was the idea that societies with more complex social hierarchies are better able to adapt to the change that comes with this evolution.[23] The most important aspect of his work, however, is the differentiation between what is considered to be "traditional" and what is "modern".[24]

A second person whose ideas were crucial for the modernization theory was Rostow. He wrote *The Stages of Economic Growth*, a work that has been so influential and hotly debated that often when people think of the modernization theory, Rostow pops up in their minds.

[19] Gilman, *Mandarins of the future*, 1-2.
[20] Irene Gendzier, *Development against democracy* (London: Pluto Press, 2011), 124.
[21] Wil Hout, "Classical approaches to development: modernisation and dependency," in *The Palgrave Handbook of International Development*, eds. Jean Grugel and Daniel Hammett (London: Palgrave Macmillan, 2016), 1.
[22] Hout, "Classical approaches to development," 3.
[23] Hout, "Classical approaches to development," 2.
[24] Hout, "Classical approaches to development," 3.

Rostow's argument is that societies go through five different stages, ranging from traditional to modern. The first stage, the traditional one, is the one in which agricultural production dominates the economic scheme of the nation and productivity is low. The following stage is what Rostow called "the preconditions for take-off". These preconditions exist of scientific innovations that ultimately help the nation to generate surplus usable for investment. The "take-off stage" is the third stage and it's the stage in which growth is self-sustained and the elites become the drivers of development. Next comes "the drive to maturity" in which countries invest in new sectors such as heavy industry. Lastly, the country arrives at the age of "high mass-consumption". In this final stage, consumption is deemed more important than actual production.[25] Important was also his idea that there were two 'ways' in which this evolution could be gone through, the first one being the democratic-capitalist method modelled after the so-called free world. The second was the model considered to be the complete antithesis of the latter, namely the totalitarian method. The second method, keeping the context of the Cold War in mind, was a direct reference to the then USSR. Despite the fact that both methods led to modernity in the end, Rostow argued that the Soviet method was a 'morbid path' towards it.[26]

Other important contributors to the infamous modernization theory were Bert Hoselitz, who mostly focused on the topic of economic development, Samuel Huntington, who analysed modernity from a more political perspective and Gabriel Almond and James Coleman who researched the politics of developing areas.[27]

In essence, modernization theory entails an academic framework that attempts to define the process of development that countries go through. A key aspect of this theory is the idea that development is an evolution brought about by political modernization, economic growth, social differentiation, etc. This development of a nation is considered to be linked to the adoption of "modern" technologies, institutions and norms. In the end, this evolution elevates traditional societies into modern ones. The example to follow was believed to be 'The West', meaning the economically strong Western European countries and the US, which was considered to be the global leader at the time. So, in order to become as modern as the West, 'traditional' countries

[25] Hout, "Classical approaches to development," 3.
[26] Gilman, *Mandarins of the future*, 102.
[27] Hout, "Classical approaches to development," 3-5.

had to promote industrialization, a market-oriented economy, adherence to human rights, individualism and so forth.

Despite the fact that modernization theory dominated thinking about development for a long time in the 20th century and even carries on influencing development theories until today, the theory also became the subject of various critiques. For example, modernization theory was strongly criticized for its normativity that was inherent to the divide between traditional and modern and the way these two categories in se referred to Western and non-Western.[28] Furthermore, critics of the theory claimed that it was too narrow to be able to really explain and alleviate the problems certain postcolonial nations faced with their development. Modernization theorists tend to focus solely on internal factors while neglecting other, external, factors that are as important to take into account when discussing countries' development. These critics refer to, among others, the impact of the former colonial economic and political structure and the dependence these states often had on the US or other already industrialized countries.[29] Ultimately, a lot of the critique that had been built up surrounding the modernization theory, was crystallized into dependency theory. The latter is largely considered to be the antithesis of modernization theory while both of them are seen as classical approaches to the development question.

A second concept that will be of importance to this analysis is the concept of postcolonial nationalism. Nationalism has been defined in many ways, by many different academics working in different disciplines such as Benedict Anderson, Etienne Belibar, Eric Hobsbawn, Anthony Smith, etc. Almost all of these academics considered the nation to be an invention, something that has to be formed and also performed in order to exist.[30] This will be a fundamental assumption that will be followed in this research. Nationalism has many faces and can be exercised in multiple ways. This also means that assuming that there is only one form of postcolonial nationalism would be inherently wrong.

[28] Hout, "Classical approaches to development," 3.
[29] Hout, "Classical approaches to development," 5.
[30] Sandra Dinter, "Nationalism and the postcolonial: an introduction," in *Nationalism and the postcolonia*l, eds. Sandra Dinter and Johanna Marquardt (Leiden: Brill, 2021), 9

According to Srirupa Roy postcolonial nationalism and postcolonial projects of community- and nation-building have to be seen as different to other forms of nationalism.[31] Important for a lot of countries that experienced postcolonial nationalism was the recognition of the state and the preferred representation of nationhood this state had.[32] True independence was only possible if the postcolonial state was recognized and respected. Furthermore, central to a lot of postcolonial states was the unification of the nation. This need often came from the fact that a lot of different tendencies, movements and social groups came together during the independence movement and struggle in order to achieve this independence. After this achievement, however, this unity fell apart in most cases. The goal for postcolonial nationalists was then to craft a common bond between the citizens of the postcolonial nation in order to create national unity.[33] What is generally considered to be the ultimate postcolonial nationalist goal is thus to create an internationally recognized state that is respected and plays a confident role in the global economic and political sphere, inhabited by citizens that have a sense of national identity and unity.[34]

Thirdly, the concept of nation-building is one that is closely linked to the concept of nationalism and one that will also be crucial for this research. In the academic literature, there exist a multiplicity of diverse definitions and conceptualizations of what nation-building constitutes. While some academics focus more on nation-building as a form of transition to democracy, others focus more on the creation of national unity as the crucial force in nation-building projects.[35] According to Jochen Hippler nation-building is an old term that flourished in the 1950s and 1960s. During this period, the concept of nation-building was also closely related to the modernization theory (cfr. supra). Arnold Rivkin, for example, once stated that:

[31] Srirupa Roy, *Beyond belief: India and the politics of postcolonial nationalism* (Durham: Duke University Press, 2007), 13.
[32] Roy, *Beyond belief*, 18.
[33] Joshua Forrest, "Nationalism in postcolonial states," in *After Independence: making and protecting the nation in postcolonial and postcommunist states*, ed. Lowell Barrington (Ann Arbor: University of Michigan Press, 2009), 33.
[34] Lowell Barrington, "Nationalism & Independence," in *After Independence: making and protecting the nation in postcolonial and postcommunist states*, ed. Lowell Barrington (Ann Arbor: University of Michigan Press, 2009), 23.
[35] Remi Chukwudi Okeke et al., "The concept of nationbuilding: theoretical expositions," *Journal of Humanities and Social Policy* 8, no. 1 (2022): 18.

> "*Nation-building and economic development… are twin goals and intimately related tasks, sharing many of the same problems, confronting many of the same challenges, and interrelating at many levels of public policy and practice."*[36]

In this thesis we will define nation-building as a process of socio-political development that is focused on creating national cohesion and a distinct national identity that is shared by all citizens. Harris Mylonas contextualized this concept as follows:

> *"…governing elites see benefit in harmonizing the political and national units through the construction and propagation of a common national identity among the population of their state."*[37]

Nation-building thus involves an integration process aimed at fostering a collective sense of identity, shared values, and common goals among citizens so that a true national identity can come into existence.[38] Commitment to the common good and to a shared community are crucial in projects of this kind.[39] T.G. Oyewole and J.A. Adegoke add to this that the two most important objectives of nation-building are a) establishing a representative government and b) setting conditions which will allow for economic growth and individual prosperity.[40] So according to these academics, economic factors play an important role as well besides the creation of a national identity. Anyanwu additionally claims that within the project of nation-building, the send of being 'proudly committed to the country' is also of importance.[41] A fourth aspect, according to E. Egbule, is the idea that nation-building is about the survival of a nation and the build-up of a 'virile and dynamic nation and an attempt to harness al the potential of a nation's human and natural resources for the benefit of the citizens of the nation.'[42] Last but not least, the OECD has also created a definition of nation-building, describing it as

---

[36] Jochen Hippler, *Nation-building: a key concept for peaceful conflict transformation?* (London: Pluto Press, 2006), 5.
[37] Harris Mylonas, *The politics of nation-building: making co-nationals, refugees and minorities* (Cambridge: Cambridge University Press, 2013), 18.
[38] Sinclair Dinnen, "Nation-building," *Technical report* (2006): 8.
[39] Dinnen, "Nation-building," 8.
[40] Okeke et al., "The concept of nationbuilding," 20.
[41] Okeke et al., "The concept of nationbuilding," 20.
[42] Okeke et al., "The concept of nationbuilding," 21.

> "*Actions undertaken, usually by national actors, to forge a sense of common nationhood, usually by national actors, to forge a sense of common nationhood, usually in order to overcome ethnic, sectarian or communal differences; usually to counter alternate sources of identity and loyalty; and usually to mobilise a population behind a parallel statebuilding project*."[43]

Finally, strongly connected to nation-building is the concept of state-building. The World Bank describes state-building as "*the centrality of efforts to build state capacity and accountability*."[44] What is of importance in this concept is the formation of institutions and systems, in opposition to the concept of nation-building in which nationhood and national identity are the core aspects.[45] So during state-building projects the main goal is to create a strong and well-functioning government that can address and respond to the needs of the people it is governing.[46] Although nation-building and state-building are intertwined as concepts, we ought to keep in mind that both have their own logic, goals and dynamic.[47]

Methodology and source selection

This research will be based on different primary archival sources from all sorts. Since I'm located in Europe and have no financial budget for travelling to India or the US themselves, I was limited to sources that were openly available on the internet. Furthermore, since some archival sites, such as the sites of the Rockefeller Foundation archives and the Ford Foundation archives, have a paywall, it was also not possible to consult sources from these sites. This means that the number of primary sources I could actually consult, were limited. However, the number of available resources that could be consulted online for free was still very considerable.

I employed various sources in my research, including reports from governmental institutions in both the US and India, transcripts of parliamentary debates, speeches delivered by Indira Gandhi and a speech by the leader of USAID, as well as an Indian law. These sources were

[43] René Grotenhuis, *Nation-building as necessary efforts in fragile states* (Amsterdam: Amsterdam University Press, 2016), 73.
[44] Grotenhuis, *Nation-building as necessary efforts in fragile states,* 73.
[45] Grotenhuis, *Nation-building as necessary efforts in fragile states,* 74.
[46] Grotenhuis, *Nation-building as necessary efforts in fragile states,* 83-4.
[47] Grotenhuis, *Nation-building as necessary efforts in fragile states,* 80.

primarily gathered using the snowball method and online search engines like Jstor. They were chosen due to their rich and detailed information regarding key aspects of the Green Revolution, the Indian perspective on American aid, the role of the Green Revolution in Indian nation-building, and more. When analysed collectively, they offer a comprehensive and valuable insight into how American science contributed to India's nation-building through the Green Revolution. However, it's important to acknowledge that not all sources were accessible, and some facts or events may not have been documented. Furthermore, it should be considered that some documents may also still be subject to censorship. The American involvement in other nations during the Cold War is still a sensitive subject, thus the existence of gaps in the archival material should not be ruled out.

Layout

Chapter one addresses the historical contextualization necessary for a thorough understanding of this research. In this part I will focus the period preceding the Green Revolution in India: I will explore the ruling political power at the time, key political priorities, and the state of the Indian economy as well as the nature of the relations India had with the US at the time. Next, the context of the start of the revolution will be described and thirdly, the US' position in South-East Asia and specifically India will be examined. Besides the historical contextualization, it will also be necessary to shortly discuss the origins of the Green Revolution, what it is, and its implementation in other countries around the world. This will contribute to a better understanding of the importance of the revolution in Indian nation-building and the American involvement in it.

In **chapter two** my focus will shift towards evaluating the influence of American science, experts, and technology. I will discuss the involvement of American universities in the broader context of the Indian Green Revolution, exploring their connections with Indian academic institutions. Additionally, I will dissect the various components that constituted the Green Revolution in India, shedding light on the extent of US engagement in each of these specific elements. This analysis will encompass not only the technical aspects but also extend to areas such as policy development. Finally, I will conclude this chapter by providing a concise summary of the key discoveries and insights gleaned from the research.

Chapter three of this thesis centres on the political dimensions of the Green Revolution. This chapter comprises three key sections. The first subsection delves into Indian political discourse as manifested in Lok Sabha debates regarding American aid. Here, I will examine four specific topics that featured prominently in these debates. This analysis will primarily rely on transcripts of these debates and speeches by Gandhi.[48] The second subsection concentrates on assessing the impact of American expertise on the power imbalances between India and the United States. The third subsection of this chapter revolves around the influence of the Green Revolution on Indian national politics from the year of 1960 onwards. The analysis will explore how the Green Revolution reshaped Indian policy priorities and triggered the emergence of new political tensions within the country. Ultimately, the chapter ends with a short conclusion.

Chapter four is dedicated to analysing the role of the Green Revolution within the broader context of India's nation-building project. The chapter is divided into two sections. The first section explores how the Indian Green Revolution served as a symbol of modernization and development within the country. The second section of the chapter shifts the focus to the role of the Green Revolution in India's postcolonial nationalism and nation-building efforts. This analysis will be primarily informed by an examination of speeches delivered by Gandhi. The chapter then wraps up with a brief summary and discussion, particularly highlighting the distinctions between the objectives of the United States and India concerning the Green Revolution.

Lastly, in the **conclusion** I will summarize the main findings of the thesis and provide an answer to the research questions developed in the introduction.

[48] From here on "Gandhi" will refer to Indira Gandhi.

CHAPTER 1 Contextualization

"...a dialogue between the concerns of global and regional perspectives is a sound rationale for writing new histories of the Green Revolution."[49]

To really understand the how the American expertise used in the Indian Green Revolution contributed to the Indian nation-building project it is important to frame this subject in a broader historical framework.

1.1. Before the revolution

1.1.1. India's planning economy

When India gained independence in 1947, it was agreed upon that this new nation had to be a democratic one with universal suffrage and freedom of press and speech. A crucial step in ensuring the democratic nature of India was ensuring that disadvantaged groups, such as the Dalits or "untouchables", were represented in the constitutional order. The democratization of the state was thus a critical point on the political agenda of the Congress party that was supposed to lead the transition into independence.[50] A second focus of Indian leaders, already before the actual independence, was the bad state of India's economy. They wanted to remedy the so-called economic backwardness the country found itself in.[51] These two points, democratization and economic growth, were pivotal in the plans of the ones leading India to independence.

Already in 1938, a *National Planning Committee* (NPC) was set up that was charged with creating an economic development policy for the independent India that would soon come to exist.[52] The chairman of this committee was actually Jawaharlal Nehru, India's first prime minister. The main goals of the NPC, which would also remain the main goals for India's

[49] Kumar et al., "Roundtable: new narratives of the Green Revolution," 401.
[50] Barbara Metcalf and Thomas Metcalf, *A concise history of modern India* (Cambridge: Cambridge University Press, 2012), 232.
[51] Guha, *India after Gandhi*, 204.
[52] Guha, *India after Gandhi*, 204.

economic development for a long time after, were national self-sufficiency and raising living standards.[53] Nehru was also especially passionate about the NPC since he believed that

> *"Behind the Plan lies the conception of India's unity and of a mighty co-operative effort of all the people of India [...] If we adopt this approach, we shall be dealing with the major disease or weakness of India, i.e. the fissiparous tendencies and parochial outlook that often confront us in this country."*[54]

So according to Nehru focusing on advancing the economy at a national level would increase people's awareness and sense of belonging to their country. The NPC drew heavily on examples of other countries that had experienced late industrialization, such as Japan and Russia, when they decided that the way to achieve these goals was through planning and state intervention in India's economy. Fortunately, a number of leading Indian industrialists shared this assumption and contributed to it in the so-called Bombay Plan, also known as *A plan for Economic Development for India* in 1944.[55] In this document they stated that only the state would be able to diminish inequalities of income. This clearly shows how even the private sector supported state intervention and state control, although not in all sectors and only to a certain extent.[56]

During the first two decades of its independence, Nehru was the most important political player on the field. Some academics even claim that this period should be characterized as "the age of Nehru". The latter was committed to creating a more equitable social order alongside a comprehensive transformation of India's economic framework and structures.[57] The economic change he envisioned was linked to agrarian reform and to more state control over the economy.[58] Agrarian reform furthermore had to be accompanied by industrial growth.[59] In order to reach these goals, Nehru and the Congress committed themselves to setting up a

---

[53] Guha, *India after Gandhi*, 204.
[54] Ramachandra Guha, "Jawaharlal Nehru: a romantic in politics," in *Makers of modern Asia*, ed. Ramachandra Guha (Cambridge: Harvard University Press, 2014), 133.
[55] Medha Kudaisya, "The promise of partnership": Indian business, the state and the Bombay plan of 1944," *The Business History Review* 88, no. 1 (2014): 97-98.
[56] Guha, "Jawaharlal Nehru: a romantic in politics," 131.
[57] Metcalf and Metcalf, *A concise history of modern India,* 243.
[58] Guha, *India after Gandhi*, 128.
[59] Guha, *India after Gandhi*, 203.

planned economy. This shows how Nehru was influenced by socialist thought and examples of other countries.

In 1950 a planning commission was created that drew up multiple five-year plans that together would lead India to modernity and true development.[60] This planning, according to Nehru, would help build a modern Indian nation.[61] A common misconception is that Nehru imposed state intervention and a planned economy on the private sector. The above-mentioned Bombay Plan actually demonstrates that the private sector and leading industrialists themselves were asking for and thus supporting larger state intervention for the cause of diminishing economic inequalities and a better distribution of national income.[62] One year later the planning commission brought out a draft of what was going to be the first five-year plan. The main focus of this plan would be agriculture, since food production came under intense pressure after Indian independence and the Indian Partition.[63] In 1952 a series of in total 55 community development programmes was launched by the Indian government. The focus of these programmes was bettering cultivation methods, improving communication systems, increasing cattle welfare, etc.[64] Important and crucial to understand the dynamics between India and the US is the fact that the US was co-sponsoring these development schemes. Furthermore, a big part of these community programmes was introducing Indian farmers to new high-yielding seeds and chemical fertilizers.[65]

Other sectors that were stressed in this particular first five-year plan were transport and communication. Nehru lauded this plan as being "*the vehicle to bring the whole of India – agricultural, industrial, social and economic – into one frame of thinking*."[66] This quote demonstrates how Nehru viewed the plan as a means to foster national unity and bring India together, making it an integral part of the nation-building process. In the end, however, the plan reached the goal of increasing food production but if failed to achieve significant results in the other sectors, which generated a certain amount of critique among the Indian population.[67] Other academics on the other hand claim that the plan reached all of its objectives, which were

[60] Metcalf and Metcalf, *A concise history of modern India,* 245.
[61] Peter Robb, *A history of India* (London: Palgrave, 2002), 209.
[62] Kudaisya, ""The promise of partnership"," 230.
[63] Guha, *India after Gandhi*, 206.
[64] Guha, *India after Gandhi*, 217; Garvin Karunaratne, "The failure of the community development programme in India," *Community Development Journal* 11, no. 2 (1976): 95
[65] Guha, *India after Gandhi*, 218.
[66] Guha, *India after Gandhi*, 206.
[67] Guha, *India after Gandhi*, 206.

limited in the first place.[68] There exists thus no general consensus in academic literature as to whether the first five-year plan was an all-round success or if it was just successful in some specific areas such as agricultural production.

The second five-year plan focused on another facet of Indian economy, namely industrialization.[69] Nehru was convinced that the building of heavy industry was crucial to the survival of India as an independent nation.[70] Without such heavy industries, dependency would remain a characteristic of the Indian economy, something that Nehru was desperate to avoid.[71] This plan was the work of an Indian academic who had studied at Cambridge, showing how Western knowledge and science was indispensable in the creation of this specific plan.[72] This academic, Prasanta Chandra Mahalanobis, also held discussions with Soviet scholars and conducted research on construction projects in the USSR, showcasing the impact of Soviet planning and economic structuring on Indian planning and the development of ideas for economic progress.[73] His research eventually culminated in the eight objectives of the second plan, the most important one being increasing the public sector. The second goal was to focus on heavy industry, as it was thought of to be the path towards genuine economic independence.[74] The two indirect goals of this plan on the other hand were 1) to raise the level of national income in real terms by 25% and 2) to raise employment levels.[75] The plan resembled an old nationalist model, named *Swadeshi*, in the sense that it really advocated economic self-reliance and independence.[76] Guha even stated that self-reliance, according to this second five-year plan, became the index of development and progress.[77]

One of the core ideas of this second plan was that India was underdeveloped at the time because of the lack of technological progress. Nehru had always been fascinated by modern

---

[68] Brij Kishore Sharma, "Jawaharlal Nehru's model of development," *Proceedings of the Indian History Congress* 73 (2012): 1296.
[69] Metcalf and Metcalf, *A concise history of modern India,* 245.
[70] Sharma, "Jawaharlal Nehru's model of development," 1300.
[71] Sharma, "Jawaharlal Nehru's model of development," 1300.
[72] Metcalf and Metcalf, *A concise history of modern India,* 206.
[73] Guha, *India after Gandhi*, 208.
[74] William Strevig, "Economic development in India under the second five-year plan," *The American Economist* 4, no. 1 (1960): 39.
[75] Arthur Wichmann, "India's economic problems and the second five-year plan," *The Southwestern Social Science Quarterly* 38, no. 3 (1957): 218.
[76] Swadeshi is a term derived from Sanskrit, meaning "of one's own country" or "self-sufficiency." It originated as a socio-economic and political movement in India during the late 19th and early 20th centuries, particularly during the period of India's struggle for independence from British colonial rule.
[77] Guha, *India after Gandhi*, 209.

science and he saw in this the key to development and modernization.[78] He wanted science to be "*the handmaiden of economic progress, with scientists devoting their work to augmenting productivity and ending poverty*."[79] The science he envisioned thus had a clear utilitarian face. The focus on practical applications was evident in the products created by these Indian scientists, who were encouraged to develop new products for the Indian market rather than limiting themselves to mere academic research across various disciplines.[80] It was also within the period between the two first five-year plans that a number of engineering schools were set up, with the goal of 'creating' more indigenous Indian scientists.[81] Crucial to this whole commitment to building India's economy independently was the fact that it had to be Indian technology that would bring the country to modernity and development.[82] Nehru attached great importance to the idea of creating and conducting science independently from Western know-how, technology and equipment.[83] In the light of the later Green Revolution, this is an important conviction to keep in mind.

What was also important was that Nehru always stressed the fact that India was indeed influenced by other countries such as the USSR, Japan and the US but that Indian planning was not merely a copy of what those countries had done before.[84] He thus clearly wanted to focus on India's uniqueness as a country, something that also came back in Nehru's policy of non-alignment, which will be discussed later on in this chapter.

