

Overview of the Policy and Investment Prioritisation through Value Chain Analysis (PPVC)

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Abstract: Policy and Investment Prioritization through Value Chain Analysis (PPVC)

In the aftermath of the COVID-19 pandemic, developing countries face heightened challenges in reducing poverty, unemployment, and achieving sustainable economic growth. Fiscal constraints have intensified, necessitating strategic prioritization of policies and investments, particularly in the agricultural sector. Policy and Investment Prioritization through Value Chain Analysis (PPVC) is a comprehensive, evidence-based framework designed to support governments in identifying and prioritizing agricultural value chains that promote inclusive economic growth and transformation.

The PPVC approach, developed by the Bureau for Food and Agricultural Policy (BFAP) and the International Food Policy Research Institute (IFPRI), enables policymakers to leverage high-quality tools and analytics. It integrates qualitative and quantitative methodologies, including value chain mapping, geospatial contextualization, partial equilibrium (PE) modeling, and the Rural Investment and Policy Analysis (RIAPA) economy-wide model. These tools guide the selection of value chains based on their potential to improve incomes, enhance food security, drive agricultural GDP growth, and create employment.

PPVC is implemented in two main phases. The first phase ranks value chains using indicators related to market potential, inclusiveness, transformation, and climate resilience. Stakeholder engagement ensures alignment with national priorities. The second phase conducts deep-dive analyses of selected value chains, identifying specific policy and investment interventions to optimize performance, sustainability, and inclusiveness.

The dynamic integration of PE and RIAPA models allows for the simulation of alternative scenarios, providing insights into the broader socioeconomic impacts of value chain upgrades. PPVC's iterative and participatory process engages public and private stakeholders throughout, fostering capacity building and ensuring actionable outcomes.

PPVC has been successfully piloted in Tanzania, Kenya, Ethiopia, and Malawi, showcasing its ability to drive impactful reforms. The framework emphasizes aligning investments and policies with national and local development goals while addressing trade-offs inherent in resource-constrained environments. By targeting value chains with transformative potential, PPVC supports inclusive agricultural transformation, making it an invaluable tool for navigating complex development challenges.

Background and Introduction to PPVC

Since the COVID-19 pandemic, many developing countries have had difficulties recovering and pursuing national goals of reducing poverty, unemployment and sustaining the desired economic growth. The pandemic period forced most countries to redirect resources towards other uses, and away from the focus on pursuing socio-economic challenges. The redirection of resources due to the pandemic also compromised most developing countries' pursuit of growth and job creation. This is because resources to implement policies and programmes are limited, and thus some kind of prioritization of objectives must be done.

Policy and Investment Prioritisation through Value Chain Analysis (PPVC) was developed to support prioritization of options and decision-making in investment and policy in the agricultural sector. PPVC is a replicable, market-led, evidence-driven approach that identifies and prioritises value chains that drive inclusive agricultural transformation. The agricultural sector and its various value chains play a critical role in most developing countries. There is widespread agreement that agricultural transformation is needed for inclusive economic growth. Yet, the transformation agenda is made difficult in that the available public spending and private investments cannot fund all the critically needed developmental priorities. There is also an agreement that the resources will always be limited, and therefore, some considerations for policy implementation may be left out or postponed.

Many developing nations face this difficult trade-off, considering continued fiscal pressure and rising debt, coupled with balancing complex and contrasting policy outcomes. The PPVC approaches and analytical work enhance government ministries such as Agriculture to prioritize policies, investments and value chains to the benefit of its citizens to improve incomes, alleviate poverty and ensure food security. The Bureau for Food and Agricultural Policy (BFAP) and the International Food Policy Research Institute (IFPRI) have developed the PPVC approach with the aim of:

1. Providing governments with access to high-quality models, tools, and analytics for assessing Inclusive Agricultural Transformation (IAT) -related priorities and trade-offs associated with alternative policy, public investment, and value chain choices.
2. Identifying and prioritising value chains that can increase incomes, ensure food and nutrition security, attain higher agricultural GDP growth, create jobs and employment and other outcomes related to IAT
3. Prioritising and implementing policies and public and private investments for upgrading the identified value chains.

The approach has already been applied in four countries, i.e., Ethiopia, Kenya, Malawi and Tanzania. It is also progressing in Ghana and Zambia.

The PPVC as an Analytical Approach

The PPVC approach applies to a package of empirically grounded tools designed to support decision-making at different stages of the policy and investment process. These tools include four main components, namely **Value chain mapping and gross margin analysis**, **Geo-spatial contextualization**, **multi-market partial equilibrium (PE) modelling (BFAP multi-market model)**, and **CGE economywide modelling (IFPRI RIAPA model)**. The specific tools are detailed below.

