

122 Decrease Hunger Among Smallholder Farmers by Investing in Soil Health

The Solution: Use the far-reaching impact of healthy soils to unlock a diverse range of capital flows that can be directly invested into either improved and sustainable farm production or cash transfers, with the end goal of lowering rates of household hunger for low-income smallholder farmers.

Source(s) of the Solution: internal discussions within AT1 around the need for financially sustainable smallholder production-focused gamechangers.

Problem addressed within food systems: The yield gap - representing what fields can potentially produce versus what they actually produce - has remained stubbornly large for smallholder farmers. A significant reason for this is that low-income farmers - often [living in areas of depleted soils](#) – do not have access to the optimal inputs to maximise the potential yields of their soils. In these situations, *the soil itself becomes a barrier to production*. However, scaling the requisite soil testing and optimal input distribution to rectify this reality is expensive. While current market forces are not solving this gap for poor populations, if the value of healthy soil¹ were better monetised, new resources could be unlocked to help smallholders improve soil health and close the yield gap, or simply receive cash payments, to better feed their families and communities.

Within the AT1 Action Area of reducing hunger, we approach this problem primarily as a path to driving down hunger rates for low-income smallholders by creating a sustainable path to either increased production or cash payments. However, this is very much a cross-cutting idea; at its core it provides a new way of thinking about financing input distribution, in ways that might be relevant to other Summit solutions (e.g., through providing a possible financing mechanism for input subsidies or to supplement environmental sustainability-focused soil health initiatives.)

How this solution will address that problem: Sustainably solving this problem requires scaling new financing models, backed by healthy soils, that could either fund seismic shifts in service delivery for smallholder farmers (e.g., logistics infrastructure for input distribution), or simply pay them cash to focus on soil regeneration on a portion of their land (e.g., letting some acres lay fallow), so they can use this cash for food.

One possible mechanism for this would be to issue *impact bonds* sourcing private capital to fund soil-friendly input distribution and extension for low-income smallholders in partnership with governments, SMEs, or social enterprises that have distribution networks. Farmers would be told that if they correctly applied the inputs to maximise soil health, they would receive the inputs at a discount or for free. Public- or private-sector investors would provide the upfront capital, which would then be paid back by the direct beneficiary of the improved soil outcome - most likely governments (linked to a range of public goods) or corporations involved in sourcing high value farm production once simple, measurable soil health indicators (or if proxy indicators, like lime application) were achieved.

Alternatively, *carbon markets* could be leveraged, as well-managed soils [will tend to sequester carbon](#). To tap into these markets, though, the initiative would need to partner with governments or companies that have strong rural farmer networks, to meet the high bar for certification and monitoring, reporting and verification that these markets require, which is challenging when working across dispersed smallholdings. Finally, *commercial value chain finance* could also be leveraged. For example, premium soya or coffee markets in the US or Europe could potentially add enough margins to products to fund the soil-health focused input distribution downstream to smallholder farmers with whom they work. While this is less directly useful for staple crops, healthier soil for commercial crops could also indirectly benefit production of adjacent staple crops.

¹ Beyond just farmer's fields, soil plays a key role in carbon sequestration, and [as much as 80%](#) of soil degradation occurs in the wider community, through increased prevalence of water/sanitation problems, landslides, infrastructure damage, etc.

The principal challenge to valuing this asset is the *scalable measurement of verifiable soil health indicators*. While facilities exist to verify and [monetise soil health for richer farmers](#), these must be developed for smallholders. If sufficient capital were available, then the most direct route would be through farm-level soil monitoring and including the value of these improvements in the asset value of land. However, given the expense of running the requisite soil testing at scale at the smallholder level, a possibly more scalable alternative could be to focus on easier-to-measure proxy indicators. A good example of this would be using agricultural lime application [as a proxy for soil pH](#): with lime, one could apply blanket recommendations and distribution across wide areas where soil acidity was too high, and then simply measure adoption by farmers (in areas of high acidity, lime and composting alone can increase yields by upwards of 40%).

Solution's alignment to the 'game changing and systemic solution' criteria: The large number of smallholders globally with depleted soils indicates a considerable potential for *impact at scale*. The need to put soil health at the centre of food system reforms is a clear priority of the Summit, making this idea *actionable*. This idea would be based around *a sustainable financing stream* that would unlock the scalable access to either proven, productivity-increasing inputs or cash payments for smallholders in return for maintaining high-quality soil health.

Existing evidence: There is considerable evidence of the value of soil as a public good. For example, in *Societal Value of Soil Carbon* (Journal of Soil and Water Conservation, 2014), Dr Rattan Lal suggests what the monetary value of carbon sequestration in soil might be. Moreover, evidence that leveraging payments for soil health as unconditional cash transfers could decrease hunger rates is found in the [randomised impact assessments](#) of GiveDirectly, which show that recipients of their transfers spent significant portions on food.

Current/likely political support: There are a number of ways this could be integrated into the work of other Summit Action Areas, and multiple member state representatives involved with AT1 have indicated preliminary support for the idea.

Contexts where this is well/not well suited: This idea will succeed or fail to the extent that the monitoring and verification can be well executed, which can be extremely difficult given the diffuse and unmapped nature of small landholdings. Given the limitations of existing remote sensing technology, it might only work in contexts where there is the ability to do this on the ground (e.g., leveraging partner organisations with deep field presence, like farmers' cooperatives).