The two first five-year plans showcase just how important economic independence and self-reliance were to the Indian leaders and population at the time. Economic advancement and technological progress had to be rooted in the country itself. Not only would this be beneficial to the economy of the country, but it would also serve as a unifier in terms of bridging the divisions that characterize the Indian population.[85] By having a shared goal that required the

[78] Sharma, "Jawaharlal Nehru's model of development," 1293.
[79] Guha, *India after Gandhi*, 215.
[80] Guha, *India after Gandhi*, 216.
[81] Guha, *India after Gandhi*, 216.
[82] Guha, *India after Gandhi*, 209.
[83] Guha, *India after Gandhi*, 216.
[84] Pulapre Balakrishnan, "The recovery of India: economic growth in the Nehru era," *Economic and Political Weekly* 42, no. 45/46 (2007): 57.
[85] Guha, *India after Gandhi*, 211.

energy of every Indian citizen in every province, Nehru hoped to overcome separatism, provincialism and sectarianism.[86]

When looking at the results of these two five-year plans that spanned the period between 1951 and 1961 it becomes clear that it indeed put an end to a period of economic stagnation that had characterized the decades before.[87] Agricultural production during the first plan grew by 25% and continued to grow with 20% during the second plan. Industrial output grew as well and overall, India's national income rose by 4% during this decade of planning.[88] However, this method of planning also had certain downsides.[89] Funding that could have been more effectively utilized in the agricultural sector was instead absorbed by inefficient industries for a long time after the first two five-year plans. Furthermore, the desire to gain self-sufficiency on all levels had as a consequence that certain goods came on the market and stayed there without any competition and without any change to their design or structure, crushing innovation.[90] Thus, there was no true competition on the domestic market.[91] Barbara Metcalf and Thomas Metcalf even claimed that Nehru didn't succeed in getting his socialism to penetrate every layer of society and the economy. There was indeed a socialized sector, but it was limited and underneath that socialized layer there existed a whole economic world without regulation or state control.[92]

Toward the end of the 1950s food production stagnated again and eventually even declined.[93] Population on the other hand, kept growing which increased the pressure on agricultural development.[94] The third five-year plan, which would span the period between 1961 and 1966, therefore showed a strong state support for more intensive agricultural production again.[95] More concretely, the plan included increasing fertilizer production, increasing the number and intensity of agricultural experiments and making agreements with the US concerning shipping

[86] Guha, *India after Gandhi*, 211.
[87] Balakrishnan, "The recovery of India," 63-4.
[88] Metcalf and Metcalf, *A concise history of modern India,* 246.
[89] Metcalf and Metcalf, *A concise history of modern India,* 246.
[90] Metcalf and Metcalf, *A concise history of modern India,* 246.
[91] Metcalf and Metcalf, *A concise history of modern India,* 246.
[92] Metcalf and Metcalf, *A concise history of modern India,* 247.
[93] Metcalf and Metcalf, *A concise history of modern India,* 247.
[94] Robert Amundson, "India's third five year plan – 1961-1966," *Review of Social Economy* 22, no. 2 (1964): 88.
[95] Amundson, "India's third five year plan," 91.

wheat and rice to the nation.[96] The latter happened under PL 480 agreements, which authorized the selling or donation of surplus American agricultural commodities to other countries (cfr. infra). In short, the third five-year plan wanted to secure a rise in national income, to achieve self-sufficiency in food grains and to increase agricultural production overall, to expand basic industries, to increase the employment rate and to reduce inequalities.[97] So economic self-reliance was established as a national goal through this third plan.[98]

However, the implementation of this particular plan was complicated by a number of issues. In the north and northeast of India, the country became involved in a war with China over control of these territories.[99] As a result of this conflict, a significant portion of the funding that was originally allocated to development programmes was redirected towards the Indian military.[100] Furthermore, the conflict also generated a lot of critique on the socialist policies Nehru had adhered to during his time as prime minister.[101]

In May 1964, Nehru died and was succeeded as prime minister by Lal Bahadur Shastri.[102] The latter quickly announced that he would more or less pursue the policies of the prime minister that went before him: "*Socialism is our objective; our policies are already defined and enunciated. What is needed is proper and quicker implementation*".[103] In the first months after his election, he had to deal with extreme food scarcity, a problem that also characterized the last months of Nehru's premiership. His solution was to give farmers assistance via loans, fertilizers, irrigational facilities and other types of guidance. Furthermore, he also reoriented policy even more towards agriculture by naming the Minister of Steel and Heavy Industries the Minister of Food and Agriculture. Shastri was committed to achieving economic development through increasing agricultural production instead of relying on foreign imports of food.[104] However, despite all the effort India still could not manage to become self-sufficient in food

[96] Amundson, "India's third five year plan," 91.
[97] Amundson, "India's third five year plan," 91.
[98] William Logan, "Building nonalignment: technological interchange and India's third five-year plan," (master thesis, Auburn University, 2016), 15.
[99] Logan, "Building nonalignment," 34.
[100] Metcalf and Metcalf, *A concise history of modern India,* 248.
[101] Metcalf and Metcalf, *A concise history of modern India,* 248.
[102] Metcalf and Metcalf, *A concise history of modern India,* 248.
[103] Sachin Chaudhuri, "The successor," *Economic and Political Weekly* 2, no. 3/5 (1967): 121.
[104] Srinath Raghavan, "Indira Gandhi: India and the world in transition," in *Makers of modern Asia*, ed. Ramachandra Guha (Cambridge: Harvard University Press, 2014), 229.

production when he was prime minister. [105] During his term, Shastri also had to deal with the Indo-Pakistani war of 1965 over the Kashmir region. Eventually, on the 10th of January 1966 India and Pakistan signed an agreement that's also known as the *Tashkent Agreement* that to resolve the war and resume diplomatic relations.[106] Unfortunately, Shastri died of a heart attack that same night, leaving India without a prime minister for the second time in two years.[107] Life magazine, that covered the cremation of Shastri in their volume, claimed that Shastri gave the Indian population a sense of national unity while he was in power and many important Indian public figures, such as the later prime minister Indira Gandhi stated that Shastri would've put India on 'the right road'. [108]

On the 19th of January 1966 Indira Gandhi was sworn in as India's prime minister.[109] The main components of her economic philosophy were self-reliance, modernization and the reduction of poverty. However, when she assumed power, India was heading towards mass-starvation due to the mediocre results of Nehru's planning economy and successive bad monsoon seasons.[110] Gandhi thus had little choice but to seek foreign, mostly American, assistance (which will be discussed in more detail in the next chapter). Partly because of the fact that the US under President Lyndon Johnson was only willing to give this crucial food aid to India if the country would modernize its agriculture and partly because of Gandhi's focus on self-sufficiency and independency, the project of the so-called Green Revolution was started.[111]

1.1.2. Indo-US relations

To be able to understand the American involvement in India's agricultural and economic policy, a brief overview of the relations between India and the US in the two decades before the start of the Green Revolution will be given.

[105] Rakesh Ankit, "Lal bahadur Shastri: 1964-1966 leader a glance," SAGE Journals 8, nr. 1 (2020): 43.
[106] Guha, *India after Gandhi*, 403.
[107] Stanley Kochanek, "Post-Nehru India: the emergence of the new leadership," *Asian Survey* 6, nr. 5 (1966): 298.
[108] Guha, *India after Gandhi*, 403.
[109] Guha, *India after Gandhi*, 405.
[110] Raghavan, "Indira Gandhi: India and the world in transition," 231.
[111] Raghavan, "Indira Gandhi: India and the world in transition," 231.

Of crucial importance to the Indian leaders at the time was their commitment to anti-imperialism and anti-colonialism and they incorporated these principles into the country's foreign policy.[112] This automatically meant that anti-imperialist movements and struggles around the world could often count on Indian sympathy and sometimes support.[113] Even prior to achieving official independence, Indians expressed their stance on military alliances, viewing them as a potential cause of war and therefore a matter they wished to avoid and denounced.[114] Nehru had been the architect of Congress' foreign policy in the years preceding independence, so when he became prime minister, he was already embedded in the world of foreign relations and foreign policy.[115] According to N. Sethuraman, Nehru was a realist who was convinced that in a sovereign nation, national survival had to be the number one goal with regards to foreign policy.[116] Two central principles in Nehru's foreign policy were Pan-Asianism and nonalignment.[117] Thus, during the Cold War, the relationship between India and the US was greatly influenced by India's commitment to maintaining positive relations with both the USSR and the US, despite their ideological differences. So, Nehru's policy of non-alignment was not intended to distance India from either of them, but rather to remain neutral and avoid taking sides.[118]

> *"Our general policy is to avoid entanglement in power politics and not to join any group of powers as against any other group. The two leading groups today are the Russian bloc and the Anglo-American bloc. We must be friendly to both and yet not join either."*[119]

When preparing for a visit to the US he reiterated that he wanted to be friendly with the country, while at the same time clarifying that they would not blindly follow the US' lead.[120] However, the fact that India did not consider the USSR to be an aggressive but rather defensive power

[112] N. Sethuraman, "Jawaharlal Nehru and Indo-US relations: the making of India's foreign policy," *Seventy Fourth Session of the Indian History Congress at Ravenshaw University* (2013): 2.
[113] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 2.
[114] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 2.
[115] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 1.
[116] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 2.
[117] Guha, "Jawaharlal Nehru: a romantic in politics," 134.
[118] Guha, "Jawaharlal Nehru: a romantic in politics," 135.
[119] Guha, *India after Gandhi*, 153.
[120] Guha, *India after Gandhi*, 156.

made the US uncomfortable with this position of non-alignment.[121] The US namely made out of this that India tilted more towards the USSR, leading them to keep Pakistan "on hand" as part of their containment strategy.[122] Furthermore, in 1950 India delivered critique on the American strategy in the Korean war, which put an even bigger strain on the relations between the two countries.[123] The year after, India faced a food crisis, leading them to seek assistance from the US in the form of food shipments, which then became the *India Wheat Loan*. This marked a significant moment in the economic and food aid aspect of Indo-US relations, as it was the US government's first substantial attempt to aid India's economy.[124]

From 1951 to 1953, India and the US strengthened their relationship, as evidenced by the US providing equipment and sending experts to assist with agricultural programmes established in India.[125] However, there was always a slight feeling of mistrust that kept lingering between the two countries and their leaders. When the republicans got back in power in the US, this mistrust was voiced with the then Secretary of State disdaining India's policy of nonalignment.[126] The US' arms pact with Pakistan, signed in 1954 with the conviction that Pakistan would be a crucial partner in the war against communism, cooled the Indo-US relations even more and drew India slightly closer to the USSR since this pact made Nehru anxious about the US' stance if an Indo-Pakistani war would ever break out.[127] During debates in the Security Council of the United Nations, the US furthermore always took a pro-Pakistani stance when it came to Indo-Pakistani struggles.[128] In votes on these struggles in that same council, it were the Soviet votes that 'saved' India's position.[129] The overt alignment of the US with India's neighbour created significant tension in Indo-US relations, which only began to shift following the Indo-Chinese war of 1962.[130] It's clear that although the US and India both attached great importance to democratic principles, there was a great distance between them with regards to international politics and global power imbalances.[131] Guha summarized it as follows:

---

[121] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 8.
[122] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 8; since the partition in 1947 Pakistan and India have been involved in number of conflicts and wars.
[123] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 8.
[124] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 8-9.
[125] Guha, *India after Gandhi*, 158.
[126] Guha, *India after Gandhi*, 159.
[127] Guha, "Jawaharlal Nehru: a romantic in politics," 135.
[128] D.C. JHA, "US policy towards India," *The Indian Journal of Political Science* 37, no.1 (1976): 54.
[129] JHA, "US policy towards India," 54.
[130] JHA, "US policy towards India," 54.
[131] Guha, *India after Gandhi*, 161.

"*America thought India soft on communism; India thought America soft on colonialism."*[132] Also in 1954, the *Public Law 480* (PL 480) was passed in the US (cfr. infra). From the beginning, India was one of the countries on the receiving end of this PL 480, something which would later incentivize Indian leaders to seek self-sufficiency in food.[133]

An important moment and something that also had a long-lasting impact on Nehru's national political economy, was his visit to the then USSR.[134] The most appealing 'thing' in the USSR at that time to the Indian prime minister was its economic system of state planning and state ownership. It was there that he found the inspiration for his own economic policy, which would likewise be characterized by a planning economy (cfr. supra).[135] The enthusiasm with which Nehru was greeted during his visit, and the subsequent visit of USSR officials of India, of course already alarmed the US in a way.[136] When Soviet troops invaded Hungary in 1956 to tackle the Hungarian Revolution, India abstained from voting a resolution that would condemn this invasion.[137] This generated a substantial amount of critique on Nehru's policy on non-alignment with the Western bloc reproaching Indian leaders to be anti-Western and hypocritical.[138] This made the US even more suspicious on India's stance in the Cold War. According to Guha, the debacle over the invasion in Hungary, marked the beginning of "Western disillusionment with Nehru", demonstrating how after 1956 the West, and in particular the US, never fully trusted India again.[139]

To sum up, the period from 1950 to 1960 was marked by rather complex and ambiguous relations between India and the US, despite the continued existence of aid flows from the US to India.[140] The election of John F. Kennedy in 1960 in the US marked a turning point in Indo-US relations, considering the fact that this president had a very liberal and open-minded attitude towards India and her policies.[141] Given the context of the Cold War, his approach towards

[132] Guha, *India after Gandhi*, 161.
[133] Cullather, *The hungry world,* 144.
[134] Guha, *India after Gandhi*, 163.
[135] Guha, *India after Gandhi*, 163.
[136] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 9.
[137] Guha, *India after Gandhi*, 165.
[138] Guha, *India after Gandhi*, 166.
[139] Guha, *India after Gandhi*, 167.
[140] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 10.
[141] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 10.

India involved providing aid in order to foster economic and political stability, with the aim of preventing the spread of communism in the country.[142]

Lyndon Johnson succeeded Kennedy as president in 1963.[143] Kristin Ahlberg claims that this president intended to use PL-480 as a bargaining tool.[144] Similar to his predecessors, Johnson saw providing development assistance to India as a means of addressing the potential for unrest resulting from a population suffering from hunger, which could increase India's susceptibility to communist influences.[145] Furthermore, the US president was convinced that the sustainability of the PL 480 agreements depended on US' ability to influence India's agricultural modernization while serving US geopolitical concerns at the same time.[146] On the Indian side, Nehru needed the US as a form of leverage against China, with which India had been engaged in a war between 1961 and 1962.[147] In 1963 Nehru wrote: *"Indo-American relations have seldom been as close and cordial as they are now."*[148]

During Shastri's term as Indian prime minister however, Indo-US relations deteriorated again, as a result of Shastri's criticism of the US involvement in Vietnam.[149] This criticism angered Johnson, as the United States had invested significant funds, troops, and resources into the proxy war. Additionally, the American government had made considerable efforts to shape India into a Western ally.[150] What made the situation even more complicated was that the US in a way also believed that they were fighting this war to protect other South Asian countries from the spread of communism and dictatorship.[151] This tension caused Johnson to adopt the infamous short-tether approach and develop a more quid pro quo attitude when it came to aid towards India .[152] The short-tether policy essentially encapsulated short-term grain shipments

[142] Sethuraman, "Jawaharlal Nehru and Indo-US relations," 10.
[143] Kristin Ahlberg,"'Food is a powerful tool in de hands of this government': the Johnson administration and PL 480, 1963-1969," *ETD collection for University of Nebraska-Lincoln* (2003): 1.
[144] Ahlberg, *Transplanting the Great Society*, 111.
[145] Ahlberg, *Transplanting the Great Society*, 1.
[146] Ahlberg, *Transplanting the Great Society*, 109.
[147] JHA, "US policy towards India," 45.
[148] JHA, "US policy towards India," 45.
[149] JHA, "US policy towards India," 60.
[150] Ahlberg, *Transplanting the Great Society*, 112.
[151] Memorandum from Robert Komer of the National Security Council Staff to the President's Special Assistant for National Security Affairs (Bundy), 28.05.1965 (U.S. Department of State archive*, Foreign Relations of the United States 1964-1968 Volume XXV South Asia*, 128), consulted 12.02.2023 https://1997-2001.state.gov/about_state/history/vol_xxv/m.html.
[152] Ahlberg, *Transplanting the Great Society*, 106.

that were linked to Indian government's adaptation to American demands and interests (both on the economic and political level).[153] In 1964 the US even limited the amount of food aid because they believed that Shastri did not invest enough in agricultural modernization of the country.[154] It was only a year later, both under pressure from the Americans as well as with support from the Americans, the so-called Green Revolution was set up.

1.1.3. PL 480 or the Food for Peace Programme

Especially important in the context of American assistance to India was the Public Law 480 or PL 480, which was defined as:

> *"An act to increase the consumption of United States agricultural commodities in foreign countries, to improve the foreign relations of the United States, and for other purposes."*[155]

This law was passed in 1954 and provided a framework for American food assistance to the rest of the world. The initial goal was thus to use surplus agricultural commodities as a tool in US foreign policy and both foreign and domestic benefits were expected to come out of this legislation. One of the most important advantages for the US itself according to senator Hubert Humphrey, who was one of the initiators behind this legislation, was that the US could use its own agricultural abundance to win allies.[156] In 1959 this law was renamed the *Food for Peace Programme*, putting more emphasis on the peace-building aspect of it. India had been a participator of PL 480 since 1954, when India and the US signed an agreement and not long thereafter PL 480 became the basis for India's food policy. Imports of American food continued to grow from 200 000 tons in 1954 to more than 4 million tons in 1960.[157]

Through this law, food was shipped to India in an effort to remedy the hunger and food production gap. Dwight Eisenhower, who was the US president in 1954 when the law was passed, considered the alleviation of poverty in a country such as India necessary because it

[153] Kristin L. Ahlberg, "'Machiavelli with a heart': the Johnson administration's Food for Peace Program in India, 1965-1966," *Diplomatic History* 31, nr. 4 (2007): 666.
[154] Ahlberg, *Transplanting the Great Society*, 109.
[155] "The Food for Peace Program," *Current History 51*, nr. 299 (1966): 46.
[156] Cullather, *The hungry world,* 142.
[157] Cullather, *The hungry world,* 144.

could serve national interests in a more indirect way, namely by creating future consumers of American produce.[158] Additional stimuli for the application of the PL 480 to India was the belief that a country plagued by poverty and starvation, such as India, could be susceptible to communist ideologies in the future.[159] Politically, this idea of food assistance was thus clearly linked to fears of an expansion of communist influences in South-Asia (cfr. supra.) What was needed was to cancel out the attraction of communism's answer to poverty, economic stagnation and hunger. In order to do so, the US needed a developmental package that was stronger and more promising than Soviet aid to India and immediate hunger relief through PL 480 wheat shipments was part of this.[160] Investing in India and ensuring its long-term economic growth would thus be an asset in convincing the Indian government that an association with the West was more beneficial than relying on Soviet aid.[161] Humphrey even wrote a report on food as a force for freedom in which he stated that agricultural commodities could be more useful in fighting the Cold War than bullets. Following from this, the senator also wanted PL 480's instrumentality in the pursuit of certain foreign policy objectives to be appreciated more over its purely economic use.[162] Aside from political motives, the US also wanted to portray themselves as the normative leader of the South Asian region. Developmental aid would give the West, and most notably the United States, a big amount of responsibility for the build-up of newly independent nations.[163] In this sense, aid to India was sold to the US government at the time as a way to restore US leadership in Asia.[164] Through food aid, the US wanted to make sure institution building in India would resemble the US' way. Furthermore, the US considered India to be the only nation capable of countering communist China in the South-Asian region, which was one more reason why they wanted to support Indian development.

When Kennedy became president, he stated that food aid would be an integral instrument to US' foreign policy, showing how domestic benefits were clearly intertwined with the idea of the US having to be a normative leader in alleviating hunger in the world. Despite the fact that

---

[158] Ahlberg, *Transplanting the Great Society*, 20.
[159] Cullather, *The hungry world,* 152.
[160] Cullather, *The hungry world,* 152.
[161] Remarks of senator John F. Kennedy at Corn Palace, Mitchell, South Dakota, 20.09.1960 (John F. Kennedy Presidential library and museum), consulted 01.02.2023, https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/mitchell-sd-19600922.
[162] Hubert H. Humphrey, "Food and fiber as a force for freedom*," Report to the Committee on Agriculture and Forestry, United States Senate* (1958): 1.
[163] Cullather, *The hungry world,* 153.
[164] Cullather, *The hungry world,* 153.

Kennedy himself never talked about food aid as a form of leverage over the countries receiving aid, some influential American policymakers did want to use aid as leverage, taking it away when recipient countries did not back the US and the international arena.[165] Another way in which food aid to India was politically motivated in government documents was by contrasting India's economic success under the system of democratic rule, with the sagging Chinese communist economy at the time. By doing this, food aid to India was legitimized by making the Indian nation into a symbol of the success of capitalism versus the failure of the communist system.

During Johnson's presidency, food aid to India still constituted a crucial component of American foreign policy. Johnson expanded the scope of Food for Peace and according to multiple academics, he was the president that would intensively use this aid programme towards India as an instrument of containment in the context of the Cold War. Ahlberg even claims that Johnson considered a country's strategic worth as being of greater importance than its need for food aid in negotiations surrounding the Food for Peace programme.[166] Therefore, during his presidency, the Food for Peace Programme really became an instrument to eradicate discontent in rural Indian areas and strengthen the belief in capitalist structures at the same time.[167] An important passage in the history of PL 480 food aid to India was the Vietnam war during Johnson's presidency. Indian government at the time did not necessarily support American intervention in Vietnam and from time to time a comment revealing how the Indians in fact condemned the war, was made (cfr. supra). What happened was that Johnson and Congress wanted something in return for PL480, namely less criticism on their war in Vietnam. They really wanted India to refrain from meddling in the situation and essentially remain quiet.[168] This was also when Johnson adopted the infamous short-tether approach (cfr. supra). Under evaluation were not only India's opinion on Vietnam War, but also the improvements in India's agricultural and overall economic performance. Even when famine threatened India in both 1965 and 1966, Johnson chose to follow the short-tether approach, demonstrating how US' economic interests and humanitarian interests were considered to be less important than their

[165] Aid to India, undated (John F. Kennedy Presidential Library and Museum, *India: General, 1962: April-December*, JFKPOF-118a-004-p0038), consulted10.02.2023, https://www.jfklibrary.org/asset-viewer/archives/JFKPOF/118a/JFKPOF-118a-004.
[166] Ahlberg,"'Food is a powerful tool in de hands of this government'," 1.
[167] Ahlberg,"'Food is a powerful tool in de hands of this government'," 91.
[168] Ahlberg, *Transplanting the Great Society*, 114.

diplomatic goals at the time.[169] The food shortage in India essentially provided the US with an important leverage, displaying the quid pro quo mentality of the US government.[170] A national security adviser at the time said the following about the situation: *"If India wants massive US support, it has to be earned*."[171] The short-tether policy kept India's leaders in a constant state of uncertainty and stress due to the fact that Johnson was willing to withhold food if India would not comply to American demands in terms of agricultural, economic and foreign policy.

Richard Nixon followed Johnson as president of the US in 1969 and he was left with this food aid programme that was tied to concessional terms. His two predecessors, and Eisenhower to a certain extent, had used food aid as a part of their foreign policy instruments. One important instance where PL 480 shipments to India were personally discussed by Nixon was when conflict erupted between East and West Pakistan, causing thousands of refugees to cross the Indian border and putting pressure on food availability.[172] This in turn reiterated conflict between Pakistan and India and the president and his administration realized that war between these two powers could potentially trigger tensions between the USSR who supported India and China who supported Pakistan.[173] As previously stated, it was in the US' interests to prevent chaos from breaking out in the region because of the fear for a communist takeover. The longer the conflict would go on, the greater the potential that both the USSR and communist China would get physically involved.[174] Food aid was then seen as an instrument to keep India from charging at Pakistan and thus to prevent geopolitical frictions. Food aid thus remained partly driven by political and security objectives. When war eventually did break out, Henry Kissinger, who was the National Security Adviser at the time, tried to cut off all US foreign aid, including food aid but he didn't succeed.[175] Furthermore, India at the time had support of the USSR and cutting of US aid would've had a big impact but not an all-destructive one.[176] Lastly, during Richard Nixon's presidency India was already building on the Green Revolution,

[169] Ahlberg, "'Machiavelli with a heart'," 666.
[170] Warren I. Cohen and Nandy Bernkopf Tucker, eds. *Lyndon Johnson confronts the world: American foreign policy 1963-1968* (Cambridge: Cambridge University Press, 2012), 166.
[171] Cohen and Tucker, *Lyndon Johnson confronts the world*, 167.
[172] Barry Riley, *The political history of American food aid: an uneasy benevolence* (New York: Oxford University Press, 2017), 324.
[173] Riley, *The political history of American food aid*, 324.
[174] Ahlberg, "'Machiavelli with a heart'," 679.
[175] Memorandum for Henry A. Kissinger from Winston Lord, 15.12.1971 (National Archives, NSAEBB66), consulted 17.02.2023, https://nsarchive2.gwu.edu/NSAEBB/NSAEBB70/doc23.pdf.
[176] Riley, *The political history of American food aid*, 327.

which showed that they were complying to American demands with regards to their agricultural policy.

1.2. The start of the 'Green Revolution' in the Global South

1.2.1. The Rockefeller Foundation in Mexico

After World War II, the United States embarked on a project to develop agricultural science.[177] The real starting point can be traced back to the Rockefeller brothers' whose interest in agricultural development made them introduce agricultural research into the Rockefeller Foundation.[178] This foundation thus became central to the development of technologies and agricultural experiments.[179] The brothers were not only interested in agriculture, but they were also concerned with the communist threat. Both of them considered US technology, such as in the field of agriculture, to be a strategic way to counter communist influences. So, when they decided to direct some of the foundation's attention to agriculture, there were geopolitical reasons behind it as well.