The PPVC approach entails six steps, grouped into two phases. In the first phase, the agricultural value chain is ranked by performance, and the main ones are selected. This phase has three steps, namely, description of the economic and policy landscape, value chain contextualisation and rankings and thirdly, stakeholder engagement. The steps in the second phase include prioritisation of policy reforms and investments through deep dives and the post-implementation monitoring and evaluation. Figure 1 shows an illustration of the PPVC approach as well as the steps that are followed in applying it.



Figure 1: Stepwise illustration of the PPVC approach

The approach is used alongside government plans and programmes to support the decision-making. The objective is to further support the targeted policy interventions in achieving the benefits to society and the economy. So, each phase and step in the approach is conducted with that end in mind.

PHASE 1: VALUE CHAIN RANKINGS

STEP 1: Qualitative policy and value chain analysis

This step involves understanding both the macroeconomic overview of the country and providing context for the value chains. The activities undertaken include the in-country stakeholder engagement for alignment and policy demand, as well as understanding governments' articulation of the value chain priorities. At times, such priorities are stipulated in broad national policy programmes such as the national agriculture investment plans (NAIPs) or flagship programs, as well as other political priorities

Then Value chains are assessed in what is referred to as **ground truthing**. These are assessments of current levels of policy support and complementary public and private investments, scalability of value chains to other value chains. For example, an upgrade of the soybean value chain benefits livestock feed value chains. and the agro-ecological potential of each value chain.

STEP 2: Quantitative policy and market analyses of value chains

In this step, data is collected and evaluated for reliability and integrity. Based on a list of prioritized value chains, data is collected to populate market-led, inclusiveness, transformation, climate and social inclusion indicators for ranking of value chains. The type of data required includes a time series to prepare commodity balance sheets, parity and local prices for each prioritized value chain. The aim here again is to generate quantitative indicators which will be used for the value chain ranking. Some of the factors and variables that are used in the PE model are shown in Figure 2. The partial equilibrium (PE) model is used to generate an outlook based on the simulated scenarios. **The PE model** estimates the supply and demand variables to generate a ten-year outlook. That outlook features the projected trends for each of the supply, demand and price variables.

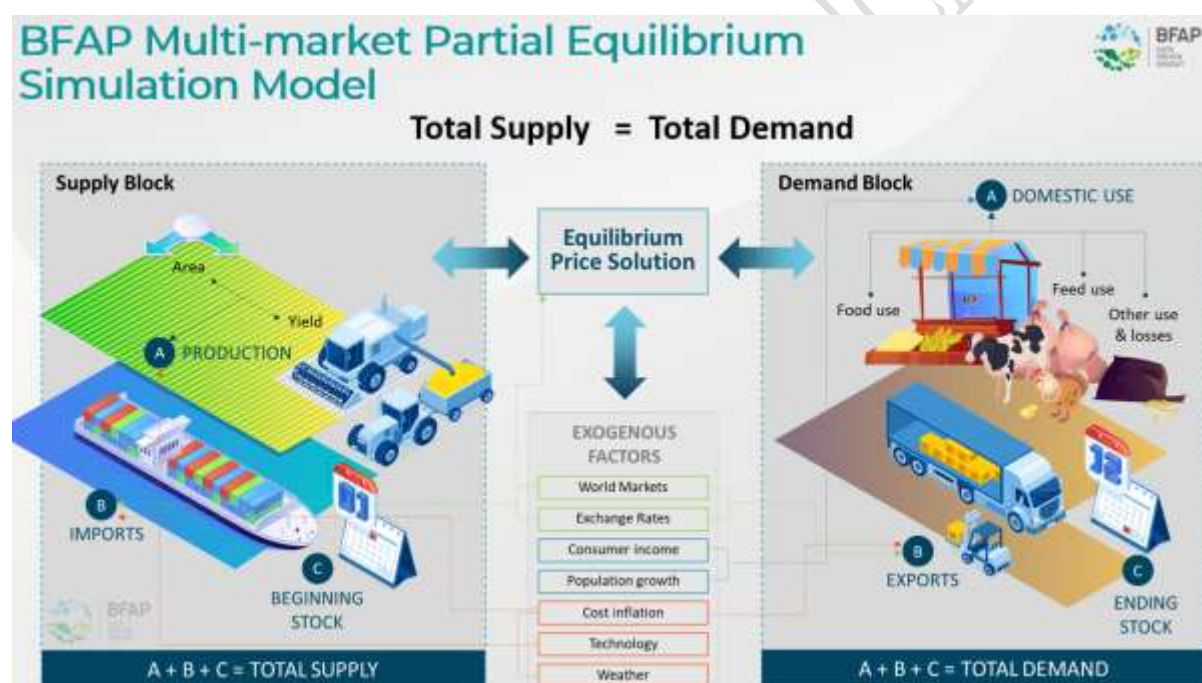


Figure 2: Partial Equilibrium model illustrations with demand, supply and various factors

