



Smart Agricultural Subsidies Can Restore Degraded Farms And Rural Economies

A brief prepared by World Resources Institute

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A Quick Summary:

Every year, governments spend more than **\$700 billion on agricultural subsidies**. But many of these farm incentives failed to achieve their desired policy objectives: boosting crop yields, improving farmers' incomes, and developing rural economies.

In some cases, they have encouraged the overapplication of chemical fertilizers and unsustainable agricultural expansion. The result is large-scale deforestation and land degradation, which can turn carbon sinks into carbon sources and accelerate climate change. Because of this trend, **the agriculture, forestry, and other land use sector represented 18.5% of global greenhouse gas emissions** in 2016. This has important economic implications for rural communities as well, **costing \$6.3 trillion a year** as the quality of soil and water and ecosystem services declines with crop yields.

Governments urgently need to stop deforestation and degradation while significantly increasing crop yields and building resilient food systems that can **feed 10 billion people by 2050**. This is particularly important as governments face tightened budgets as they begin to recover from the COVID-19 economic crisis. Smart government policies should pool limited resources and fund programs that can simultaneously meet their economic development, food security, climate, and biodiversity goals.

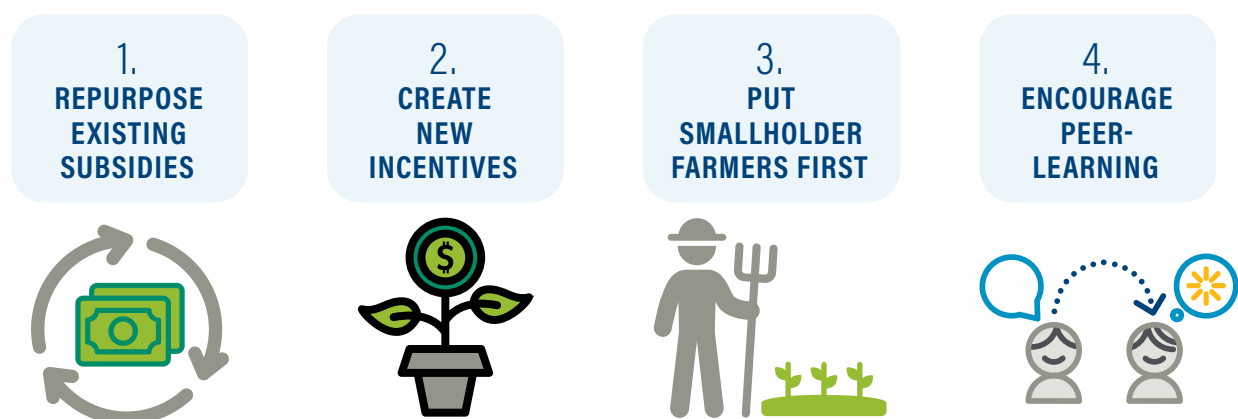
A report from World Resources Institute identifies a path that governments can take to achieve those objectives. In theory, agricultural subsidies valued at about **\$400 billion per year that are earmarked for support programs could be repurposed to better serve farmers and the planet**. A strategic action that national, regional, and local governments can take to maximize efficiency and save costs is to shift underperforming agricultural incentives (and create new ones) to *restore* degraded and marginal farmland and pasture. The returns of restoring that agricultural land are significant: **Every \$1 invested can create up to \$30 in economic benefits**.



Some governments are taking the lead and designing programs that boost farmer yields and incomes while protecting water, biodiversity, and natural forests. Learning from them, policymakers can do four things to maximize their benefits for local people.

1. Repurpose existing incentives
2. Enable markets for ecosystem services
3. Design programs that target smallholder farmers (and create new incentives)
4. Invest in systems to measure progress and in peer-learning