Already in the 1930s, they started to experiment with so-called high yielding varieties in China. It was the foundation's first large coordinated foreign effort for rural reform based on agricultural and medical projects and experiments.[180] However, World War II caused the foundation to concentrate more on projects in Latin-America.[181] In the early 1940s, they directed their attention more to Mexico where they started multiple plant breeding projects that would later on influence green revolutions in other parts of the world.[182] The Foundation's efforts in Mexico were known as the *Mexico Agricultural Programme* or MAP. The 1970 Nobel Peace Prize winner, Norman Borlaug, was the one who led most of the research projects on wheat varieties in Mexico, which makes him one of the most important Americans in the

[177] Patrick Kilby, *The Green Revolution: narratives of politics, technology and gender* (Oxfordshire: Routledge, 2019), 3.
[178] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 3.
[179] John Perkins, "The Rockefeller Foundation and the green revolution, 1941-1956," *Agriculture and Human Values* 7 (1990): 6.
[180] John Perkins, *Geopolitics and the Green Revolution: wheat, genes and the Cold War* (Cary: Oxford University Press, 1997), 103.
[181] Perkins, *Geopolitics and the Green Revolution,* 103.
[182] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 3.

context of the Green Revolution.[183] The project in Mexico was especially important because not only did the Foundation experiment in this country, they also wanted to dedicate themselves to helping Mexico create an agricultural science establishment to improve agricultural productivity in the most important foods.[184] According to J.H. Perkins, the foundation's efforts in Mexico stood out because of three reasons: first, the foundation was the first philanthropic organization that had ventured into agriculture. Second, they wanted to consciously create a scientific infrastructure. And lastly, they were the first to think about how experts could train and assist individuals in another country in order to do the former.[185] This programme in Mexico was extremely valuable for the evolution of the Rockefeller Foundation's agricultural strategy and development programmes.[186] Moreover, this initiative also established a precedent for determining which countries would receive assistance from the foundation in the future. For instance, when the foundation started the agricultural programme in Mexico, it demonstrated a willingness to support countries that held strategic significance for the United States. Food production was namely considered to be a way to stabilize Mexican political and economic affairs to prevent a growing communist influence.[187] The foundation aimed to enhance the growth of liberal democratic capitalism in Mexico while also preventing any potential uprisings by communist or socialist factions.[188] On the other hand, the foundation was also set on remaining independent from US' government affairs. This tension was something that would characterize the foundation's agricultural efforts in other countries, such as India, as well.[189]

The agricultural developments that were funded by the Rockefeller Foundation were different to other earlier agricultural developments in the sense that they completely overlooked local and traditional farming systems and knowledge and focused on purely scientific knowledge.[190] Local input was not considered to be valuable and in Mexico for example, the American scientists hardly had interaction with the local communities that they were trying to help.[191] According to Patrick Kilby, this ignoring of local communities and local knowledge was something that characterized post-war green revolutions in multiple countries in the Global

[183] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 12.
[184] Perkins, "The Rockefeller Foundation and the green revolution," 7.
[185] Perkins, "The Rockefeller Foundation and the green revolution," 7.
[186] Perkins, "The Rockefeller Foundation and the green revolution," 8.
[187] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 4.
[188] Perkins, *Geopolitics and the Green Revolution,* 115.
[189] Perkins, "The Rockefeller Foundation and the green revolution," 9.
[190] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 10.
[191] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 10.

South.[192] Furthermore, not only did the foundation export seeds, fertilizer etc. they also exported a whole new view on agriculture and how agricultural systems should be managed, changed, etc. Deborah Fitzgerald describes this situation as follows:

> "*In attempting to strengthen Mexican agriculture, the RF used not only American experts, seeds and irrigation systems, but a set of assumptions and expectations about how agricultural systems respond to such 'inputs' and how institutions and individuals behave when assistance is offered*."[193]

For example, American agriculture at the time was characterized by large farms that were capital-intensive and produced for the market. In the Global South however, a lot of the farming methods were based on smaller farms that were subsistence-oriented and mainly labour-intensive. Hence, the Foundation's programmes also tried to import the American agricultural structure to the countries they supported, such as Mexico and later on India.[194] This whole undertaking by the Rockefeller Foundation could be summarized as the transfer of Western (and more specifically American) agricultural technology to "less developed regions".[195] The goal was thus clearly to "modernize" a "traditional" country.[196]

Transporting the whole system of American agriculture to other areas of the world also meant educating local communities. This was done by training individuals within the American system.[197] Mexican scientists and students in agricultural sciences sometimes got the opportunity to receive advanced agricultural education in the US. This was done because of the lack of Mexican institutions that were able to provide advanced training in these matters.[198] Another aspect of the foundation's support of agricultural education was supporting Mexican

[192] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 10.
[193] Deborah Fitzgerald, "Exporting American agriculture: the Rockefeller Foundation in Mexico, 1943-1953," *Social Studies of Science* 16, no. 3 (1986): 459.
[194] Fitzgerald, "Exporting American agriculture," 459.
[195] Mankel Brinkmann, "Fighting world hunger on a global scale: the Rockefeller Foundation and the Green Revolution in Mexico," *Rockefeller Archive Center Research Reports Online* (2009): 2
[196] Brinkmann, "Fighting world hunger on a global scale," 6.
[197] Fitzgerald, "Exporting American agriculture," 473.
[198] Fitzgerald, "Exporting American agriculture," 474.

agricultural institutes directly for example by funding money for equipment, providing faculty training, providing them with books, etc.[199]

On the short term, the MAP developed new varieties of wheat which generated substantial growth in Mexico's total wheat production. The country went from being a wheat importer in the 1940s to being a wheat exporter in 1958, which exemplifies this growth very clearly. The programme also affected other aspects of agricultural life: a new rural elite of commercial farmers was created through the MAP. What distinguished these farmers is that they developed, together with the Rockefeller Foundation, an agricultural style that resembled the American one. On the other hand, the more traditional farmers were pushed out of the agricultural market and flocked to the cities. Furthermore, in comparison to men, women lost more access and control over resources during this period of agricultural transformation, demonstrating that the Green Revolution also impacted gender relations within society. The Mexican Green Revolution thus generated benefits for the middle classes and the emerging rural elite, but it had a predominantly adverse impact on the traditional, small-scale farmers.[200]

The primary emphasis of this thesis will be on the United States government's funding and participation in the Indian Green Revolution. However, it is important to recognize that the US also reaped benefits from programmes that were previously initiated or developed by the Rockefeller Foundation. In essence, the foundation laid the groundwork for future US governmental efforts.[201] The MAP's model of agricultural development was considered to be thé method for transferring technology to countries of the Global South.[202] The US government involvement officially began in 1949 with President Harry Truman's inauguration speech. In this speech, and more specifically in "point four" he urged the government to lend technical assistance in agriculture and other fields to other nations:

> "*I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life…*

[199] Fitzgerald, "Exporting American agriculture," 475.
[200] Perkins, *Geopolitics and the Green Revolution,* 116.
[201] Kilby, *The Green Revolution: narratives of politics, technology and gender*, 11.
[202] Perkins, *Geopolitics and the Green Revolution,* 117.

Greater production is the key to prosperity and peace. And the key to greater production is a wader and more vigorous application of modern scientific and technical knowledge."[203]

The work of this foundation, both in China and in Mexico made the US government understand that agricultural development and assistance forms an important part of international relations and something that could even be instrumentalized strategically.[204] For example, Perkins claims that the MAP demonstrated that agricultural science could in fact be used as a 'device for power relationships between nations.'[205]

1.2.2. The Rockefeller and Ford Foundation's efforts in India

The Rockefeller Foundation quickly expanded its activities into the 'biggest democracy of the world', namely India, in 1956.[206] One of the reasons that were given for this expansion was the Cold War:

"*The time is now ripe, in places possible over-ripe, for sharing some of our technical knowledge with these people. Appropriate action now may help them to attain by evolution the improvements, including those in agriculture, which otherwise may have to come by revolution*."[207]

The Rockefeller Foundation concentrated its efforts on promoting scientific research and scientific extension which became key to developing new agricultural methods.[208] It granted assistance to India on two fronts: it helped India develop the *Indian Agricultural Research Institute* (IARI) into a modern facility and post-graduate educational institutions and secondly, the foundation helped improving cereal breeding.[209]

---

[203] Inaugural Address, 20.01.1949 (National Archives, Harry S. Truman Library and Museum, Public Papers) consulted 25.04.2023, https://www.trumanlibrary.gov/library/public-papers/19/inaugural-address.
[204] Perkins, *Geopolitics and the Green Revolution,* 103.
[205] Perkins, *Geopolitics and the Green Revolution,* 103.
[206] Perkins, "The Rockefeller Foundation and the green revolution," 10.
[207] Perkins, "The Rockefeller Foundation and the green revolution," 11.
[208] Perkins, *Geopolitics and the Green Revolution,* 154.
[209] Perkins, "The Rockefeller Foundation and the green revolution," 13.

However, they were not the only foundation interested in advancing their projects on Indian territory. The Ford Foundation signed an agreement for training personnel with India in 1951.[210] According to Perkins, this foundation's efforts were mostly targeting the creation of new organizational structures for agricultural assistance.[211] Between 1951 and 1995, the Ford Foundation made roughly 2500 grants to India.[212] Second, in 1959 an agricultural production team, sponsored by the Ford Foundation was invited to study the country's food production problems and to make recommendations for increasing production. In the same year this team made up a report named *India's Food Crisis and Steps to Meet it*, which was then also submitted to the Indian government.[213] The team stated that food should become a "*central objective and crusade for the new India*"[214] In this report, recommendations were made to the Indian government such as increasing the consumption of fertilizer, the intensification the irrigation methods but most importantly they were convinced that intensive effort should be undertaken in selected areas instead of spreading developmental efforts around the country.[215] However, according to A. Venkateswarlu, the most significant recommendation of the foundation was that 'efforts should be concentrated on popularizing modern inputs and practices in the most productive areas.'[216] The Indian government accepted the recommendations of the foundation, demonstrating that this foundation played a crucial role in identifying India's agricultural issues and thus also in defining solutions for them.[217]

In 1960 the *Intensive Agricultural District Programme* (IADP) was launched in India as a joint effort of the Indian government and the above-mentioned Ford Foundation, which would provide financial and technical assistance. Ultimately, this programme was set up to substantially increase production in a few selected areas. It consisted of the development of a

[210] Perkins, "The Rockefeller Foundation and the green revolution," 11.
[211] Perkins, *Geopolitics and the Green Revolution,* 154.
[212] Leonard Gordon, "Wealth equals wisdom? The Rockefeller and Ford Foundations in India," *The Annals of the American Academy of Political and Social Science* 554 (1997): 112
[213] Venkateswarlu, *Political economy of agricultural development in India,* 130.
[214] Expert Committee on Assessment and Evaluation, "Report on the Intensive Agricultural District Programme," *Ministry of Food and Agriculture*, consulted 01.05.2023, https://books.google.at/books?id=wGgxAAAAMAAJ&pg=PA13&hl=nl&source=gbs_toc_r&cad=3#v=onepage&q&f=false
[215] Venkateswarlu, *Political economy of agricultural development in India,* 131 + report on the IADP
[216] Venkateswarlu, *Political economy of agricultural development in India,* 130.
[217] Venkateswarlu, *Political economy of agricultural development in India,* 130.

package of improved agricultural practices and the dissemination of knowledge to the farmers themselves.[218] A theoretical explanation of this goes as follows:

> "*It may be of interest to examine the concept of IADP against the background of current theories of economic development. According to Leibenstein 'a critical minimum effort' is necessary to raise the underdeveloped economy from the traditional stage to the level of take-off. If the effort falls short of that minimum level, the economy may not be able to attain sustained growth*"[219]

With regards to the implementation of this, the Ford Foundation developed a ten-point programme for improving productivity. Important points here were: agricultural education (demonstration and training), workshops, quality testing of seed, soil testing, etc.[220] Cultivators were supposed to adopt a 'package' of 'improved practices' which included new seeds, fertilizers, pesticides and more.[221] According to the Expert Committee on Assessment and Evaluation of IADP the programme 'demonstrated a significant new approach for modern agriculture'.[222] While the goal of increasing agricultural productivity was shared by both the IADP and the Green Revolution in India, it is important to note that they were distinct programmes with different implementation strategies and geographic scopes. Therefore, even though they had similar goals, the IADP is generally not considered to be a part of the Indian Green Revolution.

1.2.3. The US government's efforts in India

A third important player when it comes to American assistance to Indian agricultural development, was the US' government itself. In 1952 the US government and the government of India signed an agreement that covered both assistance to the Indian Community Development Programmes and programmes that focused on improving rural infrastructure.[223]

---

[218] Venkateswarlu, *Political economy of agricultural development in India,* 131.
[219] Venkateswarlu, *Political economy of agricultural development in India,* 131.
[220] Venkateswarlu, *Political economy of agricultural development in India,* 131.
[221] Venkateswarlu, *Political economy of agricultural development in India,* 131-2.
[222] Venkateswarlu, *Political economy of agricultural development in India,* 132.
[223] Perkins, "The Rockefeller Foundation and the green revolution," 12.

The *Indian Community Development Programme* (CDP) was actually an American concept in itself, demonstrating how India already before the Green Revolution adopted American agricultural schemes.[224] This effort had a total cost of $50 million.[225] The US would assist India in the construction of tube wells, the supply of fertilizer, performing soil surveys, etc.[226] The central goal of the CDP was to raise agricultural efficiency and living standards of the rural population through the implementation of developmental activities.[227] Furthermore, the goal was to motivate the rural population to undertake communal operations so that their participation in national economic planning was ensured. However, there existed little trust in these rural populations which ensured that local initiative and cooperation was largely ignored.[228] The agreement of 1952 also incorporated the US government's support for the Ford Foundation's involvement in the development of Indian agriculture.[229] The US investment in this assistance was far bigger then the expenditures of the two foundations mentioned above, however these foundations proved critical and paved the way for the development of a broad set of assistance programmes between India and the US.[230]

1.3. Conclusion

The common thread throughout the preceding chapter is that India and the US had divergent objectives when it came to strengthening their ties or collaborating on developmental programmes. Where the US wanted to first and foremost safeguard their own foreign policy objectives by ensuring that India would become/remain a stable electoral democracy with a well-functioning economy, India primarily wanted to achieve self-sufficiency and secure their independence. Strengthening the economy was one of the main focuses of Indian leaders even before official independence. The overarching goal behind the NPC for example was to develop a strong independent economic policy that would unite Indian citizens and create a sense of national pride. After independence, the longing for self-sufficiency and economic independency grew stronger and self-reliance even became an official national goal. The idea

[224] Venkateswarlu, *Political economy of agricultural development in India,* 128.
[225] Perkins, "The Rockefeller Foundation and the green revolution," 12.
[226] Perkins, "The Rockefeller Foundation and the green revolution," 18.
[227] Venkateswarlu, *Political economy of agricultural development in India,* 128.
[228] Venkateswarlu, *Political economy of agricultural development in India,* 129.
[229] Perkins, *Geopolitics and the Green Revolution,* 153.
[230] Perkins, *Geopolitics and the Green Revolution,* 154.

was that true independence could only be achieved when the country wasn't dependent on economic help anymore.

The US, on the other hand, were pursuing other goals. Through developmental aid, The US hoped to mold India into the perfect ally in the South Asian region during the Cold War. This demonstrated how the US was clearly following a strategic plan aimed at countering communist influences globally. The primary focus was to keep India a stable democracy with a sufficiently enough strong economy to prevent the infiltration of communist ideas or insurgencies. By alleviating poverty and hunger The US believed that the Indians would not be attracted to communist answers to poverty and hunger. Not only did they want to keep communist influences out of the South Asian country, but they also wanted to portray themselves as the normative leader in this region.

In summary, it is evident that despite working together on various matters, both countries had distinct objectives concerning why India needed to achieve economic prosperity. Throughout the Indian Green Revolution, both countries would keep holding on to these different goals, which shows that although humanitarian aid was definitely one of the aspects in the US leader's mind at the time, geopolitical objectives were still one of the main drivers behind developmental aid.

CHAPTER 2 The impact of American science, experts and technology.

"*... the agricultural scientist has a specially vital contribution to make to our plans of economic development."*[231]

In order to define the ways in which the US contributed to the Indian nation-building project via their involvement in the Indian Green Revolution, it's necessary to determine the direct impact of this involvement first. For this reason, the impact of American science, American agricultural experts and finally agricultural technology and equipment on Indian agriculture during the Green Revolution will be traced in this chapter. The emphasis will thus be on the export of American expertise and how the Indians instrumentalized this. This will be done by analysing primary sources that were available via various online platforms such as reports of agricultural universities, reports of the US government, reports of the *Indian Council of Agricultural Research* (ICAR) etc. These sources were selected based on their explicit mention of the American involvement in the Green Revolution, including their contributions and roles. Additionally, these reports were chosen because of their comprehensive coverage of the Green Revolution's origins, highlighting essential scientific aspects such as seed utilization, water management, and transformative changes in agricultural practices. These reports, originally intended to inform political leaders or institutions, provide an abundance of detailed information and explicit references to the fundamental elements that underpinned the Green Revolution, making them invaluable resources for this thesis. The first subchapter relies significantly on a source written by Hadley Read, a scholar with expertise in agricultural economics and agricultural journalism. It was commissioned under the auspices of the Council of United States Universities for Rural Development in India, in conjunction with the USAID. This source narrates the story of the collaborative engagement between Indian and American universities, encompassing its inception, evolutionary trajectory, thematic underpinnings, and substantive content. It was selected due to its comprehensive coverage, offering intricate details

[231] Indira Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969* (New Delhi: Ministry of Information and Broadcasting, 1971), 146.

regarding the participation of American universities and experts in the Indian Green Revolution across all aspects. In the second subchapter, I also relied on transcripts from Indian parliamentary debates and speeches delivered by Indira Gandhi. This decision was motivated by the fact that these sources elucidate the perspectives and strategies of Indian leaders regarding the Green Revolution and its fundamental components. They provide valuable insights into how these leaders envisioned the implementation of various aspects of this envisioned Green Revolution

In concrete terms, the American expertise that forms the subject of this chapter was made of three different elements: help from American universities to Indian universities and research institutions, American technology and equipment such as fertilizers, high-yielding seeds etc. and lastly, the training of Indian scientists by American experts.

2.1. The role of American universities

Truman's Point Four on foreign technical assistance, set certain things in motion with regards to technical assistance in agriculture for developing countries. It was after this speech that the then president of the *Land Grant College Association* proposed employing the resources of American land grant universities and colleges to address certain challenges faced by those developing countries.[232] This formed the beginning of more than 60 years of USAID-funded cooperation programmes between those universities and colleges and foreign institutions.[233] In 1952, the first USAID-university contract was signed.[234] USAID itself has said the following about these agreements in a report on the USAID's legacy in agricultural development: *"Bringing together international and national agricultural research systems with different capacities and complementary expertise has resulted in fruitful collaboration."*[235]

India soon became one of the developing countries that were on the receiving end of one of these agreements. In 1948, only a year after independence, the Indian government had set up the University Education Commission which was meant to restructure the Indian educational system. One of the first recommendations of this commission was to establish rural universities

[232] *USAID's legacy in agriculture development: 50 years of progress* (Washington: US Agency for International Development, 2016), 115.
[233] *USAID's legacy in agricultural development*, 115
[234] Parayil, "The Green Revolution in India: a case study of technological change," 745.
[235] *USAID's legacy in agriculture development*, XIII.

that would resemble the US' land grant universities.[236] It was thought that the American method of educating and conducting science would prove to be more fruitful than the Indian methods at that time which were considered to be too theoretical and "bookish".[237] Early in 1952 there already existed a system of contractual agreements between selected universities and the US government which was meant to facilitate educational technical assistance to developing democracies.[238] The word "democracies" shows how the US was willing to render development assistance to developing countries as long as they met certain democratic criteria that resembled the American ones. A document on the history of these educational agreements demonstrates this even more when it says that "*India needed help to raise the standards of living of their people to assure the survival of the democratic freedoms so long desired*."[239] Furthermore, documents made up by American officials explicitly state that education was seen as an instrument of social emancipation and thus as one of the cornerstones of a democracy. The following statement made by representatives of Kansas State University in India summarizes this: *"If India continues to move ahead as a democratic nation against the mighty odds she faces, we can then conclude our work has been well done."*[240]

All of the above suggests that educational aid and support was framed within this principle of wanting to strengthen democracies around the world. The primary objective, therefore, was not solely to alleviate hunger; rather, it served as a means for the United States to safeguard India against communist and autocratic influences and preserve their democratic framework.
In 1953, an agreement was signed between the government of India and the government of the United States called *Operational Agreement nr. 28*. This project officially was named the *Project for Assistance for Agricultural Research, Education and Extension Organizations* and it was designed to "strengthen Indian institutions concerned with agricultural instruction, research and extension."[241] This agreement served as the basis for the development of an interinstitutional program that took off in a year later, in 1955 called the *Indo-American*

[236] Parayil, "The Green Revolution in India: a case study of technological change," 746.
[237] Parayil, "The Green Revolution in India: a case study of technological change," 746.
[238] Hadley Read, *The CUSURDI Story: land-grant universities serving two democracies*, eds. Council of United States Universities For Rural Development in India and United States Agency for International Development (1974), 4.
[239] Read, *The CUSURDI Story*, 9.
[240] Read, *The CUSURDI Story*, 155.
[241] Read, *The CUSURDI Story*, 90.

partnership for Improving Higher Education in India.[242] This programme arranged for six US land grant universities, which are universities that emphasize agriculture, science, technology and extension services, to assist 50 Indian colleges of agriculture and veterinary science on top of two Indian research institutes.[243] It's important to keep in mind that although these programmes were technically executed by the land grant universities, they were funded by USAID and based on operational agreement nr. 28 which means that the US government was involved, albeit in a more indirect way.[244] This is also the reason why Parayil claims that USAID played a crucial role in helping India to develop agricultural universities.[245] Furthermore, not only was the US government involved, the Ford and Rockefeller foundations were as well. They supported the creation of new Indian agricultural colleges in different ways such as by providing equipment or making up reports.

The five universities tied to the 1955 agreement were respectively Ohio State University, the University of Illinois, Kansas State University, the University of Tennessee and the University of Missouri.[246] A sixth university was added to the agreement in 1967, namely Pennsylvania State University.[247] The purpose was that each of these American universities would work together with Indian colleges and/or institutions in two to four Indian states. The program that most of the land grant universities followed when it came to assisting their Indian counterparts, was made up of three elements: assigning university faculty members to India, programming, supervising and financing training of Indian individuals and lastly purchasing and shipping library materials, laboratory equipment and other materials that were not available in India.[248] However, a fourth element that would prove to be very crucial was extension education.[249] The latter was especially important to really instrumentalize the results that came from agricultural research by getting the information from the colleges to the Indian farmers.[250]

In 1959 the programme was evaluated by a team made up of both Indian and American educators to determine the progress that had been made in the first four years. In their report,

---

[242] Read, *The CUSURDI Story*, 29.
[243] Terminal Report: Research and Education Programs 1955-1964 and 1964-1973, July 1973 (USAID Development Experience Clearinghouse), consulted 10.04.2023, https://pdf.usaid.gov/pdf_docs/PDAAJ857.pdf.
[244] *USAID's legacy in agriculture development*, 115
[245] Parayil, "The Green Revolution in India: a case study of technological change," 744.
[246] Terminal Report: Research and Education Programs 1955-1964 and 1964-1973, July 1973.
[247] Read, *The CUSURDI Story*, 91.
[248] Terminal Report: Research and Education Programs 1955-1964 and 1964-1973, July 1973.
[249] Read, *The CUSURDI Story*, 25.
[250] Read, *The CUSURDI Story*, 25-6.

this team argued that the Indian government should not finance Indian states for an agricultural university unless they had accepted the essential land grant concepts and principles.[251] This is a very crucial argument since it demonstrates how this American idea of what an agricultural university or college should look like had penetrated into Indian thinking on this topic. Both Indians and Americans on this evaluation team were convinced that the only way to progress was to follow the American model which reveals the big influence American systems had on India and Indian ideas on progress and modernization. Following this report, an Agricultural University Committee, led by Ralph Cummings of the Rockefeller Foundation, was set up and was mandated to draft plans for agricultural universities. Once again, the position of Cummings shows the big American influence on the development of these Indian colleges. Other members of this committee were also part of the USAID mission in India, strengthening US' government presence. This stands in sharp contrast to the statements made by the Indian government right after independence when they claim that there was no intention of trying to impose foreign solutions, because the 1955 agreement negates this.[252] In this moment, the Rockefeller Foundation's activities also became more directly integrated with the agricultural university development. The foundation started to support cereal improvement schemes of the universities and by 1967 this research had produced ten new maize hybrids and six other varieties which all had high-yielding characteristics. Besides supporting research schemes, the foundation also awarded grants to government leaders and university administrators to travel to and study in the US.[253] The foundation also awarded scholarships and fellowships to distinguished Indian students so that they were able to study in the US as well.

