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## Addressing the Role of Climate Change in Agriculture and Mexico-US Immigration

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## Addressing the Role of Climate Change on Agriculture and Mexico-US Immigration

### **Abstract/ Executive Summary:**

Among the greatest threats of climate change is its significant impact on mass displacement, particularly as it relates to Mexico-U.S. immigration. Low crop yields from worsening climate conditions have been linked to increased migration of Mexican small-scale farmers. With a projected 4.2 million additional migrants in the foreseeable future, this migration pattern can be traced to the North American Free Trade Agreement (NAFTA). Both Mexican and American small-scale farmers are disadvantaged by current trade agreements, corporate agricultural structures, and poor farming conditions related to climate change. Several policies are proposed to address this dilemma. Proposals are evaluated by economic cost, equity, environmental impact, and feasibility criteria. My research concludes that the most effective policy is to provide financial and technical support for small-scale farmers in adopting conservation practices, funded through subsidy reallocation. The policy benefits both nations by addressing Mexico-U.S. immigration at its source through creating more jobs and higher earning potential. It would simultaneously reduce pollution from large agribusinesses, ensure a sustainable crop production, and build long-term resilience against climate change. This serves as a model for addressing the global increase of climate refugees and can provide solutions for climate change-driven migration in rural areas around the world.

**Keywords:** climate change, migration, conservation, agriculture, Mexican immigration, NAFTA, USMCA, small-scale farmers, environmental justice

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### ***Introduction***

Climate change sits at the forefront of scientific research and modern American politics and threatens important environments, ecosystem functions, and human health. Beyond these widely known effects, climate change also has a huge influence on the displacement and migration of large groups of people. A direct correlation has been identified between climate change-driven low crop yield and Mexico-U.S. immigration. In the foreseeable future, an additional 4.2 million migrants are estimated to enter the U.S. based on current trajectories. This migration pattern can be traced to the North American Free Trade Agreement (NAFTA). It significantly disadvantaged small-scale farmers and destabilized Mexico's agricultural sector. Yet, NAFTA's newly enacted

replacement—the United States-Mexico-Canada Agreement (USMCA)—fails to address this. My research concludes that the most direct solution is for both the United States and Mexico to support their small-scale farmers in adopting conservation practices through incentives and financial assistance. By reallocating subsidies to invest in small American farms rather than large agribusinesses, the policy would reduce overproduction and pollution—two negative legacies of the trade deal. In doing so, the current administration would ensure sustainable crop production by helping American farmers become climate-resilient and would address a main cause of migration at its source. Similarly, the Mexican government would revitalize their own agricultural sector and address the core issues that generate climate change-induced migrants. Thus, both the U.S. and Mexico would find it in their own self interest to institute these policy changes.

### ***Background***

Migration can bring benefits to host countries, such as stimulating their economies and generating development. Climate-related migration, however, often occurs unexpectedly and in masses. This could exacerbate problems for both the migrants' countries of origin and their destinations. An influx of environmental refugees or migrants could lead to the deterioration of ecosystems, disruption of political rights, and intensification of existing international conflicts (Pautsch, 2007). The study, “Linkages among climate change, crop yields, and Mexico-U.S. cross-border migration,” found that the semi-elasticity of emigration with respect to crop yield is -0.2, not explicitly controlling for all other contributing factors (Feng et al., 2010). The linkage of crop yield to migration is considered to be substantially more impactful in rural areas, which are the regions of focus. Using elasticity estimates, researchers calculated projections of the

emigration rate of adult Mexicans, ages 15-65, based on predicted crop yield changes. A wide range of projections were analyzed based on the magnitude of the carbon dioxide fertilization effect and the role of the Mexican government in implementing adaptation methods. The median forecasted increase is approximately 6%, or an additional 4.2 million Mexicans, who would face climate change driven emigration (Feng et al., 2010). A fuller understanding of Mexico-U.S. immigration can also be helpful in predicting the conditions that generate climate refugees and climate-induced migration patterns in rural areas globally.