Figure 1 | **Policy Elements to Boost Both Agriculture and Land Restoration**



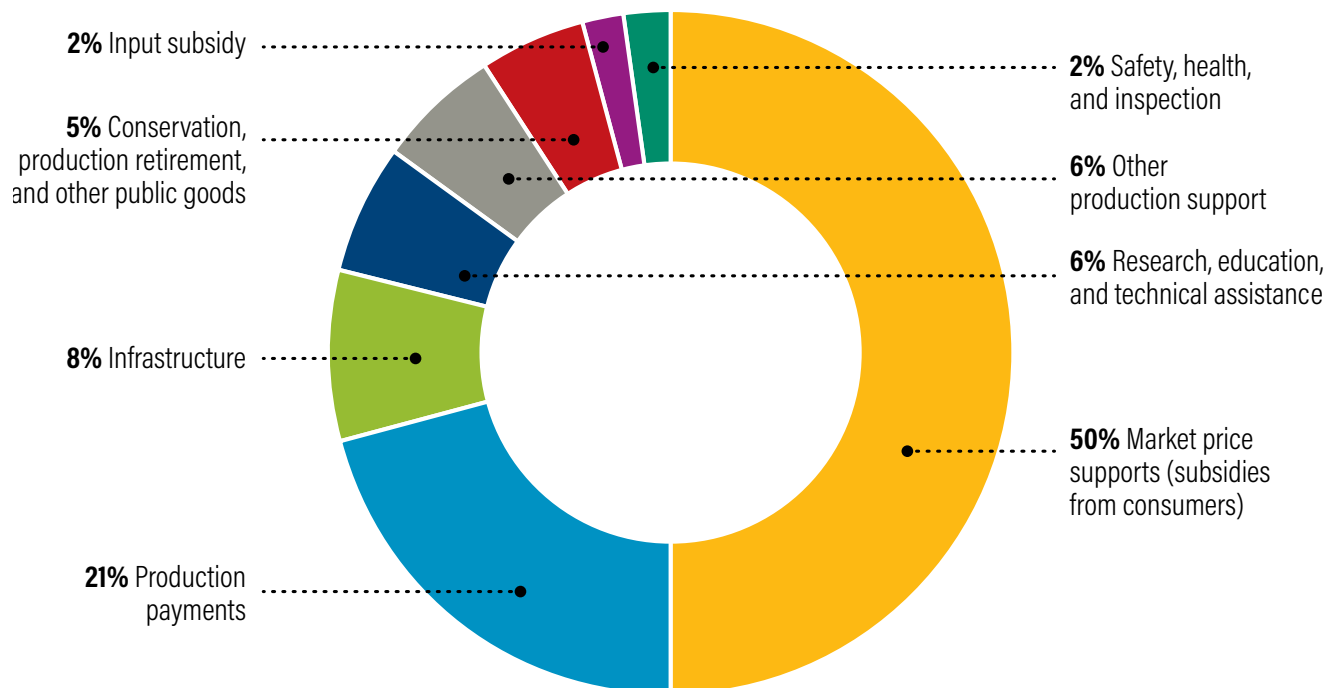
Source: WRI Authors.

Part I: The agricultural sector is among the largest recipients of government subsidies. But conventional incentives often inadvertently harm the land.

- 54 countries provided net transfers to their agricultural sectors of **USD 619 billion per year** between 2017 and 2019.
- Governments enact these programs for a variety of reasons, from boosting crop yields and food security to alleviating poverty.
- Developed economies often directly subsidize the incomes of farmers by how much they produce or by setting price floors on key crops, which often benefit large producers. That can increase food prices, hurting consumers.
- Developing economy subsidies focus on providing inputs to farmers that boost crop yields, like chemical fertilizers and pesticides.
- Although their historical impact on yields is largely positive, **the overapplication of inputs can substitute short-term profit for long-term sustainability and prosperity.**
- When used excessively, they can harm soil health and crop yields. In many countries, subsidized fertilizers and other artificial inputs have harmed the land and depleted the natural resources, like healthy soil, that farmers rely on.

- Agricultural incentives have inadvertently led to large-scale land conversion from natural forests to agricultural land. The productivity lost as a consequence of **deforestation and land degradation costs the world as much as \$6.3 trillion USD a year**.
- Sometimes, these subsidies **don't boost farmer incomes** at all.
 - Indian fertilizer subsidies have been as high as \$15 billion USD per year. These subsidies have not contributed to agricultural growth and poverty reduction (after the early years of the Green Revolution). This is because they disproportionately subsidized nitrogen, polluting the water that farmers rely on and lowering crop yields. The result: Soil fertility and crop yields have declined for years.
- In some countries, input subsidies **did not increase the land productivity** as expected.
 - After a period of poor weather and food shortages, the government of Malawi created a farm input subsidy program in 2005, spending about 60% of its agricultural budget. Although the fertilizer it provided increased maize yields at first, its impact (and crop biodiversity) declined over time, all while damaging the soil with inorganic chemicals.
- In other countries, subsidies have **incentivized deforestation**.
 - Several agricultural support programs in Brazil have inadvertently been linked to the expansion of beef and soy production into forests. The state-led rural credit portfolio, which was worth roughly R\$190 billion (US\$40 billion) in 2019–20 has supported almost 40% of the total agricultural production in Brazil. Despite the lower level of rural credit support since 2000, the production of beef and soy in Brazil has continued to grow rapidly in recent decades, spurred by low land taxes on formerly forested land.