The assistance of the American universities accelerated a number of things, such as the development of new crops which would prove to be crucial for the later Green Revolution such as improved soybeans or millet. The programme also made sure that new knowledge of ways to increase crop production were imported such as knowledge on cultural practices, irrigation methods, fertilizers and plant chemicals. Furthermore, the extension education aspect that was so important to these agricultural universities were crucial in the spread of knowledge and information on agriculture to the Indian farmers. The latter were somewhat doubtful about the use of unconventional and so-called modern methods. What was needed then to "convince

[251] Read, *The CUSURDI Story*, 136.
[252] Read, *The CUSURDI Story*, 141.
[253] Read, *The CUSURDI Story*, 128.

them" was the practice of demonstrations throughout rural areas so as to educate the Indian farmers directly without them having to rely on second-hand information.[254]

In 1966 it was decided that the Indo-American Partnerships had to be intensified in the sense that the Indian agricultural universities (with the help of the American ones) needed to put more effort into actually increasing Indian food production instead of only conducting research and disseminating this research.[255] This came after a report was made up by a special US team, sponsored by the Ford Foundation, after they were invited by the Indian government to assess the state of the nation's agricultural production. The US was then asked to send teams of agricultural scientists to selected Indian states to help the directors of agriculture focused research and extension efforts to increase the production of food.[256] The emphasis would lay on the production of the new, high-yielding cereal varieties on which research had been done in the agricultural colleges. Furthermore, these US expats were supposed to broaden the scope of the extension education efforts that were already being done. It was decided that the above would be done within the framework of the already existing partnerships between American and Indian land grant universities. A new project then came into existence, called the *Agricultural Production Program* or APP, and new aid contracts for support of this programme were signed with the American universities. This was the start of a new kind of technical assistance relationship that would eventually last until 1972.[257] During those five years 44 long-term and 13 short-term advisors went to India to help them in their 'fight against hunger'.

The ways in which the universities helped with this APP were diverse. Some universities used so-called kits of inputs which where kits containing improved seeds, chemical fertilizers and pesticides which were distributed among Indian farmers. With regards to the education and training of Indian researchers, teachers and scientists, most official US-made documents focus on the "study tours" that were facilitated through this agreement. Some of these were also sponsored by the Rockefeller Foundation which once again displays the importance of such philanthropic institutions.[258] Other universities, such as the Missouri State University, helped Indian states in building seed processing plants for example, which would then decrease their

[254]Read, *The CUSURDI Story*, 133.
[255] Read, *The CUSURDI Story*, 254.
[256] Read, *The CUSURDI Story*, 289.
[257] Read, *The CUSURDI Story*, 290.
[258] Read, *The CUSURDI Story*, 128.

dependency on foreign seeds in the future. A third, more indirect way, of contributing to the APP was to establish new channels of mass media or make these more accessible to farmers so that it was possible to distribute certain information, such as information on pests, more effectively. [259] In the state of Maharastra, focus was on developing measures to control pests such as flies, building electric fences around plots of land, developing equipment for seed processing plants, establishing laboratories, etc. while also dedicating time to studying effective methods for encouraging local farmers to experiment with and use the techniques that were driving the Green Revolution such as improved farm machines.[260] The latter was an important aspect of research since the success of the Green Revolution largely depended on the extent to which local farmers adopted and utilized the new techniques, seeds, pesticides etc. that were developed before. The university of Tennessee also dedicated a lot of their research on this sociological question. The Americans working for this university spend a lot of time researching why farmers were resisting new high-yielding seed varieties for example and researched ways to improve demonstrations in the field so that the farmers' doubts could be dispelled. This highlights how American universities were not only involved in supporting or spearheading biological experiments in laboratories or constructing facilities, but they were also actively engaged in researching educational approaches to propel the Green Revolution forward.

Read also claims that the greatest success of all was the research on extension educational programs to teach production practices to farmers. The most difficult part of this program, however, proved to be enhancing the relation between agricultural colleges and the state government. This relationship was crucial because the extension education programs also had to be teamed with practical incentives to encourage farmers to adopt these measures of the Green Revolution, such as price incentives.

Between 1952, when the US government signed agreements with American land-grant universities, and 1972, when American aid towards India was discontinued, India established nine rural universities and laid plans for eleven more. On the American side, there existed a lot

[259] Read, *The CUSURDI Story*, 297.
[260] Read, *The CUSURDI Story*, 276.

of enthusiasm on this programme, a speech by the last leader of the Tennessee team demonstrates this:

> *"Today we are bidding farewell to representatives of this Aid Tennessee team on the completion of 16 years of continued service to the building up of agricultural institutions in India through the Agricultural University system. I am in a position to say, without any fear of contradiction that but for discontinued massive and invaluable assistance from 1956 to 1972 to agricultural university movement in India would have never progressed to its present stage. I had a feeling that one could claim with candour and frankness that but for this US Aid Tennessee Assistance Program, the progress of India agriculture, including that of agriculture in this state, would have been trivial, with our agriculture continuing to be stagnant and process halting and uncertain."*[261]

With regards to the support by the two main American foundations, the Ford and Rockefeller Foundations, it was said that they

> *"contributed in different ways in different areas of agricultural development, but their efforts converged on the single objective of helping India add agricultural independence to the political independence already achieved."*[262]

This quote references a crucial aspect that drove the initiation of the Green Revolution: to mitigate agricultural dependency and foster economic independence in India. What is surprising is that, although Americans sometimes referred to this element of independence, they mostly focused on bolstering democratic institutions and a strong economy by supporting the revolution. This explicit mention of economic dependency resonates with India's rationale for pursuing the Green Revolution, highlighting the convergence of interests between American foundations and India in seeking to enhance economic self-reliance.

Because of foreign policy differences, India eventually asked the US to stop their assistance programmes in the country. The Indo-American Partnerships were officially dissolved in 1972,

[261] Read, *The CUSURDI Story*, 235.
[262] Read, *The CUSURDI Story*, 321.

with the last US university advisors leaving the country in 1973.[263] In the period between the first aid contract in 1952 and the end of the Indo-American partnerships in 1972, the six American universities spent 34.1 million US dollars towards aid.[264] 345 men and women represented the US during that time and 1018 Indian citizens studied in the US under this university technical assistance programme.[265] The partnerships led to increased utilization of chemical fertilizers, adoption of new seed varieties, widespread implementation of improved farming techniques, establishment of seed plants, and more. And lastly, Indian students and leaders that returned from the US continued to have an influence on the direction of agricultural education in India, making sure that the land grant model was still being followed and helping to create laws that facilitated the Green Revolution even more.[266] All of this significantly contributed to the success of this Green Revolution. The partnerships also demonstrated that agricultural colleges play a crucial role in increasing food production and thus in making India more self-sufficient. Read claimed that without American assistance India would have eventually build up a system of highly functional agricultural colleges herself, but that this assistance has accelerated the process and that the colleges that were created under these partnerships had a stronger foundation and were more dynamic.[267] He also stated that the efforts that were done demonstrated *"the willingness of Indian farmers to accept and apply modern production practices when given the environment to do so."*[268] Indian effort was thus very much being accentuated while at the same time claiming that the US assistance was highly influential.

2.2. Constituents of the Green Revolution in India and the US' involvement in them

The Green Revolution in India comprised various components that collectively led to a boost in agricultural production. In 1965, Chidambaram Subramaniam, the Minister of Food and Agriculture, introduced an agricultural program in the Lok Sabha with the objective of achieving self-sufficiency by 1971. This program, later referred to as the *New Strategy*,

[263] Read, *The CUSURDI Story*, 337.
[264] Read, *The CUSURDI Story*, 361
[265] Read, *The CUSURDI Story*, 363
[266] Read, *The CUSURDI Story*, 119
[267] Read, *The CUSURDI Story*, 338.
[268] Read, *The CUSURDI Story*, 399

emphasized four key elements: seeds, fertilizer, water, and plant protection.[269] In each of these aspects, there was some level of involvement from the United States, illustrating the extent of American influence throughout the Green Revolution. Furthermore, this new formula was also developed after consultation with experts from the Ford and Rockefeller Foundations and USAID.[270] The latter showcases how the US was not only technically involved, by providing equipment or funding, they were also involved in policymaking surrounding agriculture by helping to develop programmes.

2.2.1. High-Yielding seeds

The use of High-Yielding seeds was one of the main components behind the Indian Green Revolution. These seeds were characterized by their good performance in the sense that yielded more and were less susceptible to pests and diseases.[271] In 1966 the *High-Yielding Varieties Programme* (HYVP) was launched as part of the so-called *New Strategy* put forward by India's planning commission.[272] The brain behind this new strategy was the Minister of Food and Agriculture, Subramaniam. During Lok Sabha debates, he spoke many times on the problem of food production and the ways in which he thought they could amp up this production. During the meeting of 7 December 1965, he said the following:

> *"Some hon. Members took the posture that we should not go in for imports, particularly under PL480. While appreciating the reasons advanced by them that we should be self-sufficient, and particularly for a country like ours, it will not be in the interests of the*

[269] Lok Sabha Debates: thirteenth session, 07.12.1965 (Third Series, Vol. XLIX, no. 24), 6077, consulted 12.04.2023, https://eparlib.nic.in/bitstream/123456789/54547/1/lsd_03_13_07-12-1965.pdf#search=null%2003%20Lok%20Sabha%20Debates%201965; Francine Frankel, India's new strategy of agricultural development: political costs of agrarian modernization," *The Journal of Asian Studies* 28, no. 4 (1969): 694.
[270] Lok Sabha Debates: thirteenth session, 07.12.1965, 6076; Frankel, "India's new strategy of agricultural development," 693.
[271] *Evaluation study of the High-Yielding Varieties Programme (1967-1968)* (India: Programme Evaluation Organisation, 1968),4, consulted 12.04.2023, https://indianculture.gov.in/reports-proceedings/evaluation-study-high-yielding-varieties-programme-report-rabi-1967-68-wheat.
[272] Frankel, "India's new strategy of agricultural development," 693; D.K. Desai and D.A. Patel, "Developing hybrid seed enterprise: an induced growth of High-Yielding Varieties Programme in India," *Indian Journal of Agricultural Economics* 23, no. 4 (1968): 113.

economy and perhaps of our self-respect also that we should go on continuously depending upon imports."[273]

One of the elements that he focused on in his programme proposal were new varieties of seed. He specifically claimed that:

"It is no use trying with our traditional varieties which we have here. Even with the best of practices, with all the resources put in, the potentiality for yield of these traditional varieties is limited."[274]

The seed programme, according to him, was thus the most important thing since without high-yielding seeds agricultural production could not possibly get up to the point of self-sufficiency.[275] Furthermore, what was necessary to make the HYVP possible, was the creation of State seed farms so that India would not need to purchase and import foreign seed anymore.[276] Interestingly enough, the USSR expressed interest in equipping these Indian seed farms.[277]

The crops that fell under this new seed programme were wheat, paddy, maize, bajra and jowar. The first two crops were developed in Mexico and Taiwan, while the others were developed in Indian research stations in the 1950s during the so-called *Indian Seed Development Program* with the help of the Rockefeller Foundation.[278] The new varieties of these crops would, however, not be planted throughout the whole country. According to Subramanian, it would be best to use them in areas with assured water supply and decent extension services.[279] Therefore, this plan aligned with the previously implemented IADP, which emphasized specific regions like Punjab that were considered ideal for intensive agriculture.

---

[273] Lok Sabha Debates: thirteenth session, 07.12.1965, 6062
[274] Lok Sabha Debates: thirteenth session, 07.12.1965, 6078
[275] Lok Sabha Debates: thirteenth session, 07.12.1965, 6080
[276] Lok Sabha Debates: thirteenth session, 07.12.1965, 6080
[277] Lok Sabha Debates: thirteenth session, 07.12.1965, 6081.
[278] Karin Bugow, "American seed business, the Rockefeller Foundation, and Indian seed development in the 1960s," *Rockefeller Archive Center research reports* (2019): 4; E.M. Rogers et al., "Diffusion of innovations in Brazil, Nigeria, and India," *Agency for International Development* (1970), consulted 13/04.2023, https://pdf.usaid.gov/pdf_docs/PNRAB484.pdf.
[279] Lok Sabha Debates: thirteenth session, 07.12.1965, 6078

The introduction of new high-yielding wheat varieties produced the most spectacular results, in comparison with new varieties of paddy.[280] The new seeds were the wheat varieties that had been bred in Mexico under the programmes of the Rockefeller Foundation there, demonstrating how it were the American organizations that essentially created the seeds that formed the basis of India's Green Revolution.[281] This means that the a large part of this Green Revolution was based on American knowledge and research.

A second important way in which the US was involved in the whole seed programme and business in India was through the development of the Indian Seed Law. This law regulated, among others, how seeds were certified and how the quality of seeds was assessed.[282] Ralph Cummings of the Rockefeller Foundation, A.A. Johnson who was a professor at Cornell University, and USAID advised the Indian government with regards to the design of this law. It was Johnson who eventually wrote the first draft of this law, although it got adapted by the Indian administration along the way, implementing a formative role for American players.[283] This, once again, shows how the US was also actively involved in agricultural policymaking and was not just a helping hand when it came to technical problems or money.

Thirdly, the Rockefeller Foundation played a crucial role in establishing contacts between US seed corporations, USAID and the Indian government itself. By doing this, the Foundation helped American seed companies to expand their business to a country with significant strategic worth.[284]

2.2.2. Fertilizer

A second element that proved to be crucial in the advancement of the Indian Green Revolution were chemical fertilizers.[285] They were especially indispensable because the new high-yielding seeds absorbed fertilizer better than traditional varieties and they also needed a big amount of

[280] Frankel, *India's Green Revolution: economic gains and political costs,* 7.
[281] *Evaluation study of the High-Yielding Varieties Programme (1967-1968),* 4
[282] The Seeds Rules, 1968 (Indian Government), consulted 15.04.2023, https://seednet.gov.in/PDFFILES/Seed_Rule_1968.pdf
[283] Bugow, "American seed business, the Rockefeller Foundation, and Indian seed development in the 1960s," 4.
[284] Bugow, "American seed business, the Rockefeller Foundation, and Indian seed development in the 1960s," 4.
[285] Lok Sabha Debates: thirteenth session, 07.12.1965, 6078.

such fertilizers in order to provide the necessary high yields.[286] The results associated with those seeds were thus only achievable when "*the high-yielding varieties are coupled with adequate supplies of water, fertilizer, pesticides and modern equipment*."[287] There were two main issues with those fertilizers: firstly, their purchase incurred significant expenses, and secondly, there was a need for increased education to effectively showcase the benefits of high-yielding seeds and fertilizer. This educational effort aimed to convince Indian farmers about the advantages associated with adopting these agricultural inputs.[288]

In his speech, Subramanian said very clearly that India has depended on US aid when it came to fertilizer and that they would have to make available more foreign exchange so that they could still import fertilizers after 1965.[289] USAID officials described the supply of fertilizers and the education of farmers about such production inputs as "*one key to the green revolution*".[290] This American institution was also convinced that aid was the only way to really introduce this intensive use of fertilizers in India, they thus didn't think that India as a state could manage that aspect of the green revolution on its own.[291] In 1963 India only had a very limited supply of fertilizer that was produced domestically and a big part of it remained unused and stocked in warehouses. This was because the above-mentioned fact that traditional seed varieties needed significantly less fertilizers and also because the use of fertilizer was not a widespread practice since a large part of the farmers weren't taught about how to implement them.[292] However, when the demand was growing and supply remained limited because of above-mentioned reasons, a black market for this produce was developed.[293] In 1968 on the other hand, according to USAID sources, India was using one fifth of its foreign exchange earnings to import the needed fertilizers while also using their domestic raw materials to produce their own fertilizer.[294] That same year USAID also decided to finance 200 million US dollars' worth of fertilizer (on a loan basis) for India in the year 1969.[295] The prospects at that

[286] Frankel, *India's Green Revolution: economic gains and political costs,* 5; William Gaud, "The Green Revolution: accomplishments and apprehensions," (speech before The Society for International Development, 08.03.1968).
[287] https://pdf.usaid.gov/pdf_docs/PNRAB484.pdf
[288] Gaud, "The Green Revolution: accomplishments and apprehensions."
[289] Lok Sabha Debates: thirteenth session, 07.12.1965, 6109.
[290] Gaud, "The Green Revolution: accomplishments and apprehensions."
[291] Gaud, "The Green Revolution: accomplishments and apprehensions."
[292] Gaud, "The Green Revolution: accomplishments and apprehensions."
[293] Gaud, "The Green Revolution: accomplishments and apprehensions."
[294] Gaud, "The Green Revolution: accomplishments and apprehensions."
[295] Gaud, "The Green Revolution: accomplishments and apprehensions."

time were that fertilizer and more specifically the supply of it to countries that were being helped by the USAID, would become the largest and most important aspect of this American institution.[296]

The US also provided loans to cooperatives such as the *Indian Farmers Fertilizer Cooperative* (IFFCO) to construct fertilizers plants. At times this was done in association with the US Corporative Movement.[297] So the US also actively sponsored India's self-sufficiency in fertilizer. Furthermore, the American land-grant universities also established extension services and demonstrations so that the knowledge about fertilizers and how to use them was dispersed among the Indian farmers.[298] This was partly done because of the fact that before these demonstrations were being executed, there existed a lot of consumer resistance when it came to using fertilizer. But, according to an ICAR report of 1965, these demonstrations that were set up in collaboration with the universities made sure that the resistance was overcome for a large part.[299] Fertilizers were also physically being dispersed, among others by the 'kits' some Indian colleges provided to Indian farmers, which were meant to increase the number of farmers utilizing the new seeds and other production inputs.[300] Through their research the Indian agricultural colleges, with assistance from the American universities, were also able to provide recommendations and guidelines on how to improve cultivation by using fertilizers in specific ways.[301] So American institutions and colleges were involved in exporting fertilizer to India, distributing them throughout agricultural areas and extending knowledge on them.

However, in 1972, Indian farmers still depended on imported fertilizers for 40% of their requirements with most of this fertilizer coming from the US.[302] This stood in sharp contrast with the plans of Indira Gandhi at the time who argued:

---

[296] Gaud, "The Green Revolution: accomplishments and apprehensions."
[297] Gaud, "The Green Revolution: accomplishments and apprehensions."
[298] Read, *The CUSURDI Story*, 60.
[299] ICAR, "Annual report 1964-1965," consulted 15.04.2023, https://krishikosh.egranth.ac.in/displaybitstream?handle=1/2026777&fileid=024d9162-6cc3-4a65-9944-50700b3c241f
[300] Read, *The CUSURDI Story*, 292.
[301] Read, *The CUSURDI Story*, 252.
[302] Discontinuation of US Aid to India, 07.12.1972 (National Archives of India, External Affairs, PR_000005002998), consulted on 17.04.2023, https://www.abhilekh-patal.in/jspui/handle/123456789/2753016?searchWord=fertilizer&backquery=%5bquery=fertilizer&filter_field_1=dateIssued&filter_type_1=equals&filter_value_1=%5B1951-01-01+TO+1980-12-31%5D&filter_field_2=dateIssuedTo&filter_type_2=equals&filter_value_2=%5B1951-01-01+TO+1980-12-31%5D&filter_field_3=fileType&filter_type_3=equals&filter_value_3=PDF&originalquery=&sort_by=dc.date.accessioned_dt&order=desc&rpp=20&etal=0&start=40.

"Fertilizers are the most important ingredient in this strategy. While we must do whatever we can to secure the best possible terms, we must realize that it is better to buy fertilizer by factories in India using Indian labour, Indian raw material and a good proportion of Indian capital than to buy it from abroad."[303]

Fertilizers, as has become clear, were indispensable in the strategy of this Indian Green Revolution and that Americans from USAID, American factories and land-grant universities all played [304]a crucial role in how the Indians received these fertilizers and how they instrumentalized them.

2.2.3. Water

The third element that would prove to be crucial in the Green Revolution was water; that is an assured water supply and irrigation methods for the growth of these high-yielding varieties. Similar to the case of fertilizers, the high-yielding varieties had the capacity to absorb more water, but they also relied on a consistent water supply to achieve the anticipated yields.[305] This means that an assured and balanced water supply was indispensable to enlarge productivity of India' agriculture. On the importance of water Subramanian said the following during Lok Sabha debates: *"All this will have no meaning if there is no water to back this up, it will be only throwing it into waste."*[306]

India at the time had undertaken several irrigation projects previously, but Subramanian claimed that none of them possessed the necessary capacity to support the extensive cultivation required by the *New Strategy*. The adoption of high-yielding seeds and extensive use of artificial fertilizers called for the development of innovative water utilization techniques. However, the

[303] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 9.
[304] Lok Sabha Debates: thirteenth session, 07.12.1965, 6078.
[305] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent*, 1968 (Washington: US Department of Agriculture, 1968), consulted 17.04.2023, https://dec.usaid.gov/dec/content/Detail_Presto.aspx?ctID=ODVhZjk4NWQtM2YyMi00YjRmLTkxNjktZTcxMjM2NDBmY2Uy&rID=NTgwOQ%3d%3d&qrs=RmFsc2U%3d&q=KERvY3VtZW50cy5GaWxlOihIaWdoLVlpZWxkaW5nIHZhcmlldHkgcHJvZ3JhbSkpIEFORCAoRG9jdW1lbnRzLkRlc2NyaXB0b3JzX0dlb2dyYXBoaWM9KCJJbmRpYSIpKQ%3d%3d&qcf=ODVhZjk4NWQtM2YyMi00YjRmLTkxNjktZTcxMjM2NDBmY2Uy&ph=VHJ1ZQ%3d%3d&bckToL=VHJ1ZQ%3d%3d&rrtc=VHJ1ZQ%3d%3d
[306] Lok Sabha Debates: thirteenth session, 07.12.1965, 6089.

method put forward by Subramanian was very straightforward. He called for intensive agricultural methods wherever water is available so that in these areas multiple crops instead of just one crop would be grown. Areas with an abundant water supply would thus know more intensive agriculture than areas in which water was scarcer.[307] Second of all, this New Strategy called for the modernization of existing irrigation systems and lastly, Subramanian demanded that minor irrigation sources within certain areas would also be developed so that a water balance could be reached.[308]

With regards to water, the *New Strategy* also shone a light water as a destroyer instead of water as a necessary element for cultivation, for example in the case of waterlogging. What was needed was thus carefully developed irrigation systems that would provide the necessary water supply while also preventing saturation of the soil which could prove to be detrimental.[309]

The primary objective concerning water supply and its connection to cropping was thus to expand the cultivation of multiple crops on land with a consistent water supply, aiming to maximize the advantages of that particular area.