Under NAFTA, the Mexican government removed policies that sustain small-scale farmers. These policies traditionally supported production of staple crops for the domestic market. Since Mexico entered the trade agreement, agricultural policies prioritized export crops largely controlled by agribusiness (Vega-Rivera et al., 2021). Furthermore, lower crop production from worsening climate conditions exacerbated the problems. These conditions led many unemployed farmers to migrate to the U.S. in search of work. As of 2019, an estimated 11.4 million Mexican immigrants are living in the U.S. (Gonzalez-Barrera, 2021). Additionally, American small-scale farmers are also disadvantaged by NAFTA. Commodity prices are decreasing due to globalization and the trade deal's negative impacts. The top 20% of large farm producers control 70% of U.S. farmland (Johnson & Fromartz, 2017). According to data from the U.S. Department of Agriculture (USDA), 81,350 farms were driven out of business between 2013-2020 ("Farms and Land in Farms," 2021). Both American and Mexican small-scale farmers are suffering from the harmful legacies of trade agreements, existing structures in agriculture, and poor farming conditions related to climate catastrophes.

At the initial writing of this paper at the end of 2019, the USMCA was still in negotiation. Much has happened since. There has been a transition of presidential administrations with different agendas and goals. The COVID-19 pandemic shifted national and international priorities. The USMCA trade deal was entered into force on July 1, 2020. Nevertheless, the urgency for a solution to address this issue remains pertinent. While the USMCA added provisions to NAFTA, many of the same policies remain in place. One significant example is its maintenance of NAFTA's zero-tariff regulations ("U.S.- Mexico- Canada Agreement (USMCA)," 2021). This is a main incentive for agricultural dumping in Mexico by American agribusiness. In fact, most of the provisions under USMCA do not pertain to nor do they meaningfully address the dilemma. Given this consideration, the USCMA will likely lead to similar harmful consequences. This policy paper will evaluate the proposals based on the legacies of the previous trade deal, NAFTA. Since the USCMA was recently enacted, there is lacking data that isolates the new trade deal's impacts from other factors or global events.

### ***Dilemma***

Climate change-driven low crop yields have been linked to increased rates of Mexico-U.S. immigration. Small-scale farmers in both nations are disadvantaged by current trade agreements, corporate agricultural structures, and poor farming conditions related to climate change. This poses a contemporary environmental, social, and political dilemma.

### ***Policy Objectives***

The most effective policy route will fulfill the following goals: 1) reduce the high agricultural costs of climate change, 2) benefit the most disadvantaged groups, 3) have a positive

environmental impact, and 4) be highly feasible in implementation. This policy would provide a cost-effective, equitable, environmental, and highly feasible solution.

### ***Criteria for Policy Evaluation***

Each proposal will be evaluated through these criteria: economic cost (or cost reduction), equity, environmental impact, and feasibility. The economic cost criterion will consider the financial costs and benefits of the proposed policy given the current budget. It will compare the financial costs to the predicted benefits. The equity criterion will assess how the policy would address the environmental injustice aspect of the dilemma. It will focus on the extent to which the policy benefits the most disadvantaged stakeholders, small-scale farmers. The environmental impact criterion will examine the extent to which the policy could have a positive effect on the environment. This can be determined by the policy's capacity to lower carbon footprint, use less harmful chemicals, and/or build a sustainable farming system. The last criterion, political feasibility, will analyze the likelihood of the policy to be successfully ratified based on existing political structures, stakeholders, and national interests.

### ***Decision Makers and Stakeholders***

Decision makers of this policy are the United States Congress and the Mexican Congress, as well as both nations' Executive Branch. Key stakeholders in this issue include the USDA, the Mexican Secretariat of Agriculture and Rural Development (SADER), and farmers- specifically American and Mexican small-scale farmers. The policy solution aims to benefit this group because they have been most disadvantaged by the impacts of NAFTA, receive the least amount of subsidies, and are more subject to agricultural harms (Sherman 2019). Small-scale farmers of

both nations are most impacted by climate-driven low crop yield and have fewer measures in place to ensure their agricultural livelihood.

The framework of this policy paper is focused on the interests of American policymakers. Given projected immigration trends, it also serves American interest to adopt assistance policies that address climate change-driven low crop yield in Mexico. Doing so would address the issue at its core and help to slow the rate of the U.S.-to-Mexico immigration. The Mexican government also has a vested interest in stabilizing their own agricultural sector and limiting Mexican migrants caused by climate change. Since the desired policy outcome serves both American and Mexican interests, it is recommended for both governments to enact the policy recommendation. The decision makers in this issue have an opportunity to create cost-effective, equitable, environmental, and highly feasible solutions for their citizens.