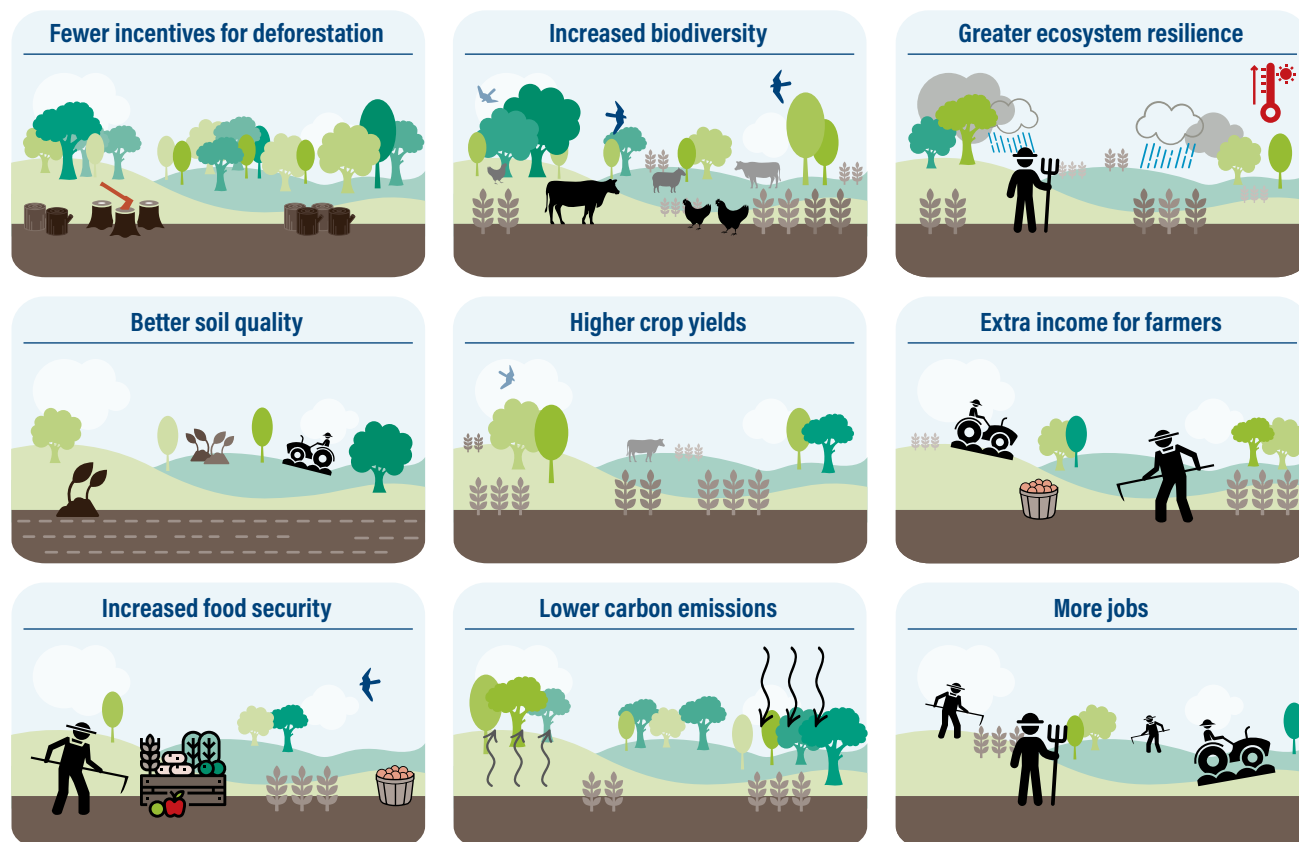
Figure 2 | **What activities do agricultural subsidies support?**



Source: "Revising Public Agricultural Support to Mitigate Climate Change," World Bank, 2020.