While water management and irrigation projects were indeed influenced by the Americans, it can be asserted that this influence was relatively less direct compared to the impact they had on the adoption of high-yielding seeds and artificial fertilizers. Already before the existence of the *New Strategy*, the US was involved in projects with regards to water supply and -management. USAID, for example, had financed importation of equipment that was necessary for projects on groundwater irrigation, groundwater exploration, etc.[310] One way in which the US influenced Indian practices of water management was through their technical assistance to the country. All but one Indian state asked for American advice in water management during the renewed and intensified assistance relationship that was formed in 1966.[311] This was done partly through the American land-grant universities that send experts on the matter to India to help with demonstrations and to give lectures to Indian students. Furthermore, American graduate students concentrating in these kinds of studies, were also encouraged to travel to India

[307] Lok Sabha Debates: thirteenth session, 07.12.1965, 6090.
[308] Lok Sabha Debates: thirteenth session, 07.12.1965, 6090.
[309] Lok Sabha Debates: thirteenth session, 07.12.1965, 6091.
[310] *The United States contribution to Indian development*, 31.12.1964 (New Delhi: USAID mission to India), consulted 19.04.2023, https://pdf.usaid.gov/pdf_docs/Pdacq704.PDF
[311] Read, *The CUSURDI Story*, 290.

to conduct research there.[312] Another way was through the USAID mission in India that provided research teams who were actively engaged in promoting better water management through extension services.[313]

The Ford Foundation was also involved in multiple projects, mostly through financial means. This Foundation, for example, provided a lot of support to the Punjab Agricultural University, which in turn provided technical guidance to private companies that manufactured multiple agricultural implements such as water lift pumps. Of course, in such a case, the American impact is less direct and straight-forward.[314]

2.2.4. Plant protection materials

The last of the four elements as prescribed by Subramanian are the plant protection materials. Those materials are substances used to control pests, diseases and weeds that could negatively affect agricultural growth and productivity by damaging plants. The primary sources provide the least amount of information on this particular aspect. Subramanian only touches upon this topic very briefly during the Lok Sabha debates when he says the following:

> *"Chemicals required for plant protection will also have to be produced within the country. Fortunately, we have already established sufficient capacity to meet the present needs, but it is not sufficient to meet the needs of the expanded programme [...] If any chemicals have got to be important, it has been decided by the government that high priority will be given with regard to allocation of foreign exchange to import these pesticides."*[315]

This quote demonstrates how domestic production of plant protection materials wasn't enough, hence the need for imports. In 1966, the Indian government implemented liberalized legislation regarding imports, which resulted in easier access to essential technological components,

---

[312] Read, *The CUSURDI Story*, 279.
[313] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent,* 1968.
[314] *Agricultural Universities in India – Progress and Problems*, 12.11.1968 (Washington: Agricultural Division of the National Association of State Universities and Land Grant Colleges), consulted 20.04.2023, https://pdf.usaid.gov/pdf_docs/PNABJ266.pdf
[315] Lok Sabha Debates: thirteenth session, 07.12.1965, 6089.

including those required for plant protection materials.[316] Arrangements were then made with overseas firms, specialized in the manufacture of these chemicals and equipment.[317] Additionally, the connections between international experimental research and the indigenous methods of utilizing plant protection materials in India would also be maintained.[318] According to American sources, a significant quantity of pesticides and their chemical components were procured from the United States in 1968, although specific details were not provided.

In general, when Indian states sought technical assistance from the US, they also sought guidance regarding plant protection.[319] Thus, US experts had a clear impact on farmers' perspectives and practices regarding these materials by providing advice and guidance. Additionally, as mentioned before, some of the American land-grant universities used a kit of inputs approach as part of their extension services so that Indian farmers were provided with the necessary means to implement this Green Revolution. One of the elements in this kit were plant protection materials such as pesticide.[320] Other universities decided to prioritize demonstrations, including those related to pesticide application.[321]

The mentioned sources do not primarily emphasize plant protection materials, despite their crucial role in the Indian Green Revolution and the involvement of the United States in this aspect. Although specific details are lacking, it is evident that the US exerted influence through exports and technical assistance in multiple ways, as with other components of the Green Revolution.

2.3. Conclusion

In conclusion, this chapter has provided a comprehensive examination of the direct impact of American involvement in India's Green Revolution, with a particular focus on American science, agricultural experts, and technology and equipment. Through an analysis of primary sources, encompassing reports from agricultural universities, the US government, ICAR and

[316] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent,* 1968.
[317] R.T. Shand, *Agricultural development in Asia* (Canberra: Australian National University Press, 1969), 96.
[318] Shand, *Agricultural development in Asia*, 96.
[319] Read, *The CUSURDI Story*, 253.
[320] Read, *The CUSURDI Story*, 292.
[321] Read, *The CUSURDI Story*, 115.

others, the multifaceted nature of American influence has been delineated. The chapter commenced by highlighting the collaborative endeavours between American land-grant universities and their Indian counterparts, partly driven by the strategic objective of reinforcing democratic values. Operational Agreement nr. 28 in 1953 marked the genesis of extensive educational support, culminating in the establishment of Indian agricultural universities. This partnership extended beyond education, encompassing research, training, and knowledge dissemination, all of which played pivotal roles in catalysing the Green Revolution. American universities thus actively engaged in various facets of Indian agriculture, from the dissemination of improved seeds and fertilizers to the promotion of extension education and the resolution of farmer scepticism toward modern techniques. These endeavours were geared towards augmenting food production and diminishing dependence on foreign aid. The philanthropic contributions of foundations like the Ford and Rockefeller Foundations further accelerated India's agricultural progress by facilitating research, scholarships, and knowledge exchange. The collaborative efforts forged during this period led to the establishment of rural universities, significant advancements in agricultural practices, and the transformation of agricultural education in India. Although India eventually sought to discontinue American assistance due to foreign policy disparities, the Indo-American Partnerships indelibly marked India's agriculture, expediting its development and significantly contributing to the success of the Green Revolution. In essence, American assistance not only expedited India's progress but also played a pivotal role in India's journey toward enhanced agricultural self-sufficiency and economic independence. The Green Revolution in India, underpinned by high-yielding seeds, chemical fertilizers, water management, and plant protection materials, stands as a testament to the profound and enduring impact of American involvement in this transformative epoch.

CHAPTER 3 The politics of the Green Revolution

"In the long run, of course, we cannot depend on people for 80 or any other source of supply from any other country, because we cannot afford to be beggars. But at the same time, when we are in difficulty, when we are short of food, it is very necessary that we approach the USA and some other countries and try to get foodstuffs from them."[322]

In this chapter the focus will be more on the Indian perspective. More specifically, this chapter will analyse the attitude of the Indian government towards the Americans, the impact of the American expertise when it comes to power inequalities between the US and India and lastly, the relationship between the Green Revolution and the Indian political development. For this, both primary sources will be used as well as secondary sources to provide more contextualized information.

3.1. Indian political discourse in parliamentary debates on American aid

In the preceding chapters, it became evident that American assistance, in diverse forms and through various channels, was widespread during both the lead-up to and the course of the Indian Green Revolution. Considering the Indian government's strong stance on self-sufficiency and self-reliance, the latter raises certain questions: Did the Indian government readily embrace the American aid without questions? Were they hesitant about applying and using American science and techniques? Were there any conditions attached to this aid? In this chapter, my primary emphasis will thus be on the emotions expressed in a parliamentary setting through an analysis of political discourse. In order to research this, both the reports from Lok Sabha debates from the period 1965-1972 were analysed, as well as speeches from Indira Gandhi who became prime minister in 1966.

[322] Lok Sabha Debates: thirteenth session, 06.12.1975 (Third Series, Vol. XLIX, no. 23), 5903, consulted 11.05.2023, https://eparlib.nic.in/bitstream/123456789/55063/1/lsd_03_13_06-12-1965.pdf.

In the first chapter Nehru and his views were mentioned, among others his views on how to modernize the country. This Indian prime minister specifically wanted to build an independent Indian economy via native Indian technology and science. Creating Indian knowledge independently from the West was something Nehru attached great importance to. Furthermore, during the third plan (1961-1966) economic self-reliance was really put forward as a national goal, leading the way to expansion of basic industries and agriculture (cfr. supra). Therefore, it is reasonable to assert that Nehru was not actively seeking extensive assistance from the US unless there were no viable alternatives available.

This stands in contrast to the American aid that was given to India from 1951 onwards in the form of food aid under the PL 480 agreement (later known as Food for Peace). Aid was even diversified when the US started to provide equipment for agricultural programmes and experts to assist with these programmes. Aid, and specifically American aid, thus became something essential to the Indian political economy.

The common thread throughout the sources is this continuous tension between striving for self-reliance and wanting to fall back on Indian experts, science, technology etc. on the one hand and needing American aid on the other. Indira Gandhi even claimed that sustained growth in India could not be built of off what she called borrowed technology. Thus, there was this idea circulating among Indian leaders that India's growth should be grounded on indigenous technology and know-how.[323]

However, India was not unique among postcolonial and former protectorate countries in facing the dilemma of striving for greater independence and self-reliance while also accepting aid from other nations, including their former colonial powers. Egypt, for example, also had to deal with Johnson's short-tether policy because the latter wanted to secure certain diplomatic concessions.[324] In the Asian context, the Philippines serves as a noteworthy example of a nation receiving substantial aid, much of it from the United States, while concurrently striving for self-sufficiency and incorporating this pursuit into nationalist propaganda and discourse.[325] It is therefore essential to contextualize the narrative of American aid in India within a broader

[323] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 384
[324] Robert Paarlberg, "Food as an instrument of foreign policy," *Proceedings of the Academy of Political Science* 34, no. 3 (1982): 34
[325] Cullather, *The hungry world,* 174.

framework that encompasses multiple countries, most of them in the Global South. By doing so, the patterns and dynamics of aid and its impact on various postcolonial and former protectorate nations become clearer.

3.1.1. Technological self-reliance

In the speech *On the problems of growth* made by Indira Gandhi, the longing for scientific and technological self-reliance becomes clear:

> *"We must make every effort for the fullest use of our own resources and capital, the managerial skill and technological talent in indigenous material and machinery. […]. We are taking foreign aid and we may have to take it for some time, but aid is not charity. We will take it only if we can do so keeping in view our self-respect and principles."*[326]

Gandhi was thus conscious about the fact that foreign aid was necessary, she even stated that it was inescapable in another speech.[327] But she also attached great importance to using native resources in the build-up of an economically prosperous India. In another speech she explicitly mentions the concept of technological self-reliance, which demonstrates how much the Indian leaders believed that self-reliance should cover every aspect of Indian society, not only economically.[328] Gandhi denounced the fact that, according to her, Indian society was not making good use of their "reservoir of talented scientists, engineers and technicians."[329] Once again, this tension between needing foreign aid on the one hand and confidence in the native, Indian, abilities on the other hand came to the fore. Furthermore, Gandhi also expressed multiple times that the American know-how and technology should not be copied blindly in India. On the contrary, know-how should get adapted to Indian conditions and context so that it could develop into something that contributes to Indian self-reliance.[330] Lastly, there was also this feeling that accepting aid should not be turned into a dependency on aid in the sense that the Indian prime minister thought that dependence would encourage the Indian population to

[326] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 9.
[327] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 385.
[328] Indira Gandhi, *Indira Gandhi: speeches & writings* (New York: Harper & Row, 1975), 52
[329] Gandhi, *Indira Gandhi: speeches & writings*, 52
[330] Gandhi, *Indira Gandhi: speeches & writings*, 53.

take “the easy road”.[331] There was thus also a field of tension between the need for assistance in providing food and importing agricultural knowledge and technology, and the drive to encourage indigenous scientists and farmers to forge their own path, independent of Western influence. In the same way as Gandhi, the parliamentarians also had certain concerns, one member claimed for example that the Indian government was fostering a society where Indians lack the need to cultivate technological expertise, as they can depend on what he referred to as "foreign collaborators" for that purpose.[332] He even referred to the Indians as “parasites”. As a result of this reliance on foreign know-how, some parliamentary members also believed that Indian engineers and technologists could not find projects to really develop their skills. This in turn led to brain-drain. All of this was believed to cause humiliation for the Indian nation:

> *“Then where is our self-respect in this world? We go about everywhere begging for technology as if the Indian scientists cannot develop our technology…This kind of continuous dependence upon every country in the world for our development is something which is sapping the vitality, sapping the morale of the developing youth, sapping the morale of our engineers, sapping the morale of her scientists; it is derogatory to the self-respect of the Indians.”*[333]

During a debate in 1972 a parliamentary member even claimed that American funds, and especially the Ford Foundation Funds were influencing India’s educational institutions too much. According to him, this would even “pollute” cultural and political life in India.[334] This individual held the view that the presence of American influence, whether through financial support or educators, had a detrimental effect on Indian culture. However, there were certain Lok Sabha members who firmly believed that the United States was the forefront nation in the realm of science and technology. Consequently, they viewed the acquisition of American expertise, particularly in the field of education, as crucial. In response to the contention that

---

[331] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 210.
[332] Lok Sabha Debates: second session, 06.06.1967 (Fourth Series, Vol. IV, no. 11), 3253, consulted 21.05.2023, https://eparlib.nic.in/bitstream/123456789/1341/1/lsd_04_02_06-06-1967.pdf
[333] Lok Sabha Debates: seventh session, 30.04.1969 (Fourth Series, Vol. XXIX, no. 51), 186, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/2691/1/lsd_04_07_30-04-1969.pdf
[334] Lok Sabha Debates: fifth session, 17.08.1972 (Fifth Series, Vol. XVIII, no. 13), 277, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/2117/1/lsd_05_05_17-08-1972.pdf

Indian society should not study or implement American science, one parliamentary representative expressed their viewpoint in the following manner:

> *"Science is not Indian. It is not American. It is not Russian. It is international; technology is not Indian, it is not American it is not Russian, it is international… There are various sensitive parts of our education where we should not allow any foreign influence…. there is no such thing as American influence in science and technology…Let us not talk of being exposed to American influence. It shows our inferiority complex."*[335]

Interestingly, this particular member holds the belief that rejecting American technology and science reflects India's lack of self-assurance on the global stage. It is noteworthy that a sense of national pride and confidence plays a pivotal role in both arguments. However, these opposing stances employ this notion to support their respective positions. This clearly demonstrates how there was not just one opinion on the role of American science and technology in Indian society and its development.

3.1.2. Race

Additionally, race and white superiority also played an important part in arguments against American aid. A member of the parliament in 1966 even explicitly referred to the US as neo-colonialists because according to him, they used their aid policies to further their own national interests.[336] A parliamentary member also stated the following to a debate in 1965:

> *"These people, white skinned people because of the pigmentation of their skin and because they have a lot of money in their pockets, think they can put us in their pocket and that is their calculation. Therefore, they go about places talking in this matter. He said that the right of the United States government is there. To examine the developmental plans on which United States money was spent. He has no business to give us such advice. But in any case, it did not require it to give us this advice because the government is*

[335] Lok Sabha Debates: third series, 05.08.1966 (Third Series, Vol. LVII, no. 10), 3097-3099, consulted 19.05.2023, https://eparlib.nic.in/bitstream/123456789/55219/1/lsd_03_15_05-08-1966.pdf
[336] Lok Sabha Debates: third series, 14.05.1966 (Third Series, Vol. LV, no. 60), 16923, consulted 19.05.2023, https://eparlib.nic.in/bitstream/123456789/55191/1/lsd_03_14_14-05-1966.pdf

already acting according to advice [...] These private people should not be allowed to have run of the land."[337]

3.1.3. Strings attached

What was also of great importance to India at the time was that aid, from any country, should not have strings attached to it. India was very vocal and proud of their position of non-alignment, and they were especially keen on not being influenced by other powers (cfr. supra). Considering the fact that the US sometimes used their aid as leverage (cfr. Johnson's short-tether policy), this also constituted one of the main tensions when it came to accepting American aid.

"We are against being influenced by any outside political power, but we welcome modernization and the expansion of science and technology, for it is through them that we can give a better life to our people and be strong enough to defend our freedom."[338]

A considerable amount of time, however, was being spent discussing the ways in which America used aid to influence India during Lok Sabha debates between 1965-72. Noteworthy was also the fact that many parliamentary members believed that the aid was indeed detrimental to India's independence, especially when it came to her foreign policy. Some claimed that because of the expectation of aid, India couldn't take a forthright stance on matters that were of interest to her as a nation.[339] Most of the times, this was a direct reference to the Vietnam War which went against India's principles when it came to foreign policy (cfr. supra). Starting from 1965, part of the Lok Sabha believed that India should call for the immediate retrieval of the United States troops on Vietnamese territory but refrained from this because of the heavy dependence on American aid of all forms. A particular member even argued that the foreign policy India was following showcased how India was both economic and politically dominated

[337] Lok Sabha Debates: thirteenth session, 18.11.1965 (Third Series, Vol. XLVIII, no. 11), 2644, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/54605/1/lsd_03_13_18-11-1965.pdf
[338] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 44.
[339] Lok Sabha Debates: eleventh session, 22.02.1965 (Third Series, Vol. XXXVIII, no. 4), 723, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/54570/1/lsd_03_11_22-02-1965.pdf

by America.[340] Another member claimed that once the Indian economy became totally dependent on US "imperialists", India's political independence would get endangered.[341] All of these claims were essentially based on the fear of losing independence when it came to policy of all sorts and on the idea that American dominance humiliated the Indian nation.[342] Following quote ties these arguments perfectly together:

> *"Any protestation that despite dependence on USA for everything in our economy, including food, we will still maintain our independence is rapidly being proved false by the developments and happenings in India. And there are some people who talk loudly about the honor, about the self-respect of our nation. Our country's honor and self-respect and even its hard won independence are being jeopardized by the policies that are being pursued by the present government."*[343]

Other members on the other hand, stated that it was wrong to claim that India was taking decisions based on the availability of aid and that it showed an inferiority complex.[344] They denied the accusation that India was giving into American pressure and tried to assure the other members of the parliament that the accepted aid was in no way derogatory to India's sovereign rights. [345]

Naturally, the ultimate objective was to fully depend on Indian science, yet Indira Gandhi consistently expressed gratitude towards the United States for assisting in bridging this gap until complete self-reliance could be achieved in every aspect. Furthermore, Gandhi was also very much aware of the importance the US attached to India's success, which adds another dimension in which India is aware of the fact that the US does not only provide aid because of some moral imperative. The prime minister was thus conscious of the role that India played

---

[340] Lok Sabha Debates third series, 03.05.1966 (Third Series, Vol. LV, no. 52), 14609, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/55540/1/lsd_03_14_03-05-1966.pdf
[341] Lok Sabha Debates: third series, 05.05.1966 (Third Series, Vol. LV, no. 53), 14782, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/55433/1/lsd_03_14_05-05-1966.pdf
[342] Lok Sabha Debates: third series, 20.04.1966 (Third Series, Vol. LIV, no. 43), 12017, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/55479/1/lsd_03_14_20-04-1966.pdf
[343] Lok Sabha Debates: third series, 20.04.1966 (Third Series, Vol. LIV, no. 43), 12017, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/55479/1/lsd_03_14_20-04-1966.pdf
[344] Lok Sabha Debates: thirteenth session, 07.12.1965 (Third Series, Vol. XLIX, no. 24), 6063, consulted 19.05.2023, https://eparlib.nic.in/bitstream/123456789/54547/1/lsd_03_13_07-12-1965.pdf
[345] Lok Sabha Debates: third series, 07.04.1966 (Third Series, Vol. LIII, no. 36), 10011, consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/55124/1/lsd_03_14_07-04-1966.pdf

within the strategic plans of the US. Following quote from one of her speeches bundles these two arguments:

> *"The United States has given us valuable assistance in our struggle against poverty, hunger, ignorance, and disease. We are grateful for this act of friendship, but we also know that our own Great Society must and can rest securely only on the quality and extent of our own effort. India's problems today are her own, but they are also the world's problems [...] India, if it is stable, united and democratic, can serve a great purpose. If India is not stable, if India fails, it would be failure of the whole democratic system."*[346]

At some points, Gandhi also made it explicitly clear that she thought that aid was being used as an instrument to enforce certain short-term policy objects of the donor countries. This, according to her, eroded India's independence and the effectiveness of the aid.[347] Furthermore, Gandhi also once described foreign aid as a form of "enlightened self-interest" on the part of the aid-giving countries and especially when it was tied to the purchase of equipment and know-how from these donor countries. This argument shines a light on how Indian leaders did consider technical assistance as something concessional, with clear benefits for aid-giving countries.[348] Indira Gandhi was not the only one who held this opinion on the concessional nature of American aid. Parliamentary members also expressed their concerns about this during Lok Sabha debates, starting from 1965. A specific member went so far as to call for an investigation into the effects of American aid on the Indian economy, expressing concerns about the potential risks associated with accepting this aid. Additionally, this member explicitly expressed their belief that India's ability to adopt a decisive stance on certain issues important to the country was compromised due to the fear of losing the aid.[349] When the Indo-Pakistani war broke out, a lot of comments were made in the Indian parliament about whether American aid was tied to concessions or not:

[346] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 461.
[347] Gandhi, *Indira Gandhi: speeches & writings*, 104-105.
[348] Gandhi, *Indira Gandhi: speeches & writings*, 130.
[349] Lok Sabha Debates: eleventh session, 22.02.1965, 723-724.

"The wonderful aid that comes from the UK and USA, that wonderful aid they were going to stop [...] this is the unstrung aid which they give us. Even their economic aid, for whatever it is worth, was not without strings, in order to punish us for our effrontery, in wishing to defend our honor and our integrity as an independent country, we were to be penalized most drastically."[350]

This demonstrates how there existed a lot of doubt and uncertainty about the ways in which American aid possible infringed on the Indian sovereignty, especially when it came to foreign policy. One parliamentary member even compared accepting American aid to losing the nation's soul.[351] Other members, on the other hand, claim that this thinking is false, and that accepting aid had no impact whatsoever on India's stances on certain matters.[352]

One interesting argument that was reiterated multiple times during Lok Sabha debates was the suspicion that the US made CIA agents infiltrate into organizations sustained by or projects initiated by USAID in India.[353] It started when members realized that the president of the Ford Foundation at the time was also the overall director of the American National Security Council, which guides the activities of the CIA.[354] Furthermore, during a debate in 1972, the year American aid eventually got suspended, one member stated that the Director General of the CIA had openly stated that they got their people working in various countries of the world, under the guise of various technical experts.[355] Therefore, certain members of the Indian parliament harboured significant doubts regarding the motives of individuals affiliated with USAID or technical experts who held American citizenship. Consequently, there was a pervasive fear of potential surveillance, which was accompanied by suspicions regarding America's true intentions in providing aid. Uncertainty prevailed regarding the potential

[350] Lok Sabha Debates: twelfth session, 24.09.1965 (Third Series, Vol XLVI, no. 29), 7465, consulted 17.05.2023, https://eparlib.nic.in/bitstream/123456789/54531/1/lsd_03_12_24-09-1965.pdf
[351] Lok Sabha Debates: twelfth session, 23.08.1965 (Third Series, Vol XLIV, no. 5), 1300, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/3079/1/lsd_03_12_23-08-1965.pdf
[352] Lok Sabha Debates: thirteenth session, 07.12.1965, 6063.
[353] Lok Sabha Debates: second session, 29.05.1967 (Fourth Series, Vol. III, no. 5), 1334, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/1858/1/lsd_04_02_29-05-1967.pdf
[354] Lok Sabha Debates: eight session, 22.08.1969 (Fourth Series, Vol. XXXII, no. 24), 175, consulted 25.05.2023, https://eparlib.nic.in/bitstream/123456789/2775/1/lsd_04_08_22-08-1969.pdf
[355] Lok Sabha Debates: fifth series, 25.05.1972 (Fifth Series, Vol. XVI, no. 52), 226, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/1015/1/lsd_05_04_25-05-1972.pdf

political leverage associated with American assistance, concerns about the compatibility of American scientific approaches with Indian society, etc.

Overall, American aid was seen as something that was both necessary but negative to Indian growth, since the latter could only be sustained by Indian science, technology and experts. There thus existed a strong focus on eradicating this aid in order to develop in a more sustainable and authentic way that reflected Indian values and identity. Furthermore, there was a prevailing belief that the United States was employing their aid strategically and encroaching upon Indian independence in the process. This comes to the fore once again during Lok Sabha debates when America is called 'a friend' but members also insisted on refusing economic aid from them.[356]

3.1.4. Gratitude

Although a lot of Lok Sabha members and Indira Gandhi herself were sometimes suspicious of American aid towards India, expressions of gratitude were also frequently conveyed on numerous occasions. In the consulted sources, there is no mention whatsoever of any individual who believed that American aid posed no issues and could continue indefinitely. Therefore, it can be inferred that the majority of parliamentary members, including the prime minister herself, desired the cessation of American aid, on the condition that India had achieved self-sufficiency and self-reliance. But until the latter could be achieved, many members of parliament realized that aid was necessary in order for India to develop and combat poverty and hunger. Gandhi also displayed a strong awareness of this reality and emphasized the necessity for aid in several of her speeches.