### ***Policy Proposals***

I will evaluate several policy proposals, which include 1) policy inaction, 2) American support in Mexico's development of an organic agricultural program, and 3) support for small-scale farmers in adopting conservation practices, which would be funded through subsidy reallocation.

### ***Analysis of Policy Proposal 1:***

The first proposal is policy inaction, or maintaining the status quo. The policies under NAFTA come at a high economic cost, display environmental injustice, and have a negative impact on the environment. Economically, the increased use of chemicals and GMO seeds cost the Mexican government \$36 billion in pollution damages annually, which exceeds economic gains from trade ("The World Economy Today: Major Trends and Developments," 2012). For the American government, there is no specified value on the direct cost of total chemical use in agriculture.

However, Nitrogen from fertilizer and manure runoff costs about \$157 billion annually, so the net value of chemical damage is estimated to be greater than that value (Schechinger, 2015). In terms of externalities of agricultural production, external costs are estimated at \$5.7-\$16.9 billion annually. The external costs of American agriculture to natural resources, wildlife, ecosystems, and human health are expensive (Tegtmeier & Duffy, 2004). It is in both the U.S. and Mexico's best interests to work toward mitigating the damages caused by pollution. Maintaining the current policies (policy inaction) would not work and would likely exacerbate future expenses due to worsening climatic events.

In terms of equity, there is little to none for small-scale farmers. They are most impacted by climate-driven low crop yield and have less measures in place to ensure their agricultural livelihoods. American small-scale farmers have been disadvantaged by NAFTA. The policies heightened pressure to increase production, which large operations were the only entities to exploit and profit from. At this time, Congress lowered commodity prices and offered "emergency" payments—or subsidies—that were mainly given to large operations (Hansen-Kuhn, 2013). Similarly, Mexican small-scale farmers were also burdened by the trade deal. Many rural farmers were left jobless. Heavily subsidized American agribusinesses flooded the Mexican market with cheap crops and outcompeted small-scale farmers (Clark, 2006). Significant trade disparities have led an estimated 2.3 million Mexican farmers to lose their businesses. Job losses cost Mexican producers nearly \$12.8 billion within a nine-year period (Wise, 2009). Small-scale farmers in both countries are pushed to take on migrant and seasonal farming jobs, where they perform physically demanding labor and are more exposed to occupational hazards. They often come from a low socioeconomic background and lack access to

adequate health care. They suffer the most from farming-related health risks (Mobed et al., 1992). This is a case of environmental injustice, with small-scale farmers suffering disproportionate climate harms compared to the benefits they receive.

Environmentally, the enactment of NAFTA has worsened weather conditions and contributed to climate change. The trade deal drove large American farming operations to increase production and oftentimes, overproduce. They tend to adopt practices that take a large negative toll on the environment (“Subsidizing Waste.” 2016). In general, NAFTA drove competition, forcing farmers to use more fertilizers, pesticides, and other chemicals. These methods threaten natural resources, wildlife, and the ecosystem’s biodiversity. Furthermore, American agribusinesses damaged Mexico’s environment in favor of more chemical-intensive fertilizers and low input costs. Rural farmers were pushed into marginal land to maintain their farms (“NAFTA’s Impact on Mexico,” n.d.). This practice resulted in an average deforestation rate of more than 630,000 hectares per year since 1993 (Papademetriou et al., 2004).

Lastly, policy inaction is highly feasible. It requires no enactment of any new policies or provisions to existing legislation.

***Analysis of Policy Proposal 2:***

The second policy alternative would be for the U.S. to support Mexico’s development of an organic agricultural program. This could help farmers take advantage of both nation’s increasing demand for organic food products. Globally, the organic food market is projected to increase at a compound annual growth rate (CAGR) of 12.2% from 2020 to 2027, reaching USD \$272.18 billion by 2027 (“Organic Food Market by Type,” 2020). While organic agriculture has been established in the US, it represents a significant market opportunity in Mexico. According to the

U.S. Foreign Agricultural Service in Mexico, increasingly more Mexican consumers are adopting healthier eating lifestyles and buying behaviors are shifting toward organic foods (“Mexico- Country Commercial Guide, 2020). However, 98% of Mexican grown organic crops are currently being exported, mostly to the U.S. to meet American market needs. Thus, the U.S. should support Mexico in creating a program that provides reduced-cost organic certifications for domestic consumer demand. Increasing organic farming and crops would also allow Mexican farmers to tap into the American market, maximizing their profit potential.