Part II: Re-investing underperforming agricultural subsidies in *restoring degraded and marginal farmland* can help farmers grow food – and their incomes – while protecting the environment.

Figure 3 | Shifting agricultural subsidies to restore land can lead to many benefits



Source:WRI Authors.

- The right agricultural policy incentives can help *restore* damaged forests and farms, while disincentivizing deforestation at the same time.
 - Forest and landscape restoration is a process that aims to regain ecological functionality and enhance human well-being in deforested or degraded landscapes.
- People can restore farmland through a variety of approaches like **agroforestry** (trees on farms), **silvopasture** (trees on grazing land), and **low-carbon agriculture** (no-till farming and cover crops, for example).
 - Investing in these techniques is still investing in agriculture and farming, just a low-carbon version that can provide sustainable returns for decades and store carbon.
- Restoring degraded farmland increases the **per-hectare yield gains on existing agricultural lands**, reducing pressure on existing forests. It also increases water retention in the soil, reduces topsoil losses and erosion, and increases food security.

- Revitalizing 150 million hectares of degraded agricultural land could generate **\$85 billion in net benefits** to national and local economies and provide **\$30–40 billion a year in extra income** for smallholder farmers and additional food for close to **200 million people**.
- Every **\$1 invested** in restoration can create **\$7-30 in economic benefits**, create jobs, grow GDP, and alleviate poverty.
- Repurposing agricultural subsidies for restoration can help governments achieve their pledges to restore more 210 million hectares of land that they have made to the global Bonn Challenge, AFR100 in Africa, and Initiative 20x20 in Latin America and the Caribbean.
- Investing in restoring land is not a silver bullet to the challenges of climate change and rural poverty for any country, but there are clear synergies. Targeting agricultural subsidies more effectively can help governments meet their food security, rural development, and environmental goals.
- Restoring farmland can help lead a **just transition to sustainable rural economies after the COVID-19 pandemic**.
 - Climate and biodiversity targets could both be met through restoring land, saving the total government budget while achieving multiple policy goals. This will be essential for a post-COVID era where frugal government financial policies are most needed.
 - The need for climate mitigation and adaptation financing will skyrocket through 2030, and governments will foot some of the bill.
 - Government stimulus programs that invest in restoring farmland, especially those put in place during the COVID-19 pandemic, can both accelerate rural economies in the short run while closing this climate finance gap in the long run.
 - The latest research suggests that **by directing less than 5% of the total stimulus to date (\$552 billion USD) into nature-based solutions like land restoration, world leaders can create 7% more jobs and 8% more short-term domestic economic activity**.



Part III: 4 things that policymakers can do to mobilize public finance for restoring farms and pasture

1. Repurpose existing incentives:

- Policymakers can remove harmful subsidies (that encourage the overuse of artificial fertilizers, chemical pesticides and ground water) in areas where yield increases can't be sustained and soil degradation is high.
- They can then repurpose subsidies to finance restoration techniques, like agroforestry and low-carbon agriculture, that can boost climate resilience and guarantee long-term yields and incomes.
- Some countries have already repurposed their existing incentives to protect biodiversity, human health, and rural economies.
 - After two decades of Costa Rica's Payments for Environmental Service (PES) program, a total of \$500 million USD of taxes on gasoline had been transferred to protect and restore 1.25 million hectares of forest, nearly one fourth of the country's territory. Today, ecotourism employs thousands of people, all thanks to the beauty of the country's restored forests.
 - An ecological fiscal transfer (EFT) is an innovative financing mechanism, first introduced in 1992 in the Brazilian state of Paraná. EFTs allocate government budgets to local authorities to cover the costs of conserving the environment and compensate for any lost income when an area is protected. Since its inception, the EFT has expanded the total area in conservation units by over 1 million hectares. In Paraná in 9 years, a 165% increase, and by another 1 million in Minas Gerais in 5 years, a 62% increase.

