



Enabling inclusive agricultural automation

Agricultural automation reshapes the labour market

Agricultural production is rapidly changing alongside a global agricultural transformation and evolving agrifood systems. Likewise, agricultural employment is changing. Increasingly, agricultural producers are adopting labour-saving technologies, from tractors in low-income countries to artificial intelligence (AI) solutions found mostly in high-income countries. The culmination of these changes has important implications for the agricultural workforce. Therefore, policies need to be carefully designed to enhance positive effects and safeguard against negative ones on rural employment and livelihoods. This requires a holistic approach that considers the entire agrifood systems.

Figure 1 presents a simplification of agrifood systems, showing the linkages across upstream, midstream (subsistence, family commercial and corporate commercial farms) and downstream stages. At the bottom, the major types of labour used at each stage are included, as are the expected employment impacts from agricultural automation (shown with upward and downward arrows).

The figure illustrates how automation impacts on employment do not solely depend on what happens at the farm level. Indeed, while automation reduces demand for workers performing the now automated task, it also spurs new jobs in logistics, processing and input markets as a result of increased production. It also increases demand for workers to operate, maintain, and manage the new equipment. This is especially true in a context of rising scarcity of rural labour, as is the case for high- and many middle-income countries. On the other hand, if forcedly promoted – e.g. through government subsidies – in contexts of abundant rural labour, it can lead to labour displacement and falling or stagnant wages, particularly affecting poor and low-skilled workers. Quantifying the final impacts of automation on employment is, however, a very challenging task requiring a large amount of data that may not be available.



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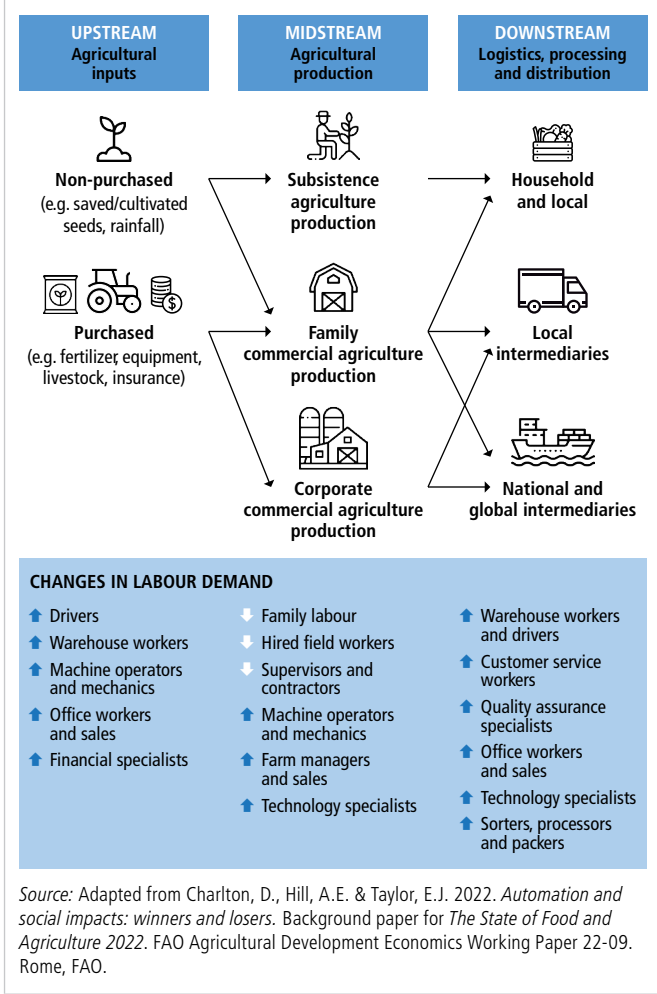
KEY MESSAGES

- ▶ In situations of rising wages and labour scarcity, agricultural automation can stimulate employment by expanding production and creating jobs.
- ▶ Conversely, when labour is plentiful and subsidies lower the cost of automation, there is a risk of unemployment, especially for low-skilled workers.
- ▶ Governments should neither subsidize nor restrict automation. Instead, they should create an enabling environment for inclusive adoption.
- ▶ Policies must ensure access by marginalized groups (e.g. women), and build the knowledge and skills of agricultural workers to facilitate the transition to new jobs.

Beyond creating (or displacing) jobs, agricultural automation reshapes the labour market in two other relevant ways: first, the new jobs created require different skillsets that match the more sophisticated automation technologies. This can be a challenge if agricultural workers do not acquire with the appropriate speed the needed skills to transition to the new jobs. Second, there is a risk that if automation technologies are not scale-neutral, small-scale producers may be pushed out of business because they lack the economies of scale to remain competitive.

However, with the right enabling digital infrastructure, and legal, regulatory and cultural environment, there is great potential for automation to enable sustainable rural economic development. If the transition is well-managed, there will also be other social gains from automation, such as through the decrease of low-paying, seasonal farm employment, and the increase of higher-paying, safer and less seasonal employment upstream and downstream – namely in processing and services.

FIGURE 1. Agricultural automation impacts on employment



Policies that promote an inclusive agricultural automation process

The increasing use of automation in agriculture has been incremental and will likely continue to be so; therefore, it is unlikely to abruptly displace a large number of workers. That is not to say the process will not be without friction; the adoption (or non-adoption) of labour-saving technologies will create unemployment at some times and in some places. Policy approaches that aim for inclusiveness will be instrumental in determining whether the positive social impacts of the increase in higher-paying, less seasonal work compensate for the negative impacts of the decrease in low-paying, seasonal employment, allowing the latter workers to find alternative employment.

Safeguard against negative employment effects.

Governments must avoid excessive and too rapid automation, especially in low- and lower-middle-income countries where rural labour is abundant and wages are low. This can lead to negative social impacts, especially for less skilled workers. On the other hand, government policies must also avoid creating obstacles to agricultural automation on the assumption that this will preserve jobs and incomes. The assumption that limiting automation will preserve employment is likely to be flawed because, first, such policies make farms less competitive and unable to expand production, and second, the adoption of new technologies can improve wages and working conditions for farm workers.

Build human capacity. Public efforts to build knowledge and skills of all relevant stakeholders on how to create, manage and repair agricultural automation equipment will be key to ensure an inclusive process. In this regard, a capacity-building agenda is required, including investments to scale digital skills.

Provide public or collective goods that contribute to an enabling environment. Policy support that provides public or collective goods, such as supporting agricultural research and development (R&D) and developing and maintaining infrastructure (e.g. energy and internet connectivity) will enable a smoother transition to greater automation, while minimizing risks of unemployment.

Focus on marginalized groups, namely small-scale producers, women and youth. Taking into account the needs of these groups is key for ensuring they reap the benefits. Policies, legislation and investments that address their disadvantages (e.g. improving women's access to credit and extension) can help increase their access to automation. Recognizing gender-specific challenges that women face and taking measures to address them is also key, such as through research and development that tailor technologies to their needs. Similarly, a specific agenda that targets rural youth and ensures they acquire the necessary skills should become a policy priority.

To conclude, policymakers should be careful not to promote automation before it is needed, nor must they inhibit adoption where it might otherwise occur. Instead, governments should focus on creating an enabling environment to facilitate adoption, while building human capacities, improving R&D, and developing key enabling digital infrastructure, such as electricity and internet connectivity, in order to facilitate the transition.