This policy proposes a base funding of 6 million pesos—the unutilized amount of Mexico’s SADER budget in Fiscal Year 2016—to be allocated for this program. In 2016, this department underspent by 6 million pesos, using only 89 million of their 95 million peso budget (“Mexico: Spending on Social Development and Agriculture,” 2019). The U.S. can leverage their current Organic Certification Cost Share Program (OCCSP) to serve as a model for Mexico. This program offers cost share assistance to farmers who are obtaining or renewing their certification under the National Organic Program. Certified operations could receive up to 50% of their certification costs paid during the program year, with a maximum cap of \$500 (“Organic Certification Cost Share Program (OCCSP),” 2021). Following this model, Mexico could similarly create a cost share assistance program to compensate farmers who undergo organic certification through SADER. By examining the U.S. 2019 National OCCSP report, state agencies disbursed \$6,864,148 in cost share assistance to 9,405 certified operations (“Report to Congress Fiscal Year,” 2019). Given the American model, the Mexican Congress could reasonably allocate 6 million pesos as a base funding amount to cover the program’s creation and cost share assistance. The predicted benefits of this proposal would reasonably justify the

financial costs. Organic cost share assistance would directly incentivize existing farmers to adapt their approach and increase job opportunities for new farmers to enter the industry. This program would allow Mexico to reach an expanded domestic and export market of organic goods. Mexican farmers would be better positioned to profit from sales and production. Increasing Mexican domestic suppliers over imported components would strengthen the economy and maximize employment opportunities (Papademetriou et al., 2004). However, it is difficult to predict the specific economic value and number of created jobs from the proposed policy.

Evaluating under the equity criterion, this proposal is predicted to be relatively equitable but could bring potential concerns. The intended purpose is to support Mexican farmers in the financial cost of participating in an organic certification program. In addition to the policy's predicted benefits discussed above, it would bring significant health benefits. Organic farming limits the use of commercial fertilizers and pesticides. Farmers would reduce the likelihood of negative health risks and long-term diseases associated with prolonged exposure to chemicals (Mobed et al., 1992). Organic farms and markets have a huge potential to support small-scale farmers. They allow for a growing consumer base to directly pay these farmers, stimulating the local economy and employing local farm workers (Gopalakrishnan, 2019). However, it is important to note the policy's potential to reproduce social inequalities between large and small farmers that exist in conventional agriculture. The growing bureaucratic requirements of international organic certification tend to benefit large producers and agribusiness operations (Tovar et al., 2005). This policy is equitable to the extent that its intentions are to invest in the most marginalized group—small farmers in Mexico. Additional provisions and safeguard

measures are needed to prevent the possibility of producing inequalities in the organic farming sector.

This policy would bring significantly beneficial environmental impacts. There is currently a tendency of export growers to adopt chemical-intensive production methods, driven by competition under NAFTA (Papademetriou et al., 2004). Minimizing usage of these mechanisms would minimize negative environmental impacts. Organic agriculture reduces pollution, conserves irrigation water, decreases soil erosion, improves soil quality, and uses less energy, which conventionally uses fossil fuels (Gopalakrishnan, 2019). These practices encourage the use of biological methods and climate management. The farmed land is less likely to be exhausted from continued use of pesticides and fertilizers. It would be healthier and more resistant to climate catastrophes like drought or flooding. Farmers could also use compost applications to enrich the soil. Encouraging these techniques would also produce more biodiverse agricultural fields and crops. This would aid in its resistance against pest-related diseases that traditionally damage entire crops. Biodiversity in farming helps the security of consistent crop production and thus, the security of farmers' livelihoods. This policy has a positive environmental impact by adequately lowering carbon footprint, reducing chemical use, and helping build long-term sustainability.