> *"Until we become self-reliant, I do not see any loss of prestige in asking for more aid. It is very, very important that economically the momentum of development is not lost…. We must use every means to build up ourselves, to make the country strong. We must have a high target. There must be visible movement in the economy. If the movement is in doubt, people will fail us. But if we are moving forward, they will bear up with hardship. What*

[356] Lok Sabha Debates: twelfth session, 24.09.1965 (Third Series, Vol. XLVI, no. 29), 7465, consulted 23.05.2023, https://eparlib.nic.in/bitstream/123456789/54531/1/lsd_03_12_24-09-1965.pdf

we are seeing today is the rebirth of India, a new India in transition from a traditional to modern society."[357]

Gandhi thus clearly focuses on the process of development and the future that India could have. She understands that in order for this future to take place, aid is necessary because otherwise the development of the country will lack force. But her expressions of gratitude were always accompanied by statements about the need to make India self-reliant.[358]

Various statements were also made during Lok Sabha debates from 1965 to 1972 that explicitly expressed gratitude to the United States for their aid, including PL 480 food shipments, support in the educational sector, and other forms of assistance. One of these statements was made by the Indian President in 1968 when he addressed parliament:

"The USA continues to extend to us valuable and substantial economic and food aid, which has helped us to tide over difficulties in the past and should assist us in the growth for our economy in the future. We are grateful for their understanding and help."[359]

Here interestingly enough the president alludes to American aid also being used in the future and there is no strong statement about wanting to become self-reliant so that aid could diminish. Although parliamentary members thanked the United States multiple times during the Lok Sabha debates, it can be said that more attention was paid to, and time spend on the negative aspects of this aid. Expressions of gratitude or statements about the positive aspects of American aid were rather short and often followed debates about the negative aspects other members brought up.

[357] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 102-3.
[358] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 9.
[359] Address to Parliament: first session, 12.02.1968 (Fourth series), 152, consulted 20.05.2023, https://eparlib.nic.in/bitstream/123456789/3962/1/husain_12_02_1968.pdf

3.2. The impact of American expertise on power inequalities between India and the US

Although it is not possible to exactly measure the power inequalities between the two countries, it's useful to give an overview of the power the US held over India through her aid programs in the country and how this translated into possible power inequalities. Unlike the preceding subchapter, this section will primarily emphasize empirical evidence, delving into concrete power imbalances that transcend discourse and parliamentary debates. The subchapter thus focuses on observable facts that heightened the inequality between the two countries. More concrete, the subjects are well-established facts on financial implications (e.g., loans), patents, and domestic American developments. For this particular subchapter, both primary sources and secondary sources will be used, as the analysed primary sources are often subjective and needed to be verified by other sources. Furthermore, as in the previous subchapter, the reports of the Lok Sabha debates have proven to be very useful.

When analysing the Indian primary sources, it immediately became clear that, not taking into account hard facts, a considerable number of parliamentary members felt that power inequalities between the US and India were indeed growing because of the American aid and the use of American know-how. In multiple statements about the subject, they referred to India as "beggars", as a country being controlled by the US, as a nation being humiliated, etc. This clearly implies that they felt as if India was losing part of her independence and dignity to the country that claimed to help her gain more independency (especially in the economic field). References to India's lack of integrity were often made during the Lok Sabha debates, displaying the sense of humiliation that was widespread among the parliamentary members. When it comes to power inequalities, the overarching feeling was that India was subservient to the United States. This power inequality stemmed from economic measures, but many feared and believed that it also translated into the political field such as India's stance on the Vietnam war or the troubles between India and Pakistan. In this case it is thus important to remember that power inequalities can be very subtle and hard to detect in an explicit way.

India was very dependent on the US for a number of things that all together could make or break her development and according to the Lok Sabha, these power inequalities took on many

forms. An example is the belief of some parliamentary members that the United States in fact controlled the finances of India.[360]

> *"You are shining in borrowed glory. We take huge loans from all foreign countries. We spend right-royally out of the loans we get, and we claim that we are fairly financially a viable state. Apart from the loans from the World Bank and the Aid-India Consortium of America, the PL 480 counterpart funds, funds alone come to Rs. 800 crores. The Unites States is in fact controlling the finances of this country."*[361]

This was believed to be done through the mechanism of loans and repayments and the involvement of the World Bank's conditionalities.[362] The control of India's finances by the United States would have signified a significant exertion of power by the US over the nation of India. In reality, it would've been an exaggeration to state that the US really controlled the finances of the Indian State. However, the exportation of the Green Revolution led by American businesses and organizations was not without its associated commercial interests from these entities. The main goal of many of them was to liberalize India's economy so that American products would have a bigger market in that region.[363] For instance, the World Bank imposed specific conditions on its aid to India, with the primary requirement being the implementation of import liberalization.[364] Besides prerequisite that the president of the World Bank must always be an American, This illustrates how Western organizations, despite not being legally American and not inherently American in nature, also to some extent, aligned with America's agenda. Furthermore, Venkateswarlu explicitly claimed that the United States, through the World Bank, enforced the devaluation of the Indian rupee in 1966 with the aim of liberalizing the Indian economy and facilitating increased imports of American chemical fertilizers into the country.[365] The reason why this was possible was because the US used the World bank as its intermediary when it came to aid and because the US in March 1966 explicitly states that the

---

[360] Lok Sabha Debates: eleventh session, 15.03.1965 (Third Series, Vol. XXXVIII, no. 19), 4401, consulted 21.05.2023, https://eparlib.nic.in/bitstream/123456789/55103/1/lsd_03_11_15-03-1965.pdf
[361] Lok Sabha Debates: eleventh session, 15.03.1965 (Third Series, Vol. XXXVIII, no. 19), 4401, consulted 21.05.2023, https://eparlib.nic.in/bitstream/123456789/55103/1/lsd_03_11_15-03-1965.pdf
[362] Venkateswarlu, *Political economy of agricultural development in India,* 148
[363] Venkateswarlu, *Political economy of agricultural development in India,* 148
[364] Venkateswarlu, *Political economy of agricultural development in India,* 148
[365] Venkateswarlu, *Political economy of agricultural development in India,* 148

amount of aid given to India was to become dependent on the latter coming to terms with the World Bank and its conditionalities.[366] Venkateswarlu summarizes this form of control by stating that the export of the Green Revolution by the US insisted on liberalization of the Indian economy.[367] According to him, the US also had explicit demands surrounding control over pricing and distribution of certain components of the Green Revolution package, especially in the case of fertilizers.[368]Additionally, both the World Bank and USAID advocated for favourable conditions regarding foreign investment in India's fertilizer industry, as well as the removal of domestic regulations, in addition to their emphasis on import liberalization.[369] To comprehend the financial dimension of American influence over India during the Green Revolution, it is vital to acknowledge the substantial financial support provided by the World Bank and USAID for importing the technology package that served as the cornerstone of the Indian Green Revolution.[370] Without their financial assistance, it would have been highly improbable for India to mobilize the necessary funds to implement the Green Revolution on such a significant scale. When considering the collective evidence, it becomes evident that while it may be an overstatement to assert that the United States had absolute control over India's finances, it is indeed accurate to recognize that American influence over the Indian state encompassed a significant financial component. Furthermore, it is evident that power imbalances were indeed present within the financial realm. The Americans were able to manipulate India's financial policy using their aid and knowledge as leverage. In addition, India exhibited a profound reliance on American financial support for its ongoing agricultural development. Consequently, if this support were to diminish, India's productivity would have suffered a severe decline, leading to widespread hunger and further weakening India's position within the global economy.

Furthermore, a number of parliamentary members also expressed concerns over the use of patents by foreigners and especially by Americans.[371] They claimed that these patents were "strangling them" and that the revenue generated from patents, which flowed into the US, was

[366] Venkateswarlu, *Political economy of agricultural development in India,* 148-9.
[367] Venkateswarlu, *Political economy of agricultural development in India,* 149.
[368] Venkateswarlu, *Political economy of agricultural development in India,* 149.
[369] Venkateswarlu, *Political economy of agricultural development in India,* 149.
[370] Venkateswarlu, *Political economy of agricultural development in India,* 150.
[371] Lok Sabha Debates: twelfth session, 09.09.1965 (Third Series, Vol. XLV, no. 18), 4834, consulted 19.05.2023, https://eparlib.nic.in/bitstream/123456789/3073/1/lsd_03_12_09-09-1965.pdf

grossly inequitable. Crucial when it comes to the Green Revolution were the American patents on fertilizers. Because of the fact that India needed those fertilizers to produce high yields, a lot of money flowed straight into the pockets of American companies and industrials.[372] Secondary sources indeed reaffirm that India was in fact reliant on foreign firms when it came to patents, meaning that they could only instrumentalize foreign knowledge if foreign firms gave permission to do so.[373] This also means that India was relying heavily on foreign (mostly American) private investment to buy and produce the elements that together made the Green Revolution package.[374] Important to keep in mind when it comes to the latter is that there existed a relatively strong interdependence of American private and government interests. According to W.D. Posgate this was because the Americans believed that development could best be achieved by encouraging private enterprise and entrepreneurship. At the same time, these American corporations recognized and accepted the role of the American government in this.[375] This situation exemplifies a type of power imbalance, whereby Americans, leveraging their expertise and patents, were able to partly exclude India from the fertilizer market and impose exorbitant prices on the country for their products. This ensured the economic dominance of the US over India when it came to this specific product. Furthermore, it also lay a limit on the spread of scientific knowledge and technology. With these patents in place, the US also held a technological dominance over India. The latter was thus not able to use the scientific knowledge on their own terms for their own national good. In essence, the crux of the matter is that the Americans were able to remain unchallenged by India, compelling the country to purchase their products without having the ability to exert significant leverage power in return.

India also relied on imported food grains from the US, which also made them very vulnerable to the US' decisions when it came to the quantities of grains exported.[376] In 1965 for example, a strike took place in the US which had a detrimental impact on the PL 480 exports towards India. This occurrence showcased how events in the US had an all-encompassing impact on the Indian food situation. The strike, according to a parliamentary member, caused a food crisis in

[372] Lok Sabha Debates: twelfth session, 09.09.1965, 4834.
[373] W.D. Posgate, "Fertilizers for India's Green Revolution," *Asian Survey* 14, no. 8 (1974): 736.
[374] Posgate, "Fertilizers for India's Green Revolution," 743.
[375] Posgate, "Fertilizers for India's Green Revolution," 746.
[376] Lok Sabha Debates: eleventh session, 30.05.1965 (Third Series, Vol. XLI, no. 49), 12230, consulted 21.05.2023, https://eparlib.nic.in/bitstream/123456789/54791/1/lsd_03_11_30-04-1965.pdf

India, which made this particular member criticize the position of dependency India was in. Another very important example is when the US switched to the short-tether policy or when they threatened to withdraw aid after the Indo-Pakistani conflict of 1965. Talking about the latter instance, one parliamentary member claimed that India was being punished by the US and penalized for trying to defend their integrity and independence.[377] These examples make it very clear that although the American government always denied it, there were in fact string being pulled. Even the parliamentary members that didn't believe that the American food policy was used to shape Indian political behaviour admitted during debates that the dependency on them was too big.[378] Many more comments were made during the Lok Sabha debates between 1965 and 1972 on the dependence on PL 480 food aid and funds but in essence almost all of these comments refer to the need to attain self-sufficiency because dependency on foreign influences could impact and was impacting the nation's independency and honour. When it came to food aid the fear of dependency and the feeling of being treated as a nation subservient to the US thus prevailed. The many examples and facts clearly demonstrate that this was not just an irrational feeling, there existed in fact a clear power imbalance between the two countries when it came to food aid. The fact that the US could even use the possibility of withdrawing food aid as a threat shows that American food aid was at times being used as a weapon.[379] Many of the members of the Lok Sabha also allude multiple times to the deceitful aspect of this American aid, trying to discover America's real intentions:

> *"US aid may appear to be a delicate necklace today, but tomorrow it will turn into a high man's rope. Once our economy becomes totally dependent on the US imperialists, our political independence itself is in danger."*[380]

[377] Lok Sabha Debates: twelfth session, 24.09.1965, 7465.
[378] Lok Sabha Debates: thirteenth session, 02.12.1965 (Third Series, Vol. XLIX, no. 21), 5270, consulted 21.05.2023, https://eparlib.nic.in/bitstream/123456789/55114/1/lsd_03_13_02-12-1965.pdf
[379] Riley, *The political history of American food aid*, 289.
[380] Lok Sabha Debates: third series, 05.05.1966, 14782.

3.3. The impact of the Green Revolution on Indian national politics from 1960 onwards

The Indian Green Revolution was very connected to the Indian political landscape and tendencies. This explains why the revolution also impacted political dynamics in the country. This impact manifested itself in different ways. The Green Revolution transformed India's policy priorities, redistributed political power within the country, strengthened agricultural lobbies, changed the country's foreign policy, etc.

3.3.1. Policy priorities

At the beginning of the 1960s and more explicitly after 1965 and the creation of the New Agricultural Strategy, Indian policy came to be directed more and more towards improving agricultural strategy and attaining self-sufficiency. When in January 1959 an agricultural production team sponsored by the Ford Foundation came to India to study the country's food production, their report emphasized that India should prioritize agricultural development. The objective of having enough food for her entire population should be the "crusade" for India.[381] Eventually, with the IADP, the Indian government followed this team's advice. In the report made based on the results of the IADP, information could be found that exposes the value attached by the government to agricultural changes. One example being that the Department of Agricultural urged the state governments to give high priority to the allocation of funds for the intensification of irrigation programs.[382]

According to Ashutosh Varshney a decisive shift in public policy is widely accepted as the main reason for India's agricultural revolution and success.[383] He claims that over a period of three years between 1964 and 1967, India drastically changed her agricultural strategy, focusing more on increasing production through the technical base in agriculture.[384] After 1965, which marks the true start of the Indian Green Revolution, policy became even more directed towards improving agriculture. In the years 1965 and 1966 India increased its budget allocation to

[381] Expert Committee on Assessment and Evaluation, "Report on the Intensive Agricultural District Programme," 1.
[382] Expert Committee on Assessment and Evaluation, "Report on the Intensive Agricultural District Programme," 47.
[383] Ashutosh Varshney, "Ideas, interests and institutions in policy change: transformation of India's agricultural strategy in the mid-1960s," *Policy Sciences* 22, no. 3 (1989): 290.
[384] Varshney, "Ideas, interests and institutions in policy change," 290.

agriculture by more than 1/3.[385] In his address to the Parliament in 1966 the President reiterated that the high priority that was given to agriculture was necessary to ensure self-sufficiency in food grains but also to increase India's exports of both agricultural and industrial products.[386] The expansion of exports, although less mentioned as one of the main goals of the Green Revolution, was of high importance to Indian leaders. In 1968 the Indian president even claimed that the latter was a national objective of the highest priority.[387] The goal thus really became achieving self-reliance as soon as possible in order to "*strive for a better life for our people at home and to assist in promoting peace and cooperation in the world*."[388] Other sources also explicitly mention that building a self-generating and self-reliant economy was "the national goal".[389] In one of her speeches, Indira Gandhi refers to the already mentioned concept of *swadeshi* as the nation's main goal in the economic sphere.[390] This term explicitly refers to Gandhian times and the Indian independence struggle against the British, highlighting the significant value Indian leaders placed on self-reliance and self-sufficiency over an extended period.

Amidst the comprehensive scope of the Green Revolution, emphasis was placed on specific elements over others. Indian agricultural policy came to be very focused on the production of fertilizer for example.[391] From 1967 to 1970, India's fertilizer consumption tripled.[392] This increase reflected clear changes in government policies and programs for budget allocation, foreign investment and foreign exchange allocation.[393] A lot of the available money for agriculture was directed towards increasing the use of fertilizer in the country during those years. This boost in consumption was however not only because of an increase in domestic

[385] Gaud, "The Green Revolution: accomplishments and apprehensions."
[386] Address to Parliament: first session, 14.02.1966 (Third Series), 141, consulted 17.05.2023, https://eparlib.nic.in/bitstream/123456789/3960/1/radhakrishnan_14_02_1966.pdf
[387] Address to Parliament: first session, 12.02.1968 (Fourth Series), 153, consulted 17.05.2023, https://eparlib.nic.in/bitstream/123456789/3962/1/husain_12_02_1968.pdf
[388] Address to Parliament: first session, 14.02.1966, 143.
[389] Discontinuation of US Aid to India, 07.12.1972.
[390] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 22.
[391] Address to Parliament: first session, 20.02.1970 (Fourth Series), 175, consulted 19.05.2023, https://eparlib.nic.in/bitstream/123456789/3965/1/giri_20_02_1970.pdf#search=null%20%5B1970%20TO%201979
[392] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent,* 1968.
[393] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent,* 1968.

production, it was also due to higher fertilizer imports.[394] In a sense, the latter partially compromised the idea of self-reliance in the short run, with the belief that increased fertilizer consumption would eventually steer the country towards that goal in the long term. This idea is also mentioned in the work of Shand when he stated that "*in view of the importance of fertilizer, it is fortunate that priority for agriculture has been officially interpreted to mean a willingness to obtain imported supplies to make up for shortfalls in domestic production."*[395] While economic independence and self-reliance remained the primary national objective, there were thus instances where concessions had to be made, considering the long-term perspective and the broader context. Later, in 1970 the President stated that enlarging fertilizer production was the highest priority of the national plan for agriculture.[396] Fertilizers came to be seen as the most important element of the Indian agricultural strategy.[397] Hence, one of India's policy priorities was to promote the expansion of domestic fertilizer production, aiming to reduce reliance on imported fertilizers, predominantly sourced from the United States. This clearly aligns with the overarching necessity and goal to become self-sufficient as a country.

But, although India was very internally motivated to increase her food production and become more independent, we also have to keep in mind that the US was demanding India to focus more on agricultural development in exchange for aid.[398] Hence, it is exceedingly challenging to precisely determine the extent to which India's agricultural endeavours were influenced by American demands or independently determined by Indian officials. Varshney is convinced that although international actors, such as the US government, the World Bank and the Rockefeller and Ford Foundations, played a role in India's policy change, they merely *"leaned against an open door; they did not force the door open."*[399] He states that these actors were not responsible for the conception of the new policies, but only partly for the implementation of them through their financial support.[400] This stands in sharp contrast, however, to the claims of the external actors themselves.[401] The latter namely claimed that the change in Indian policy

[394] *Accelerating India's food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent,* 1968.
[395] R.T. Shand, *Agricultural development in Asia*, 95.
[396] Address to Parliament: first session, 20.02.1970, 175.
[397] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 9.
[398] Gaud, "The Green Revolution: accomplishments and apprehensions."
[399] Varshney, "Ideas, interests and institutions in policy change," 291.
[400] Varshney, "Ideas, interests and institutions in policy change," 291.
[401] Varshney, "Ideas, interests and institutions in policy change," 309.

priorities that took place from the 1960s onwards, was due to pressure from them. The World Bank, for example, stated in 1983 that studies done by associative organizations from the Bank itself, were the catalyst for the creation of Indian bodies such as the *Food Corporation of India*.[402] Nonetheless, Varshney quickly shuts down this idea in his work, demonstrating how the data fails to support the validity of these claims.[403] As mentioned above, a clear distinction has to be made between the origins of these priority changes and the implementation of them. Regarding the former, it is well-established that they originated from within India and were largely unaffected by external influences. The implementation of the Indian new agricultural strategy on the other hand was very dependent on foreign exchange, which explains why the US government among others played such a big role in this specific aspect.[404] Varshney summarizes it as follows:

> *"Thus, in the end, the primary role of the US and the World Bank consisted in facilitating the implementation of new agricultural policy by providing resources for importing fertilisers and other allied inputs upon which depended to success of the new policy. They did not cause the change."*[405]

In general, we can conclude that the Indian Green Revolution did indeed change Indian policy in the sense that a lot of the government's attention and money was redirected towards agriculture and food production. In the end, this change in policy priorities also became visible when looking at India's food output over the years. In the year 1965-1966 India's food output was 72.3 million tons while by 1970-1971 it was already 108.4 million tons.[406] Setting aside the controversies surrounding social inequality and the unequal distribution of the revolution, it can be affirmed that this shift in priorities yielded evident effects.

3.3.2. The creation of new political tensions

The Green Revolution not only influenced the policy priorities of the Indian government but also gave rise to novel socio-economic groups and entities that found their place within the

[402] Varshney, "Ideas, interests and institutions in policy change," 310.
[403] Varshney, "Ideas, interests and institutions in policy change," 311.
[404] Varshney, "Ideas, interests and institutions in policy change," 314.
[405] Varshney, "Ideas, interests and institutions in policy change," 314.
[406] Varshney, "Ideas, interests and institutions in policy change," 289-90.

Indian political landscape. This formation of new social groups is also the source for a lot of criticism on the Indian Green Revolution and its effects. As mentioned before, an extensive amount of academics believe that the revolution deepened certain socio-economic inequalities, thus claiming that it was not beneficial for all Indians. According to them, Indian propaganda surrounding the revolution and the importance still attached to it, is one-sided and naïve. The biggest problem causing the effects of the Green Revolution to be unequal, was the uneven distribution of the necessary technology.[407] Due to its relatively high cost, only farmers with larger economic holdings and greater capital were capable of adopting and harnessing the benefits of the latter.[408] Smaller farmers, having less then 5 acres, saw their condition either stabilize due to the Green Revolution or even deteriorate according to Frankel.[409] She claims that only cultivators with 10 acres or more were able to use their capital for investment in land development, which means they were able to effectively use the modern inputs that constituted the force behind the Indian Green Revolution.[410] There thus existed a tendency toward economic polarization between large farmers on the one hand and smaller ones on the other.[411] Another important effect of the Indian Green Revolution was displacement and migration.[412] Smaller farmers or landless laborers started to migrate to urban areas or areas in which there was a food-surplus.[413] This also undoubtedly had effects on the changing Indian political landscape, as the needs and desires of the urban population often differ from the rural ones.

This economic polarization also translated itself over time into political polarization as both groups started to have widening interests and goals.[414] Landless laborers and sharecroppers also became part of this socio-economic polarization, finding themselves among the disadvantaged groups affected by the outcomes of the Green Revolution. Traditionally, the dominant Congress Party had been dominated by the elite and urban groups.[415] But radical parties emerged and tried to channel this social tension into political conflict between the large landowners on the

[407] Frankel, *India's Green Revolution: economic gains and political costs,* 192.
[408] Frankel, *India's Green Revolution: economic gains and political costs,* 192.
[409] Frankel, *India's Green Revolution: economic gains and political costs,* 192.
[410] Frankel, *India's Green Revolution: economic gains and political costs,* 193.
[411] Frankel, *India's Green Revolution: economic gains and political costs,* 194.
[412] Basucci, "The Green Revolution: socioeconomic insecurity and agricultural displacement in India," 23.
[413] Basucci, "The Green Revolution: socioeconomic insecurity and agricultural displacement in India," 23.
[414] Frankel, *India's Green Revolution: economic gains and political costs,* 198.
[415] Adita Dasgupta, "Technological change and political turnover: the democratizing effects of the Green Revolution in India," *American Political Science Review* 112, no. 4 (2018): 918.

one hand and small landowners, sharecroppers and laborers on the other.[416] The latter organized themselves mostly along Marxist or Maoist lines, claiming to be striving for a new democratic revolution based on more socio-economic equity.[417] The "village poor", under the leadership of leftist parties, sometimes even occupied lands by force and harvested crops growing on them.[418] The heart of the new social conflict, according to Frankel, can be summarized as follows:

> *"It is precisely the social blindness of modern technology that is encouraging the most disadvantaged sections of the agricultural population to question the justice of inequalities that perpetually barred them from participating in games that are otherwise within reach."*[419]

On the other hand, state legislatures were and kept being dominated by the top class of the farmers, meaning large farmers that had the means and money to implement the modern inputs of the Green Revolution.[420] This led to evident political unrest as smaller farmers and impoverished laborers sought to attain political power, occasionally resorting to force, while the wealthier socio-economic classes, which included large farmers, attempted to address the socio-economic disparities, often without direct results.[421] Interestingly enough, there is evidence that this polarization in a way strengthened the democratization process in the country.[422] Aditya Dasgupta claims that the input of new technology and knowledge can represent a form of "political creative destruction" meaning that it can change the political landscape in a thorough way.[423] He states the following:

> *"[…] the introduction of high yielding variety crops to India strengthened the incentives and capacity of a politically excluded group, in this case agricultural producers, to seek greater political representation. This contributed to support for agrarian and regional*

[416] Frankel, *India's Green Revolution: economic gains and political costs,* 199.
[417] Frankel, *India's Green Revolution: economic gains and political costs,* 199.
[418] Wolf Ladejinsky, "Ironies of India's Green Revolution," *Foreign Affairs* 48, no. 4 (1970): 766.
[419] Frankel, *India's Green Revolution: economic gains and political costs,* 202.
[420] Ladejinsky, "Ironies of India's Green Revolution," 767.
[421] Ladejinsky, "Ironies of India's Green Revolution," 767.
[422] Dasgupta, "Technological change and political turnover," 935.
[423] Dasgupta, "Technological change and political turnover," 935.

opposition parties and played a pivotal role in India's historical transition from single party dominance to multi party competition."[424]

These agricultural producers managed to create wealth and collective action capacity, which then led them to strive for more political representation.[425] His research suggests that the Indian Green Revolution, and more specifically the spread of HYV crops have led to the decline of the single party dominance in India and paved the way for a deep democratization.[426] He concludes his work by stating that technological change can in fact contribute to processes of democratization.