2. Enable markets for ecosystem services

- Policymakers should foster the development and adaptation of payments for the ecosystem services (PES), like clean water and carbon storage, that come with restored land. Governments also need to support the development of surrogate markets where ecosystem services can be traded. When restoration doesn't pay, it doesn't happen.
- Some countries are incentivizing farmers to grow more trees on their land and adopt low-carbon agriculture, boosting rural incomes and food security.
 - To reverse the topsoil losses caused by its previous subsidies, the government of Malawi created a PES scheme for low-carbon agriculture to reduce erosion. These incentives, funded by the hydropower company, along with a change in the perception of new farming techniques like no-till or intercropping, made more people adopt restorative agriculture.
 - In Ghana, environmental degradation caused by wildfires has threatened local livelihoods. To reduce further damage from forest fires, farms are adopting more sustainable land management practices. A PES scheme in 2015 helped farmers grow trees to reduce soil erosion and improve soil quality. When farmers received the payments, the participation rate tripled.
 - In Mexico, fixed payments were made to landowners who improved the environment by building fences to keep cattle out of regenerating areas, controlling pests, or checking their land for signs of illegal logging. This program led to a lower average deforestation rate nationwide and better land management. The subsidy supported *additional* work to improve the health of the land, instead of merely compensating work that farmers had already begun.



3. Design incentive programs that target smallholder farmers

- Local communities often bear the costs of environmental degradation – and ecosystem restoration.
- Large landowners and corporations often benefit disproportionately from existing subsidies. Part of the problem lies with the design of these programs, which can inadvertently prevent smallholder farmer participation. To better target these smallholders, agricultural subsidy programs should be seen as one component of larger programs that aim to reduce rural inequality.
 - Since these policy changes may affect the interests of large landowners, building inclusive coalitions is key to overcoming resistance from these powerful groups.
- Small farmers need more clearly defined land rights. Without legal title, they are often ineligible for subsidies or direct payments that reward their efforts to protect and restore their farms. They also need markets where they can sell the ecosystem services, like clean water and carbon sequestration, that their restored land creates.
- Payment for ecosystem services (PES) programs need to put smallholder farmers at an advantage. Grouping individual farmers together in cooperatives or producer organizations at the community and landscape levels and organizing payments through those intermediaries is one potential solution.
- Some countries are designing incentive programs that create extra sources of income to support the livelihoods of smallholder farmers. As rural economies look to recover from COVID-19, these programs can serve as an inspiration:
 - Burkina Faso has lost almost half of its forest cover since 2000. In response, the government initiated a \$30 million USD Forest Investment Plan (FIP) that paid community members to grow trees. This scheme not only restored land; it also allowed households to spend 12% more on food, reducing food insecurity by 35-60%.
 - In the Brazilian Amazon, some small rural communities burn down forests to grow cassava/manioc, their staple crop. Two programs, Bolsa Floresta and Bolsa Verde, pay smallholders if they agree not to clear primary forests. Under these programs, cassava yields increased by 22.83 kg per household per year while protecting the forest.

4. Invest in systems to measure progress

- Policymakers should build systems and in peer-learning to track the impact of their policies and show where people are restoring farms. They should collaboratively design those systems with beneficiaries and before the restoration process begins.
- Equipped with high-quality, locally relevant data, policymakers can adjust their programs to reach more farmers and improve the outcomes of their policies over time.
- New satellite data is helping governments better monitor and measure where trees are growing outside the forest (on farms and pasture).
- Some governments are using a mixture of remote sensing, artificial intelligence, and field-collected data to measure progress.
 - In Malawi, the Government has developed a framework to monitor the impact of their National Restoration Plan, built from a technique laid out in the Road to Restoration guidebook. That plan is creating thousands of jobs for young farmers.
 - In El Salvador, the Sustainability Index for Landscape Restoration is showing how one restored landscape is benefitting both local people and the environment. The Index allows governments to measure the health of their landscapes on a simple 0-1 scale.
- Policymakers should also participate in national and international peer-learning programs. There, they can learn from past experiences and together tackle challenges at the intersection of environment and agriculture.

Are you interested in learning how you can help agricultural subsidies transform farmland?

- Read the entire publication, Repurposing Agricultural Subsidies to Restore Degraded Farmland and Grow Rural Prosperity, [here](#).
- Read a short summary of WRI's training and mentorship program for policymakers, the Restoration Policy Accelerator, [here](#).
- Questions? Reach out to Helen Ding (helen.ding@wri.org) and Will Anderson (will.anderson@wri.org) at World Resources Institute.