In terms of feasibility, this proposal has potential to be ratified; however, existing roadblocks might challenge this. The current political structures allow for a high likelihood for the American government to adopt this policy. Serving mainly as a consultant, it would require little-to-no financial obligation on their behalf. It would require more resources from the Mexican government but their existing SADER is well-positioned to adopt this approach and

have leftover budgetary funding to finance it. It is in Mexico's interests to invest in organic farming for the health of farmers, sustainability of the land, and to build job security. Increased stability in the agricultural sector could lead to less instability caused by Mexican immigration, which speaks to both nation's priorities. Current roadblocks to enactment include American farmers' willingness to expand Mexico's domestic organic market. The American organic industry currently benefits from bilateral trade by importing most of the Mexican grown organic crops. Even with the implementation of this policy, American farmers could still be at a higher advantage and have greater access to sell these goods. Another roadblock includes Mexico's newly established import requirements for organic products to be certified by SADER, beginning June 2021 ("Mexico: Organic exports to Mexico must be certified to Mexican organic standards," 2020). Given these new organic standards, it is advisable for both governments to establish organic equivalency and certifications to allow for more efficient trade ("FAIRS Annual Country Report," 2018). Addressing these limitations could lead to greater feasibility for this policy to be ratified.

### ***Analysis of Policy Proposal 3:***

The final policy proposal recommends supporting small-scale farmers in adopting conservation practices, which would be funded through subsidy reallocation. Both nations' agricultural sectors would benefit from creating climate adjustment assistance programs, which would provide financial assistance and training. The recommended farming methods have been identified as having the greatest potential to improve environmental health. These include alley and multi-story cropping, establishing silvopasture/trees/shrubs, wetland wildlife habitat management, and wetland restoration/ creation/ enhancement (Basche et al., 2020). A significant

aspect of the policy proposal is the funding source. Strategic redistribution of subsidies would meaningfully shift payments away from large farm operations. This policy would simultaneously reduce the harmful effects of heavily subsidized large farm operations while investing in conservation practices that create long-term sustainability.

In terms of cost, this policy would not require additional funding but rather a reallocation of existing funds. Specifically, shifting subsidies away from America's largest producers and eliminating the incentives for overproduction. The top 1% of American farmers received 26% of commodity subsidies between 1995-2020. The remaining 80% received 9% with a payment of \$8,014 per recipient. In 2018, the U.S. spent \$18.0 billion in total subsidies and \$8.95 billion in commodity programs and payments ("EWG's Farm Subsidy Database, n.d.). The policy could, for instance, allocate 50% (\$4.475 billion) of the 2018 total commodity payment to fund the conservation assistance program. The cost reduction potential of reducing subsidies from the largest farmers—often the most polluting—is significant. Heavily subsidized large farms come at a high cost to society from externalities of pollution and profiting off of taxpayer money ("Subsidizing Waste." 2016). Higher concentration of nitrate contamination, for example, has been found in the American counties that receive higher subsidies (Schechinger, 2021). Nitrogen has an annual cost of \$157 billion in damages to human health and the environment (Schechinger, 2015). On the other hand, shifting payments to support small-scale farmers in conservation farming would bring about additional benefits that will mitigate the cost of pollution externalities caused by large operations. In FY 2018, the recommended conservation practices received \$244 million, a mere 0.08% of the total \$144 billion USDA annual budget (Basche et al., 2020). This policy's proposal would draw from existing funds and require no

additional cost outside of the USDA's budget. The predicted benefits and cost reduction potential of this policy outweigh its costs.

This policy proposal is highly equitable, since it addresses the current dilemma of environmental injustice toward the most disadvantaged stakeholders, small-scale farmers. The policy would mitigate current financial and technical barriers to conservation farming. By directly paying farmers to do so, it would provide greater job security, increase earning potential, and ensure their resiliency in the face of climate change. The proposal also has a huge capacity for addressing existing socioeconomic inequalities. Currently, there is a huge disparity in subsidy payments between large and small farmers. For Mexican rural farmers, they received 33.2% of total income in 1990, which was reduced to 13.2% in 2001 as a result of NAFTA and other factors ("The World Economy Today: Major Trends and Developments," 2012). This disparity is paralleled by American farmers, of which the top 1% received 26% of commodity subsidies. The remaining 80% of farmers received only 9% of subsidies ("EWG's Farm Subsidy Database, n.d.). Reducing subsidies from the largest operations would reduce wasteful spending and environmental practices that mainly serve to profit the top earners. Investing this funding into small-scale farmers would bring great potential to reform the existing systems of socioeconomic inequalities between large and small farmers.