Traditional political patterns that were organised along clientelist lines, thus disappeared because of the Green Revolution, creating a political vacuum.[427] According to Frankel, this demonstrated how the traditional landowning patron could not act as a middleman between the poor peasantry and the overarching national political processes anymore.[428] This led to the centrality of the issue of distribution in the 1971 political campaigns.[429] During this campaign, Indira Gandhi and her party really tried to portray themselves as the symbol of economic and social justice, which once again showcases how big the issue of socio-economic inequality was in the country after the first years of the revolution.[430]

Another positive outcome of this political tension and this socio-economic division was the creation of the *Small Farmers' Development Agency*, which provided approximately two million farmers with inputs and services meant to enable them to also share in the benefits of the Green Revolution.[431] But in order for this agency to work properly, Indian government had to take certain measures with regards to land reforms.[432] Therefore, the fundamental issue persisted as a gap existed between those who possessed extensive land and those who had smaller plots or were left landless. According to W. Ladejinski these political tensions stemmed

[424] Dasgupta, "Technological change and political turnover," 935.
[425] Dasgupta, "Technological change and political turnover," 918.
[426] Dasgupta, "Technological change and political turnover," 935.
[427] Frankel, *India's Green Revolution: economic gains and political costs,* 208.
[428] Frankel, *India's Green Revolution: economic gains and political costs,* 208.
[429] Frankel, *India's Green Revolution: economic gains and political costs,* 208.
[430] Frankel, *India's Green Revolution: economic gains and political costs,* 210.
[431] Ladejinsky, "Ironies of India's Green Revolution," 767.
[432] Ladejinsky, "Ironies of India's Green Revolution," 767.

from the Indian government's failure to adequately pursue and prioritize distributive justice during (and after) the Green Revolution.[433] It was the fact that the agricultural revolution was focused only on raising productivity via new techniques and new knowledge, that made it possible for these tensions to foster and ultimately for the socio-economic and political disparities to exist.[434] However, we have to keep the positive note apparent in Ladejinsky's research in mind, which shows that this polarization not only produce negative effects but also contributed to the process of democratization in India.

3.4. Conclusion

In summation, the Green Revolution in India embodies a nuanced interplay of aspirations and challenges, both on the domestic front and in the context of American aid. Indian leadership adeptly navigated the intricate balance between the pursuit of self-sufficiency and the pragmatic necessity of external assistance. The pursuit of technological self-reliance underscored India's desire to harness indigenous innovation, all while acknowledging the invaluable contributions of foreign expertise. This intricate dynamic is encapsulated by the deliberations within the Lok Sabha, which unveiled concerns about the terms and ramifications of American aid, exposing anxieties regarding India's policy sovereignty, neo-colonialism, and even racial dynamics.

From an economic standpoint, India's dependency on American aid, characterized by loans, aid packages, and trade relationships, fostered perceptions of financial reliance on the United States. Concurrently, American technological supremacy in pivotal facets of the Green Revolution raised apprehensions regarding India's capacity to leverage scientific knowledge on its own prerogatives. Geopolitically, the provisioning of food grains through American aid initiatives introduced vulnerabilities that conferred a degree of influence to the United States over Indian policy determinations.

Furthermore, the Green Revolution precipitated socio-economic disparities, thereby catalysing political tensions that precipitated a transformation in Indian politics, transitioning from single-party dominance to a landscape of multi-party competition. Although criticisms pertaining to unequal benefits endured, this transformative epoch substantively reshaped India's policy focal

[433] Ladejinsky, "Ironies of India's Green Revolution," 768.
[434] Ladejinsky, "Ironies of India's Green Revolution," 768.

points and political milieu. It serves as a testament to the multifaceted influence wielded by American expertise on the contours of India's identity and developmental trajectory during this era.

CHAPTER 4 The role of the Green Revolution in the Indian nation-building project

"The most important of our achievements is the building up of a politically unified Indian society."[435]

In this chapter I will argue that, taking into consideration the importance that has been attached to the Indian Green Revolution by Indian leaders and Indian scientists, thinkers, writers, etc., this revolution contributed to the Indian nation-building project in a significant manner. The ideals underlying this nation-building project were the ideal of *swaraj*, which means self-rule, and *swadeshi*, which essentially means self-sufficiency.[436] In this chapter the focus will thus lay on how exactly India's nation-building project and the Indian Green Revolution were (and are) intertwined with one another. This will be done by analysing speeches by Indira Gandhi, who as a prime minister had a leading role in shaping the Indian nation-building project. Her speeches shed light on how the Indian nation was defined and on the incorporation of modernity and development within the framework of nation-building. Additionally, the speeches underscore the significance of the Green Revolution in Gandhi's vision of nation-building.

4.1. The Indian Green Revolution as a symbol of Indian modernization and development

Upon examining the speeches, it becomes evident that the focal point of India's development policies was the earnest pursuit of modernization and progress. The noteworthy aspect is that the rhetoric of Indian leaders concerning this pursuit aligns with the well-known modernization theory. Words such as "progress" and "modernization" are often accompanied by contrasting concepts like "backwardness". The idea was that India needed to rapidly and efficiently progress in order to bridge the gap with other nations like the US and USSR, which were already ahead in terms of advancement and modernization. The intended paradigm, consistent with the

[435] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 45.
[436] Seshia and Scoones, "Trading policy connections," 3.

fundamental tenets of modernization theory, mirrored the Western model. Mentions of other "more progressed" nations frequently surfaced in the discourse about this developmental journey, underscoring how the notion of a solitary path towards development and modernization was deeply engrained in the perspectives of Indian leaders.

> *"I would like to emphasise that many of these difficulties are due to the fact that we in India are trying to develop at a very rapid pace. We are trying to achieve, within a decade or so what many countries have achieved over much longer."*[437]

The well-known concept of linear development, famously elaborated by Rostow, was effectively adopted and employed by Indian leaders to rationalize the necessity of their development efforts.[438] As mentioned before, the modernization theory, as taken over by the Indians, had to be seen as the model of the West applied to non-Western regions. It was believed that both without political democratization and economic "progress" and growth, India would lag behind and fall short compared to other nations. Indira Gandhi spoke about a "march towards progress" in one of her speeches, once again demonstrating how progress was seen as the end goal and final destination of the country.[439] In the end, the progress would ensure that India would emerge as a fully self-reliant and confident nation.[440] Furthermore, reaching this goal was something very urgent as striving towards this destination of development was linked to the definite elimination of poverty and the raising of living standards.[441] When Gandhi or members of the Lok Sabha spoke on this topic, they thus also often emphasized the need to tread this path towards development as quickly as possible.

> *"We cannot afford to look back. We cannot afford to wait even for a single second. We must continue our progress. We must cross the swollen river. Once across our progress*

[437] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 8.
[438] This concept outlines a linear and progressive path through which countries are believed to develop economically.
[439] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 12.
[440] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 463.
[441] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 10-4.

will be easier […] We have to maintain the rate of progress in the agricultural and industrial fields."[442]

The greatest need at the time, according to Indian leaders, was thus to increase the tempo of economic growth. They held the belief that this approach was the sole method to address and manage the challenges that India was grappling with during that period. These challenges encompassed issues such as unemployment, untapped industrial capacity, the advancement of what were termed "backward areas" and "backward sections of the community" among others.[443] It was only through achieving swift growth that social equity within the nation could be realized.

Linked to this rapid economic growth was also the idea that this path towards development should also be managed by a truly modern administration.[444] Therefore, the progression of the economy and agriculture within the country was not solely perceived as the exclusive solution to these challenges, but it was also intricately tied to the modernization and advancement of India's governance. To realize development, it was imperative for India's bureaucratic system to undergo modernization, which entailed adopting a more comprehensive approach to governance instead of segmenting every domain separately. It was believed that only then, it would be possible to execute the agricultural and developmental plans and programs.[445] This aligns with how Western intellectuals defined modern and developed societies, further illustrating the journey of the modernization theory from West to East. A part of this modernization and development when it came to governance was thus the lasting commitment to the ideals of democracy.[446] Gandhi herself claimed that India was attempting a *"creative application of a meaningful democracy to the vastly different economic and social problems of India."*[447] Together, economic planning and democratic principles were meant to lift India out of poverty and dependency by sustaining and enhancing the processes of modernization and development. This holds significance as it demonstrates that the modernization theory was

[442] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 31.
[443] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 118.
[444] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 139.
[445]Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 143.
[446] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 462.
[447] Gandhi, *Indira Gandhi: speeches & writings*, 82.

extended beyond the economic realm to encompass the political domain as well. Moreover, it demonstrates how these two spheres were considered to be mutually dependent.

Being recognized as a modern nation also involved the capacity to export specific products, as advocated by the intellectuals who formed the foundation of the modernization theory. Part of being "advanced" was the development of a market-orientated economy instead of an economy that was solely focused on subsistence and sufficiency. While self-sufficiency remained the primary objective during India's Green Revolution era, cultivating a market-oriented economy also held significant importance for them, particularly in the long run.[448] The Green Revolution, initially created to gain more economic (and political) independence, had the power to transform India's economy into a market-orientated one over time. This underscores the significance of the agricultural process once again. It had the potential to not only establish India's self-reliance but also elevate the country to the pinnacle of "advancement" by enabling surplus exports and the production of goods tailored for international consumption.

4.2. The role of the Green Revolution in India's postcolonial nationalism

The Green Revolution became the symbol of progress and development in the country. On the other hand, this process also played a crucial role in India's postcolonial nationalism and its nation-building processes.

An important reason for wanting to achieve the ultimate stage of development, as defined by Rostow's theory of economic growth, as soon as possible was because leaders such as Gandhi believed that modernization was the way to make India strong enough to defend their freedom.[449] Economic strength was believed to be one of the beacons of modernization, making it essential for the defence of the Indian nation.[450] The country's degree of security was thus believed to be contingent upon its economic progress, as gauged by the extent of its modernity and advancement.[451] This aligns with the strong emphasis on sovereignty and independence that played a pivotal role in Indian policy formulation during the decades following their official independence from British rule. The pursuit of freedom, both in the direct political sense and

[448] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 106.
[449] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 44.
[450] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 49.
[451] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 104.

in the indirect economic sense, occupied a central position in the discourse surrounding India's Green Revolution. The political autonomy achieved in 1947 needed to be complemented by an economic autonomy achievable solely through genuine self-sufficiency. Devoid of this secondary facet of freedom, the political freedom would mean little to nothing.[452] This aligns with how certain scholars, such as Oyewole and Adegoke, perceive postcolonial nationalism.[453] It serves as a mechanism that, among its various facets, seeks to attain recognition and respect for the nation, as such recognition signifies the presence of genuine independence. The Indians also applied this line of thinking to other non-aligned nations:

> *"The developing nations must make a tremendous effort to become self-reliant in order to give fuller meaning and content to our independence…The newly independent and developing nations will be liable to strains and pressures until they attain a minimum level of development and enter a stage of self-sustaining growth."*[454]

Once more, the language employed in Gandhi's speeches illustrates how Indian leaders wholeheartedly embraced the developmental ideas put forth by Rostow, employing them as a framework to bolster their own initiatives.

Repeatedly, it was underscored in leaders' speeches and Lok Sabha discussions that attaining genuine modernization and the trajectory toward development necessitated the collective endeavour of the entire Indian population. The idea revolved around the notion that the entire nation should come together in support of these objectives, which would subsequently serve as a genuine unifying force for the Indian population:

> *"It is the duty of every individual to lend his corporation and his great task. No one can absolve himself of this responsibility. We are all soldiers in the fight against poverty."*[455]

> *"Our progress is dependent on national unity, on peace and on economic and political stability. Brothers and sisters, the welfare of each one of us is indissolubly linked with the prompt prosperous India. We should forget our own difficulties and only think of making*

[452] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 185.
[453] Okeke et al., "The concept of nationbuilding," 20.
[454] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 335.
[455] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 13.

India strong and prosperous. We should so conduct ourselves that the future generations remember us for laying the foundation of a strong nation effort, ushering in a new era. I call upon the people to join hands in making this ancient land a modern, powerful and prosperous nation."[456]

The message was essentially that without the support of the whole nation, the task of modernizing the country and becoming self-sufficient would not be possible. When examining the speeches and debates of leaders and parliamentarians, it's also striking to observe the frequent usage of the word "national". They discuss national issues, national solutions, national unity, national objectives, and more.[457] The entire effort of the green revolution was consequently depicted as something inherently national, that belonged to the nation as a whole. According to Gandhi, the agricultural planning was national by its nature simply because it was of concern to the entire nation.[458] One of the aims of postcolonial nationalism involves forging a national identity and cohesion. Through the establishment of a shared connection, it is anticipated that the population will come together in unity. This was exactly the case with the Green Revolution. Through this initiative, Indian leaders endeavoured to bring together a population that was divided along lines of religion, ethnicity, socio-economic status, and more. According to some academics, the creation of a national unity forms a vital part of nation-building processes.[459] This implies that the Green Revolution played a substantial role in the process of building the Indian nation, by uniting the Indian population under a common objective.

Furthermore, a significant contribution of the Green Revolution to India's global nation-building endeavour was the notion that bolstering its agricultural sector would elevate India's international reputation and status. By strengthening their economy and thus diminishing their reliance on external forces, they would be able to truly display their independence.

---

[456] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 54-55.
[457] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 13; Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 45; Lok Sabha Debates: third series, 07.04.1966, 10011; …
[458] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 125.
[459] Forrest, "Nationalism in postcolonial states," 33; Mylonas, *The politics of nation-building: making co-nationals, refugees and minorities*, 18; Dinnen, "Nation-building," 8.

"Unless we increase agricultural production, rapidly control our population and thus achieve self-sufficiency in the next few years, we will have forfeited our right to call ourselves a free country, let alone a great country…. In my view our honor is involved here, our security is involved, the lives of our people are involved"[460]

This illustrates the immense significance Indian leaders attached to being recognized as a prominent nation and taking pride in their country. National honour was thus a very important aspect when it came to the role of the Indian Green Revolution in the nation-building project. Within postcolonial nationalism, two fundamental elements come to the forefront: respect and recognition. Indian leaders directed their efforts not only towards gaining acknowledgment as an independent nation but also towards garnering esteem in that capacity. This unequivocally aligns with the principles of postcolonial nationalism. Furthermore, The Indian population needed to be proud of their nation and stand behind it, which was something that could be achieved by strengthening India's economy and gaining economic independence. The nation-building process thus also focused on making the population "proudly committed" to their country.

The economy also holds a noteworthy position in this process of nation-building. One of the objectives of nation-building is to promote economic growth and ensure that every citizen has the opportunity for individual prosperity. These two specific goals of the Indian Green Revolution were often mentioned in Gandhi's speeches:

"The purpose of these programs is the removal of poverty. I appeal to my countrymen to join in this battle. By increasing production, they will improve their own living standards and also help the nation in its March towards progress."[461]

Through the eradication of poverty, the Green Revolution would bolster democratic institutions, foster national unity, and cultivate a sense of collective national identity. Progress

[460] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 140.
[461] Gandhi, *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*, 11.

in the economy would contribute to establishing the public's confidence in India's leadership and institutions, thus also contributing to the nation-building process.

Moreover, integral to the concept of nation-building is the notion that the nation's entire potential should be harnessed for the welfare of all its citizens. As previously stated, Indian leaders and lawmakers held the belief that genuine freedom and independence could only be achieved by building upon Indian knowledge, Indian scientists, Indian laborers, and so forth. The adoption of American knowledge and technology was considered a transient measure, while long-term endeavours were made to ensure that this foreign influence would gradually diminish over time. As a contribution to nation-building, the Green Revolution needed to be implemented and upheld by Indians – a goal explicitly pursued by the country's leaders. Thus, economic advancement would be achieved by the Indian populace, for the Indian populace. This in turn would also help bolster the national unity that stands central to postcolonial nationalism and nation-building.

> *"Our progress is linked with our ability to invent, improvise, adapt, and conserve. We have a reservoir of talented scientists, engineers and technicians. We must make better use of them. No matter what our religion, language or state, we are one nation and one people. Let's use all farmers and workers, teachers and students, scientists and technologists, industrialist, businessman."*[462]

4.3. Conclusion

It's essential to recognize that when it comes to the Indian Green Revolution, the United States and India didn't necessarily share identical objectives in both planning and execution. In the introduction I briefly touched upon the main differences between state- and nation-building. While these concepts are interconnected and frequently go hand in hand, they are not synonymous. While nation-building primarily revolves around forging national unity and fostering common ideals and objectives, state-building concentrates on establishing effective

[462] Gandhi, *Indira Gandhi: speeches & writings*, 52.

institutional frameworks within the governance system. Throughout this research, it became clear that the two main players of the Indian Green Revolution, the US and India, each had one of these concepts as their goal.

In the preceding subchapter, it was elucidated how India strategically leveraged the Indian Green Revolution to mobilize its population towards a shared objective: attaining economic independence as a means to achieve freedom. This revolution unequivocally played a role in advancing Indian nation-building, a goal actively sought after by numerous former colonial nations during the latter half of the twentieth century. While modernizing the institutional system and administration was a part of India's nation-building efforts, it can be considered an additional aspect rather than the primary focus of their nation-building goals. I argue that while state-building efforts were to some extent interconnected with Indian nation-building endeavours, the latter remained the foremost objective of the Indian government.

When analysing the role of the Unites States in the Green Revolution, a different picture can, however, be painted of their role. The Americans clearly had their own national goals in mind when sending aid to India and sharing American knowledge. They were not making any active efforts to assist in the construction of a distinct Indian identity or to foster greater unity among the Indian population. If the latter occurred as a result of their assistance, it was primarily an incidental outcome rather than a deliberate objective actively pursued by the US. Their aim was to transform India into a robust democracy akin to the American system. By supporting India's economic growth and fostering a prosperous agricultural model, the United States aimed to empower India and align its values and principles more closely with Western ideals. This strategic objective was to enable India to serve as a stronghold against the spread of communism in the East, as mentioned multiple times before in the preceding chapters. Because of the fact that the US mostly focused on strengthening India’s institutional system, albeit via more indirect economic ways, it’s safe to state that their main aim was state building in India. The primary distinction between the two countries' objectives in the Indian Green Revolution thus lies in their desired outcomes: India utilized it as a tool for nation-building and promoting cohesion, whereas the United States primarily sought state-building to advance their own national interests.

CONCLUSION

The Indian Green Revolution, along with its underlying technology, significantly reshaped India's approach to harnessing its agricultural potential. While extensive academic research has been conducted on this particular green revolution and its impact in India, there remains a research gap regarding the role played by the United States in this transformative process. However, a thorough examination and analysis of the United States' involvement are essential to fully grasp the significance of this revolution and the roles it played for various actors. This was exactly the objective of this thesis. By analysing the ways in which the Americans were involved, studying the politics of the Green Revolution, deconstructing the ways in which the modernization theory was used by both actors and analysing the role of the Green Revolution in India’s postcolonial nationalism, this thesis aimed to grasp the importance of the American technology and knowledge for the Indian nation-building project.

The Indian Green Revolution, a transformative chapter in India's agricultural history, unfolded against the backdrop of a complex interplay between India's pursuit of self-sufficiency and America's geopolitical objectives. India's post-independence leaders, notably Nehru, envisioned a self-reliant, democratic nation with a robust economy. Their meticulously planned initiatives initially focused on agriculture, drawing inspiration from Western and Soviet models. Despite successes in augmenting agricultural production, challenges such as sluggish industries persisted. Amidst this nation-building effort, the United States emerged as a significant presence. The evolving relationship between the two nations oscillated between suspicion and cooperation, shaped by India's non-alignment stance and the US's desire for a stable democratic ally in the Cold War context. President Kennedy's tenure marked a shift towards increased aid and collaboration, although occasional strains emerged. Central to America's presence was the PL 480 or *Food for Peace* program, initially designed for surplus agricultural commodities but later wielded as a tool to promote democracy and counter communism. India's strategic importance in the Cold War theatre led to the use of food aid as leverage, reinforcing the multifaceted nature of the relationship.

The Americans also played pivotal roles in shaping global agricultural development through foundations like Rockefeller and Ford, paving the way for the Green Revolution's expansion. In anticipation of the Indian Green Revolution, American foundations and the US government

influenced agricultural development strategies. However, underlying this collaboration were divergent objectives. India aimed for self-sufficiency and economic independence as markers of sovereignty, while the US sought to shape India into a stable democratic ally. This stark contrast highlighted the intricate interplay of humanitarian aid and geopolitical objectives in their partnership.

Ultimately, the American role in the Indian Green Revolution transcended agricultural modernization; it symbolized the convergence of India's quest for self-reliance and America's pursuit of Cold War interests. This dynamic alliance shaped the trajectory of Indian agriculture, marking a pivotal moment in the nation's postcolonial journey towards development and independence.

The Green Revolution in India thus bore witness to a profound American influence, encompassing technological, educational, and strategic dimensions. American expertise and partnerships, particularly through programs like the Indo-American Partnerships and collaborations with Indian agricultural institutions, catalysed advancements in crop varieties, farming techniques, and knowledge dissemination. The support extended by American foundations such as the Ford and Rockefeller Foundations encompassed diverse areas, from research to capacity building. This partnership not only addressed food scarcity but also aligned with broader objectives of safeguarding democracy and countering communism. Ultimately, the American contributions played a pivotal role in achieving the Green Revolution's objectives, including increased food production and economic independence. The enduring legacy of this American Indian collaboration is evident in strengthened agricultural universities, enhanced innovation, and the relative success of India's Green Revolution.

The politics surrounding American assistance during India's Green Revolution represented a nuanced and intricate relationship between India's aspirations for self-reliance and the practical need for external aid. Leaders like Jawaharlal Nehru and Indira Gandhi navigated conflicting priorities, including a commitment to indigenous science and technology, non-alignment, and foreign policy independence. Their cautious approach to American aid reflected concerns about compromising sovereignty and the desire to adapt foreign knowledge to Indian conditions rather than blindly adopting it. While expressions of gratitude for American aid were not uncommon, India's leadership was acutely aware of the potential pitfalls of foreign influence.

This complex political landscape also revealed significant power imbalances. The United States, while not having direct control over India's finances, exerted influence through loans, conditionalities, and foreign investment. American patents on critical technologies granted dominance to US firms, limiting India's technological autonomy. Food aid dependence made India vulnerable to US decisions and political pressures, sometimes used as tools of influence. These dynamics underscored the challenges India faced in maintaining its national integrity while addressing pressing development needs. Moreover, the Green Revolution's impact on Indian politics was multifaceted. It reoriented policy priorities toward agriculture and self-sufficiency, leading to economic growth. However, it also gave rise to socio-economic disparities, leading to political polarization and the emergence of leftist movements. This polarization, while creating tensions, contributed to India's transition from single-party dominance to multi-party competition, ultimately promoting democratization. In conclusion, the politics of the Indian Green Revolution illuminate a complex interplay of self-reliance aspirations, foreign aid pragmatism, and concerns about power imbalances. This period marked a critical phase in India's agricultural transformation and political evolution, shaped by a delicate balance between immediate development needs and long-term national goals.

In examining the intricate relationship between the Indian Green Revolution and India's nation-building project, it becomes evident that these two processes were deeply intertwined. Indian leaders, driven by the ideals of swaraj and swadeshi, saw modernization and development as the path to bridge the gap with more advanced nations. Their pursuit of progress aligned with Western modernization theory, reflecting a belief in a singular developmental trajectory. This vision of rapid progress encompassed not only economic growth but also modernization of governance and a commitment to democracy. The Green Revolution symbolized India's modernization and development efforts, aiming to make the nation self-reliant and internationally recognized. It played a pivotal role in postcolonial nationalism, uniting a diverse population around the shared objective of achieving economic independence. Furthermore, leaders emphasized that economic strength was vital for defending India's political freedom, underscoring the inseparable link between political and economic autonomy. Moreover, the Green Revolution showcased India's commitment to harnessing its entire potential for the welfare of its citizens, fostering national unity and pride. It represented a shift from reliance on external forces to self-reliance, aligning with the principles of postcolonial nationalism.