The proposed policy is predicted to bring many benefits for the environment. Reducing subsidies for the top 20% of large farm producers would significantly reduce pollution. These operations currently control 70% of U.S. farmland (Johnson & Fromartz, 2017). Subsidies encourage large farming operations to adopt practices that take a negative toll on the environment through overproduction ("Subsidizing Waste." 2016). Conservation agriculture, on

the other hand, would reverse these negative impacts and can actually lead to the greatest crop yield (“Conservation Agriculture for Climate Change Mitigation,” 2012). Adaptive farming methods would increase the crop-yield per acre, while protecting farmers against worsening climate conditions. A particular study identified practices that hold the greatest potential to improve environmental health, which include alley and multi-story cropping, establishing silvopasture/trees/shrubs, and wetland management/ restoration/ creation (Basche et al., 2020). Practices like alley and multi-story cropping not only help diversify and increase crop production but also develop a more stable soil foundation. Healthier soil increases its effectiveness at carbon sequestration (“Conservation Agriculture for Climate Change Mitigation,” 2012). Increasing soil organic matter would help to reduce soil erosion especially during heavy rainfall or flooding. Adopting conservation farming, particularly those mentioned, would create healthier and more resilient soil, increase agrobiodiversity, and expand adaptive strategies (Basche et al., 2020).

In terms of feasibility, this proposal is highly feasible. A major focus of the current administration is to “review regulatory roadblocks to new innovations and invest in climate-friendly farming” (“The Biden Plan,” 2020). Considering the administration’s priorities, the policy is well positioned to receive support and can be feasibly ratified. There are also significant predicted benefits to the environment, human health, and adaptability to future climate instability. As with any proposal, there are roadblocks that could challenge the policy’s likelihood to be enacted. The policy proposes subsidy cuts to the top 20% of agricultural producers. Agribusinesses have enjoyed 91% of payments since 1995 and the top 1% enjoy an average of \$1,913,205 per recipient (“EWG’s Farm Subsidy Database, n.d.). They have much to lose from this proposal. Due to their million dollar campaign contributions, these companies

have a huge influence on political legislation. Agribusiness corporations are among the most powerful lobby groups and would likely oppose policies that do not directly benefit them (“The Political Power of Agribusiness and the Fouling of America’s Waterways,” 2011). Despite this challenge, the policy is highly feasible as it aligns with today’s political agendas with benefits outweighing its costs.

### ***Recommendations***

Providing payments to support small-scale farmers’ adoption of conservation practices through subsidy reallocation proves to be the best policy to provide a cost-effective, equitable, environmental, and highly feasible solution. It adequately fulfills the policy objectives by a) redistributing existing budgetary funds, b) directly invest in small-scale farmers, c) bring a host of positive environmental benefits, and d) is highly feasible. This policy would help protect small-scale American farmers from the ongoing and worsening climate conditions that threaten their livelihood. It would bring about higher crop yield through sustainable conservation farming practices and carbon sequestration techniques. By lowering the agricultural sector’s carbon footprint and pollution, America would position themselves as a leader in combating climate change. The policy would further address a key driver of Mexico-U.S. immigration at its source.

The policy recommendation would reduce the high economic cost of pollution from heavily subsidized large farm operations. At a minimum, this would save the U.S. an annual amount of \$157 billion in Nitrogen damages to human health, wildlife, and the environment. It would simultaneously bring additional financial benefits related to the policy’s other pollution mitigants such as carbon sequestration. With the onset of worsening climate conditions, it is highly likely that these costs of pollution damages will increase exponentially. The policy would

further address the huge disparity in subsidy distribution between large and small farmers. Small-scale farmers of both nations would benefit significantly. This is highly equitable since they currently suffer the most disproportionate effects of current farming practices. Environmentally, this policy would support and train small farmers in adopting conservation practices that will bring a long-term crop supply and build sustainable systems. These practices would create more resilient soil, increase agrobiodiversity, and expand adaptive strategies. Lastly, this proposal is highly feasible considering the current administration's priorities and existing political structures. It could be framed as a policy that will invest in small-scale farmers long-term, lower Mexico-U.S. migration rates, and revitalize both nation's agricultural sectors. It would provide a safeguard mechanism to mitigate the worsening weather conditions and build future protections against the instability of climate change.

There are many opportunities for effective implementation of this policy, given the existing structures and programs. Currently, the U.S. administration and Congress are rapidly investing in climate-related policies. One example of this is the Growing Climate Solutions Act, which would create a certification program for carbon credits. This bill passed the Senate with overwhelming bi-partisan support (Evich & Monnay, 2021). The administration has also outlined several principles that align with the proposal's intentions and desired outcomes. Furthermore, the USDA is well-positioned to support the policy's program. It has several financial assistance programs in place that support the transition to sustainable farming through financial and technical resources as well as individualized guidance ("Financial Assistance," 2021). The Conservation Stewardship Program, for instance, provides payments based on conservation efficiency performance. While they serve as a good model for the proposed policy, these

programs have great potential to do more and enact the initiatives on the macro-level. Scaling up investments to \$4.475 billion- or 50% of 2018 total commodity payments- would bring significant benefits. Among them are more jobs, better working conditions, healthier environments, and more resiliency against worsening climate conditions.

The policy proposes several benefits that speak to Mexican interests. If they were to institute the same subsidy reallocation changes, Mexico would revitalize their own agricultural sector and address the core issues that generate climate-driven migrants. Under NAFTA, Mexico reduced subsidies to rural farmers from 33.2% of total income in 1990 to 13.2% in 2001. The majority of subsidies were allocated to Mexico's largest producers ("The World Economy Today: Major Trends and Developments," 2012). America's subsidized agricultural products essentially flooded the Mexican market when the trade deal eliminated tariffs (Clark, 2006). This policy would prevent this by shifting subsidies away from America's largest producers and removing the incentives for overproduction. It would protect essential Mexican crops from being outcompeted by cheaper prices. This creates a more fair market where Mexican and American crops can be sold competitively. It would be advisable for the U.S. to support Mexico in developing their own conservation assistance program. The recommendation provides an opportunity for the Mexican government to implement aggressive adaptation policies.

While these proposals could work together to achieve the desired outcomes, it is essential to recommend one main strategy for the purposes of this policy paper. Focusing on only one priority helps ensure a more thorough analysis of the predicted costs, benefits, and outcomes. It could allow for a more effective understanding of how a single approach can address the dilemma. Even so, a combination of proposals should be explored to have the greatest impact for

more ambitious climate action. This would make it more desirable for a wider range of decision makers when there are more benefits on the negotiation table.

### ***Conclusion***

Climate change and low crop yield have been indicators of Mexico-U.S. immigration rates. Instability in Mexico's agricultural sector drove farmers to flee to the U.S., leading to greater political, economic, and societal instability. In the foreseeable future, an additional 4.2 million migrants are estimated to enter the U.S. Both American and Mexican small-scale farmers are suffering from current trade agreements, corporate agricultural structures, and poor farming conditions related to climate change. The research in this policy paper proves significant for the sustained livelihood and wellbeing of small-scale farmers. Smaller operations are often also family-owned, farms passed down through generations. Their traditional practices and values are the backbone of the agriculture industry and thus, preserving them is crucial. While this situation is unique to Mexico and the U.S., a fuller understanding can help predict the conditions that generate climate refugees and climate-induced migration patterns in rural areas internationally.

The findings and projections conducted by this study provide a model for how crop yield-induced migration is expected in other rural regions. Areas in Africa, India, Bangladesh, Latin America, and Australia are already facing devastation to their agricultural sectors as a result of climate change catastrophes. This also speaks to the global dilemma of addressing climate refugees and the unique challenges they pose. Most of them suffer long-term climatic events, are displaced internally, and lack a legal precedent. From a policy standpoint, it is difficult to determine how exactly to provide shelter, food, and aid for approximately 200 million

displaced people. Therefore, this policy proposal offers a cost-effective, equitable, environmental, and highly feasible solution to this global dilemma.

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