However, it's crucial to distinguish between the objectives of India and the United States in the Green Revolution. India primarily aimed at nation-building, using the revolution as a means to unite its population and achieve economic independence. In contrast, the United States focused on state-building, seeking to strengthen India's institutional framework to align with Western democratic values and serve as a bulwark against communism in the East. In summary, the Indian Green Revolution played a multifaceted role in shaping India's nation-building project, promoting unity, economic growth, and international recognition, while also reflecting the differing objectives of India and the United States in this transformative process.

So, when it comes to answering the main research question it's fair to state that American expertise played a multifaceted and instrumental role in India's nation-building project and postcolonial nationalism through the Green Revolution. This transformative agricultural initiative, facilitated by American knowledge and partnerships, had far-reaching implications. American expertise contributed significantly to technological advancements in Indian agriculture. Through collaborations with Indian institutions, programs like the Indo-American Partnerships, and the support of foundations like Ford and Rockefeller, India gained access to cutting-edge crop varieties and farming techniques. This technological infusion catalysed increased food production, a pivotal component of India's nation-building efforts. Second, American contributions extended beyond technology to capacity building. Investments in research, training, and the establishment of agricultural universities enhanced India's scientific and agricultural capabilities. This not only addressed immediate food scarcity concerns but also aligned with broader goals of self-sufficiency and economic independence, central to postcolonial nationalism. Moreover, American contributions broadly aligned with India's postcolonial goals of self-reliance and sovereignty. The Green Revolution aimed to reduce dependence on external sources for food and technology as India's leaders recognized that genuine political freedom required economic independence, emphasizing the interplay between political and economic autonomy. Lastly, The Green Revolution became a unifying force for a diverse Indian population. Through this initiative, India's leaders sought to forge a shared connection among citizens, transcending divisions of religion, ethnicity, and socio-economic status. This sense of collective purpose contributed to the broader objective of nation-building. However, The United States' involvement was not solely altruistic; it was intertwined with Cold War geopolitics. As India's strategic importance grew in the Cold War theatre, the US used

food aid, such as the PL 480 program, as leverage. This demonstrated how American expertise served the dual purpose of advancing Cold War interests while also supporting India's development objectives. In conclusion, American expertise in the Green Revolution played a pivotal role in India's nation-building project and postcolonial nationalism. It provided the technical know-how, capacity building, and resources needed to bolster India's agricultural production, economic independence, and national unity. However, it's essential to recognize that this collaboration was not devoid of geopolitical considerations, highlighting the intricate interplay of humanitarian aid and strategic interests during this transformative period in India's history.

BIBLIOGRAPHY

Literature

"The Food for Peace Program." Current History 51, nr. 299 (1966): 46.
Ahlberg, Kristin L. "'Machiavelli with a heart': the Johnson administration's Food for Peace Program in India, 1965-1966." *Diplomatic History* 31, nr. 4 (2007): 665-701.

Ahlberg, Kristin. "'Food is a powerful tool in de hands of this government': The Johnson administration and PL 480, 1963-1969." *ETD collection for University of Nebraska-Lincoln* (2003).

Aid to India. Undated (John F. Kennedy Presidential Library and Museum, *India: General, 1962: April-December*, JFKPOF-118a-004-p0038). Consulted 10.02.2023. https://www.jfklibrary.org/asset-viewer/archives/JFKPOF/118a/JFKPOF-118a-004.

Amundson, Robert. "India's third five year plan – 1961-1966." *Review of Social Economy* 22, no. 2 (1964): 87-103.

Ankit, Rakesh. "Lal bahadur Shastri: 1964-1966 leader a glance." SAGE Journals 8, nr. 1 (2020): 39-57.

Balakrishnan, Pulapre. "The recovery of India: economic growth in the Nehru era." *Economic and Political Weekly* 42, no. 45/46 (2007): 52-66.

Basucci, Mia. "The Green Revolution: socioeconomic insecurity and agricultural displacement in India." *Refuge: Canada's Journal on Refugees* 16, no. 3 (1997): 23-7.

Borlaug, Norman. "The Green Revolution: for bread and peace." *Bulletin of the Atomic Scientists* 27, no. 4 (1971): 6-48.

Brinkmann, Mankel. “Fighting world hunger on a global scale: the Rockefeller Foundation and the Green Revolution in Mexico.” *Rockefeller Archive Center Research Reports Online* (2009).

Bugow, Karin. “American seed business, the Rockefeller Foundation, and Indian seed development in the 1960s.” *Rockefeller Archive Center research reports* (2019).

Chambers, Robert. “Beyond the Green Revolution: a selective essay.” In *Understanding Green Revolutions: agrarian change and development planning in South Asia*, edited by T.Bayliss-Smith and S. Wanmali, 362-79. Cambridge: Cambridge University Press, 1984.

Chaudhuri, Sachin. “The successor.” *Economic and Political Weekly* 2, no. 3/5 (1967): 121-22.

Cohen, Warren I. and Nandy Bernkopf Tucker, eds. Lyndon Johnson confronts the world: American foreign policy 1963-1968. Cambridge: Cambridge University Press, 2012.

Dasgupta, Adita. “Technological change and political turnover: the democratizing effects of the Green Revolution in India.” *American Political Science Review* 112, no. 4 (2018): 918-38.

Dasgupta, Biplab. “India’s Green Revolution.” *Economic and Political Weekly* 12, no. 6/8 (1977): 241-60.

Desai, D.K. and D.A. Patel. “Developing hybrid seed enterprise: an induced growth of High-Yielding Varieties Programme in India.” *Indian Journal of Agricultural Economics* 23, no. 4 (1968): 113-24.

Dinnen, Sinclair “Nation-building,” *Technical report* (2006).

Dinter, Sandra. “Nationalism and the postcolonial: an introduction.” In *Nationalism and the postcolonia*l, edited by Sandra Dinter and Johanna Marquardt, 1-20. Leiden: Brill, 2021.

Expert Committee on Assessment and Evaluation. “Report on the Intensive Agricultural District Programme.” *Ministry of Food and Agriculture.* Consulted 01.05.2023.

https://books.google.at/books?id=wGgxAAAAMAAJ&pg=PA13&hl=nl&source=gbs_toc_r&cad=3#v=onepage&q&f=false

Fitzgerald, Deborah. "Exporting American agriculture: the Rockefeller Foundation in Mexico, 1943-1953." *Social Studies of Science* 16, no. 3 (1986): 457-483.

Forrest, Joshua. "Nationalism in postcolonial states." In *After Independence: making and protecting the nation in postcolonial and postcommunist states*, edited by Lowell Barrington, 33-44. Ann Arbor: University of Michigan Press, 2009.

Frankel, Francine. "India's new strategy of agricultural development: political costs of agrarian modernization," *The Journal of Asian Studies* 28, no. 4 (1969): 693-710.

Frankel, Francine. *India's Green Revolution: economic gains and political costs*. Princeton: Princeton University Press, 2015.

Gendzier, Irene. *Development against democracy. L*ondon: Pluto Press, 2011.

Gilman, Nils. *Mandarins of the future: modernization theory in Cold War America. Ba*ltimore: Johns Hopkins University Press, 2003.

Gordon, Leonard. "Wealth equals wisdom? The Rockefeller and Ford Foundations in India." *The Annals of the American Academy of Political and Social Science* 554 (1997): 104-116.

Grotenhuis, René. *Nation-building as necessary efforts in fragile states.* Amsterdam: Amsterdam University Press, 2016.

Guha, Ramachandra. "Jawaharlal Nehru: a romantic in politics." In *Makers of modern Asia*, edited by Ramachandra Guha, 117-47. Cambridge: Harvard University Press, 2014.

Guha, Ramachandra. *India after Gandhi: the history of the world's largest democracy.* London: Macmillan, 2007.

Hippler, Jochen. *Nation-building: a key concept for peaceful conflict transformation?* London: Pluto Press, 2006.

Hout, Wil. “Classical approaches to development: modernisation and dependency.” In *The Palgrave Handbook of International Development*, edited by Jean Grugel and Daniel Hammett, 21-39. London: Palgrave Macmillan, 2016.

Humphrey, Hubert H. “Food and fiber as a force for freedom.*” Report to the Committee on Agriculture and Forestry, United States Senate* (1958).

Hussain, Siraj. “India’s food security is thanks to the Green Revolution. Let us not deny it.” *The Wire.* Consulted 15.05.2023. https://thewire.in/agriculture/food-security-green-revolution.

Inaugural Address. 20.01.1949 (National Archives, Harry S. Truman Library and Museum, Public Papers). Consulted 25.04.2023. https://www.trumanlibrary.gov/library/public-papers/19/inaugural-address.

JHA, D.C. “US policy towards India.” *The Indian Journal of Political Science* 37, no.1 (1976): 41-70.

Karunaratne, Garvin. “The failure of the community development programme in India.” *Community Development Journal* 11, no. 2 (1976): 95-118.

Kilby, Patrick. *The Green Revolution: narratives of politics, technology and gender.* Oxfordshire: Routledge, 2019.

Kochanek, Stanley. “Post-Nehru India: the emergence of the new leadership.” *Asian Survey* 6, nr. 5 (1966): 288-99.

Kudaisya, Medha. “The promise of partnership”: Indian business, the state and the Bombay plan of 1944.” *The Business History Review* 88, no. 1 (2014): 97-131.

Kulke, Hermann and Dietmar Rothermund. *A history of India. L*ondon: Routledge, 2016.

Kumar, Prakash, Timothy Lorek, Tore Olson, Nicole Sackley, Sigrid Schmalzer, Gabriela Soto Laveaga. “Roundtable: new narratives of the Green Revolution.” *Agricultural History* 91, no. 3 (2017): 397-422.

Ladejinsky Wolf. “Ironies of India’s Green Revolution.” *Foreign Affairs* 48, no. 4 (1970): 758-68.

Logan, William. “Building nonalignment: technological interchange and India’s third five-year plan.” Master thesis, Auburn University, 2016.

Memorandum for Henry A. Kissinger from Winston Lord. 15.12.1971 (National Archives, NSAEBB66). Consulted 17.02.2023. https://nsarchive2.gwu.edu/NSAEBB/NSAEBB70/doc23.pdf.

Memorandum from Robert Komer of the National Security Council Staff to the President’s Special Assistant for National Security Affairs (Bundy). 28.05.1965 (U.S. Department of State archive*, Foreign Relations of the United States 1964-1968 Volume XXV South Asia*, 128). Consulted 12.02.2023. https://1997-2001.state.gov/about_state/history/vol_xxv/m.html.

Metcalf, Barbara and Thomas Metcalf. *A concise history of modern India.* Cambridge: Cambridge University Press, 2012.

Mylonas, Harris. *The politics of nation-building: making co-nationals, refugees and minorities.* Cambridge: Cambridge University Press, 2013.

Paarlberg, Robert. “Food as an instrument of foreign policy.” *Proceedings of the Academy of Political Science* 34, no. 3 (1982): 25-39.

Parayil, Govindan. “The Green Revolution in India: a case study of technological change.” *Technology and Culture* 33, no. 4 (1992): 737-56.

Perkins, John. “The Rockefeller Foundation and the green revolution, 1941-1956.” *Agriculture and Human Values* 7 (1990): 6-18.

Perkins, John. *Geopolitics and the Green Revolution: wheat, genes and the Cold War.* Cary: Oxford University Press, 1997.

Posgate, W.D. “Fertilizers for India’s Green Revolution.” *Asian Survey* 14, no. 8 (1974): 733-50.

Raghavan, Srinath. “Indira Gandhi: India and the world in transition.” In *Makers of modern Asia*, edited by Ramachandra Guha, 215-44. Cambridge: Harvard University Press, 2014.

Read, Hadley. *The CUSURDI Story: land-grant universities serving two democracies*, edited by Council of United States Universities for Rural Development in India and United States Agency for International Development (1974).

Remarks of senator John F. Kennedy at Corn Palace, Mitchell, South Dakota. 20.09.1960 (John F. Kennedy Presidential library and museum). Consulted 01.02.2023. https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/mitchell-sd-19600922.

Remi Chukwudi Okeke, Chinyere Patricia Ikeh, Christopher Chukwu Oku. “The concept of nation building: theoretical expositions.” *Journal of Humanities and Social Policy* 8, no. 1 (2022): 187-27.

Riley, Barry. *The political history of American food aid: an uneasy benevolence.* New York: Oxford University Press, 2017.

Robb, Peter. *A history of India. L*ondon: Palgrave, 2002.

Rogers, E.M, J.R. Ascroft and N.G. Roling. “Diffusion of innovations in Brazil, Nigeria, and India,” *Agency for International Development* (1970). Consulted 13/04.2023. https://pdf.usaid.gov/pdf_docs/PNRAB484.pdf.

Rostow, Walt W. *The stages of economic growth: a non-communist manifesto.* Cambridge: Cambridge University Press, 1968.

Roy, Srirupa. *Beyond belief: India and the politics of postcolonial nationalism.* Durham: Duke University Press, 2007.

Sandhu, Jashandeep Singh. “Green Revolution: a case study of Punjab.” *Proceedings of the Indian History Congress* 75 (2014): 1192-99.

Seshia, Shaila and Ian Scoones. “Trading policy connections: the politics of knowledge in the Green Revolution and biotechnology eras in India.” *IDS Working Paper* 188 (2003).

Sethuraman, N. “Jawaharlal Nehru and Indo-US relations: the making of India’s foreign policy.” *Seventy Fourth Session of the Indian History Congress at Ravenshaw University* (2013): 1-14.

Shand, R.T. *Agricultural development in Asia*. Canberra: Australian National University Press, 1969.

Sharma, Brij Kishore. “Jawaharlal Nehru’s model of development.” *Proceedings of the Indian History Congress* 73 (2012): 1292-1302.

Strevig, William. “Economic development in India under the second five-year plan.” *The American Economist* 4, no. 1 (1960): 31-40.

Swaminathan*, M.S. Combating hunger and achieving food security.* Cambridge: Cambridge University Press, 2015.

Varshney, Ashutosh. “Ideas, interests and institutions in policy change: transformation of India’s agricultural strategy in the mid-1960s,” *Policy Sciences* 22, no. 3 (1989): 289-323.

Venkateswarly, Akina. *Political economy of agricultural development in India.* Milton: Taylor and Francis, 2021.

Wichmann, Arthur. “India’s economic problems and the second five-year plan.” *The Southwestern Social Science Quarterly* 38, no. 3 (1957): 215-227.

Primary sources

Accelerating India’s food grain production, 1967-1968 to 1970-1971: requirement and prospects for a yearly growth rate of 5 percent. Washington: US Department of Agriculture, 1968). Consulted 17.04.2023, https://dec.usaid.gov/dec/content/Detail_Presto.aspx?ctID=ODVhZjk4NWQtM2YyMi00YjR

mLTkxNjktZTcxMjM2NDBmY2Uy&rID=NTgwOQ%3d%3d&qrs=RmFsc2U%3d&q=KERvY3VtZW50cy5GaWxlOihIaWdoLVlpZWxkaW5nIHZhcmlldHkgcHJvZ3JhbSkpIEFORCAoRG9jdW1lbnRzLkRlc2NyaXB0b3JzX0dlb2dyYXBoaWM9KCJJbmRpYSIpKQ%3d%3d&qcf=ODVhZjk4NWQtM2YyMi00YjRmLTkxNjktZTcxMjM2NDBmY2Uy&ph=VHJ1ZQ%3d%3d&bckToL=VHJ1ZQ%3d%3d&rrtc=VHJ1ZQ%3d%3d

Address to Parliament: first session, 12.02.1968 (Fourth series). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/3962/1/husain_12_02_1968.pdf

Address to Parliament: first session, 12.02.1968 (Fourth Series). Consulted 17.05.2023. https://eparlib.nic.in/bitstream/123456789/3962/1/husain_12_02_1968.pdf.

Address to Parliament: first session, 14.02.1966 (Third Series). Consulted 17.05.2023. https://eparlib.nic.in/bitstream/123456789/3960/1/radhakrishnan_14_02_1966.pdf.

Address to Parliament: first session, 20.02.1970 (Fourth Series). Consulted 19.05.2023. https://eparlib.nic.in/bitstream/123456789/3965/1/giri_20_02_1970.pdf#search=null%20%5B1970%20TO%201979.

Agricultural Universities in India – Progress and Problems, 12.11.1968. Washington: Agricultural Division of the National Association of State Universities and Land Grant Colleges. Consulted 20.04.2023. https://pdf.usaid.gov/pdf_docs/PNABJ266.pdf.

Discontinuation of US Aid to India. 07.12.1972 (National Archives of India, External Affairs, PR_000005002998). Consulted on 17.04.2023. https://www.abhilekh-patal.in/jspui/handle/123456789/2753016?searchWord=fertilizer&backquery=%5bquery=fertilizer&filter_field_1=dateIssued&filter_type_1=equals&filter_value_1=%5B1951-01-01+TO+1980-12-31%5D&filter_field_2=dateIssuedTo&filter_type_2=equals&filter_value_2=%5B1951-01-01+TO+1980-12-31%5D&filter_field_3=fileType&filter_type_3=equals&filter_value_3=PDF&originalquery=&sort_by=dc.date.accessioned_dt&order=desc&rpp=20&etal=0&start=40.

Evaluation study of the High-Yielding Varieties Programme (1967-1968). India: Programme Evaluation Organisation, 1968. Consulted 12.04.2023. https://indianculture.gov.in/reports-proceedings/evaluation-study-high-yielding-varieties-programme-report-rabi-1967-68-wheat.

ICAR. "Annual report 1964-1965." Consulted 15.04.2023. https://krishikosh.egranth.ac.in/displaybitstream?handle=1/2026777&fileid=024d9162-6cc3-4a65-9944-50700b3c241f

Indian Parliament. *The Seeds Rules.* 1968. Consulted 15.04.2023, https://seednet.gov.in/PDFFILES/Seed_Rule_1968.pdf.

Indira Gandhi. *Indira Gandhi: speeches & writings.* New York: Harper & Row, 1975.

Indira Gandhi. *The years of challenge: selected speeches of Indira Gandhi January 1966 – August 1969*. New Delhi: Ministry of Information and Broadcasting, 1971.

Lok Sabha Debates third series, 03.05.1966 (Third Series, Vol. LV, no. 52). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/55540/1/lsd_03_14_03-05-1966.pdf.

Lok Sabha Debates: eight session, 22.08.1969 (Fourth Series, Vol. XXXII, no. 24). Consulted 25.05.2023. https://eparlib.nic.in/bitstream/123456789/2775/1/lsd_04_08_22-08-1969.pdf.

Lok Sabha Debates: eleventh session, 15.03.1965 (Third Series, Vol. XXXVIII, no. 19). Consulted 21.05.2023. https://eparlib.nic.in/bitstream/123456789/55103/1/lsd_03_11_15-03-1965.pdf.

Lok Sabha Debates: eleventh session, 15.03.1965 (Third Series, Vol. XXXVIII, no. 19). Consulted 21.05.2023. https://eparlib.nic.in/bitstream/123456789/55103/1/lsd_03_11_15-03-1965.pdf.

Lok Sabha Debates: eleventh session, 22.02.1965 (Third Series, Vol. XXXVIII, no. 4). Consulted 18.05.2023, https://eparlib.nic.in/bitstream/123456789/54570/1/lsd_03_11_22-02-1965.pdf

Lok Sabha Debates: eleventh session, 30.05.1965 (Third Series, Vol. XLI, no. 49). Consulted 21.05.2023. https://eparlib.nic.in/bitstream/123456789/54791/1/lsd_03_11_30-04-1965.pdf.

Lok Sabha Debates: fifth series, 25.05.1972 (Fifth Series, Vol. XVI, no. 52). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/1015/1/lsd_05_04_25-05-1972.pdf.

Lok Sabha Debates: fifth session, 17.08.1972 (Fifth Series, Vol. XVIII, no. 13). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/2117/1/lsd_05_05_17-08-1972.pdf.

Lok Sabha Debates: second session, 06.06.1967 (Fourth Series, Vol. IV, no. 11). Consulted 21.05.2023. https://eparlib.nic.in/bitstream/123456789/1341/1/lsd_04_02_06-06-1967.pdf.

Lok Sabha Debates: second session, 29.05.1967 (Fourth Series, Vol. III, no. 5). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/1858/1/lsd_04_02_29-05-1967.pdf.

Lok Sabha Debates: seventh session, 30.04.1969 (Fourth Series, Vol. XXIX, no. 51). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/2691/1/lsd_04_07_30-04-1969.pdf.

Lok Sabha Debates: third series, 05.05.1966 (Third Series, Vol. LV, no. 53). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/55433/1/lsd_03_14_05-05-1966.pdf.

Lok Sabha Debates: third series, 05.08.1966 (Third Series, Vol. LVII, no. 10). Consulted 19.05.2023. https://eparlib.nic.in/bitstream/123456789/55219/1/lsd_03_15_05-08-1966.pdf.

Lok Sabha Debates: third series, 07.04.1966 (Third Series, Vol. LIII, no. 36). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/55124/1/lsd_03_14_07-04-1966.pdf.

Lok Sabha Debates: third series, 14.05.1966 (Third Series, Vol. LV, no. 60). Consulted 19.05.2023. https://eparlib.nic.in/bitstream/123456789/55191/1/lsd_03_14_14-05-1966.pdf.

Lok Sabha Debates: third series, 20.04.1966 (Third Series, Vol. LIV, no. 43). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/55479/1/lsd_03_14_20-04-1966.pdf.

Lok Sabha Debates: third series, 20.04.1966 (Third Series, Vol. LIV, no. 43). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/55479/1/lsd_03_14_20-04-1966.pdf.

Lok Sabha Debates: thirteenth session, 02.12.1965 (Third Series, Vol. XLIX, no. 21). Consulted 21.05.2023. https://eparlib.nic.in/bitstream/123456789/55114/1/lsd_03_13_02-12-1965.pdf.-

Lok Sabha Debates: thirteenth session, 07.12.1965 (Third Series, Vol. XLIX, no. 24). Consulted 12.04.2023. https://eparlib.nic.in/bitstream/123456789/54547/1/lsd_03_13_07-12-1965.pdf#search=null%2003%20Lok%20Sabha%20Debates%201965.

Lok Sabha Debates: thirteenth session, 07.12.1965 (Third Series, Vol. XLIX, no. 24). Consulted 19.05.2023. https://eparlib.nic.in/bitstream/123456789/54547/1/lsd_03_13_07-12-1965.pdf .

Lok Sabha Debates: thirteenth session, 18.11.1965 (Third Series, Vol. XLVIII, no. 11). Consulted 18.05.2023. https://eparlib.nic.in/bitstream/123456789/54605/1/lsd_03_13_18-11-1965.pdf.

Lok Sabha Debates: twelfth session, 09.09.1965 (Third Series, Vol. XLV, no. 18). Consulted 19.05.2023. https://eparlib.nic.in/bitstream/123456789/3073/1/lsd_03_12_09-09-1965.pdf.

Lok Sabha Debates: twelfth session, 23.08.1965 (Third Series, Vol XLIV, no. 5). Consulted 20.05.2023. https://eparlib.nic.in/bitstream/123456789/3079/1/lsd_03_12_23-08-1965.pdf.

Lok Sabha Debates: twelfth session, 24.09.1965 (Third Series, Vol XLVI, no. 29). Consulted 17.05.2023. https://eparlib.nic.in/bitstream/123456789/54531/1/lsd_03_12_24-09-1965.pdf.

Lok Sabha Debates: twelfth session, 24.09.1965 (Third Series, Vol. XLVI, no. 29). Consulted 23.05.2023. https://eparlib.nic.in/bitstream/123456789/54531/1/lsd_03_12_24-09-1965.pdf.

Terminal Report: Research and Education Programs 1955-1964 and 1964-1973, July 1973. USAID Development Experience Clearinghouse. Consulted 10.04.2023, https://pdf.usaid.gov/pdf_docs/PDAAJ857.pdf.

The United States contribution to Indian development, 31.12.1964. New Delhi: USAID mission to India. Consulted 19.04.2023, https://pdf.usaid.gov/pdf_docs/Pdacq704.PDF.

USAID's legacy in agriculture development: 50 years of progress. Washington: US Agency for International Development, 2016.

William Gaud. "The Green Revolution: accomplishments and apprehensions." 08.03.1968. (Speech before The Society for International Development).