The second set of quantitative models used is the Rural Investment and Agricultural Policy Analysis (**RIAPA**). RIAPA is used to simulate the effects of expanding farm production within existing agricultural value chains (Schuenemann, Thurlow, Meyer, Robertson, & Rodrigues, 2017). Total factor productivity (TFP) growth in the farm component of each value chain is accelerated beyond baseline growth rates, such that, in each value chain scenario, total agricultural GDP is one percent higher in the future than it is in the business-as-usual baseline scenario. RIAPA evaluates the impacts of the direct and indirect effects on various social inclusion and agricultural transformation outcome indicators. These can aid policymakers' understanding of the contribution of value chains to broader agrifood system growth and employment, as well as their effects on poverty and diet quality. Figure 4 shows an example of the agrifood system linkages between input supplies or even imports with farmers and to the food services and international markets. These RIAPA outcome indicators are used alongside other PPVC

outcome indicators (e.g., from the qualitative value chain scans or partial equilibrium modeling) to rank and ultimately select shortlisted value chains for deep dive analysis.

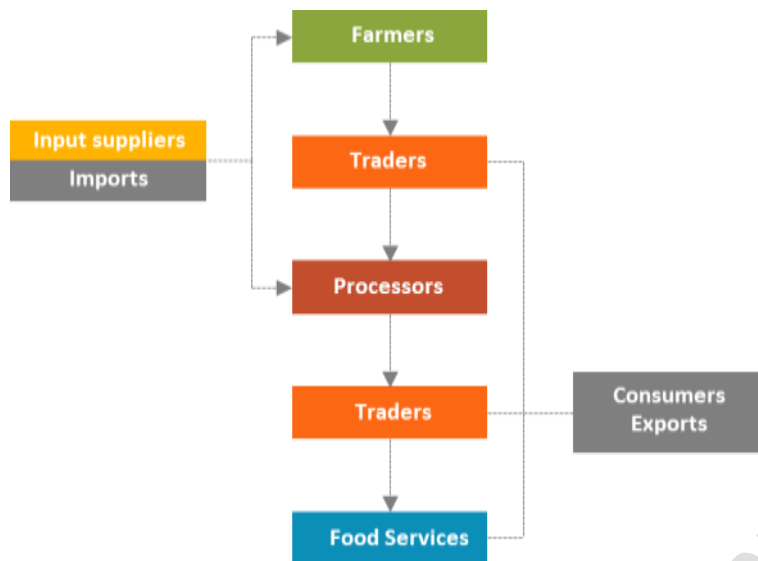


Figure 3: Linkages within the agri-food system in the RIAPA framework

The detailed representation of the agrifood system in the RIAPA enhances assessment of the extent to which policies or investments affecting farmers or value chains have spillover implications for other actors in the supply, trade, agroprocessing, or food service sectors. This also forms part of the major alignment that is required between the two models.

An alignment of macro (GDP growth, exchange rate, population, etc) and technical coefficients is required between the PE and the RIAPA model to ensure simulation of baseline and alternative future states is consistent. This stage is referred to as the PE-RIAPA Handshake, which is the coding and assumptions between the two models. It is the merging of the outputs from value chain analytics, PE and RIAPA models into the inclusive agricultural transformation (IAT) matrix for the ranking of value chains.

- Market-led indicators: Potential for intensification, domestic consumption growth, regional export potential, Relative Trade Advantage (RTA), Input cost to use ratio
- Inclusiveness indicators: Poverty Reduction, Agri-food System Employment
- Transformation indicators: Agri-food system growth, Diet Quality
- Climate indicators: Yield volatility, water footprint and GHG emissions

Step 3. Value chain ranking and selection

After the value chain contextualization step, the next step is the shortlisting of value chains based on indicator rankings. The indicators from the various models are combined using a Garrett Ranking technique (Ao & Jamir, 2020). The indicators inform a ranking outcome for each category, they

represent orders of merit assigned to value chains through the indicators. The final ranking of value chains is assigned according to mean scores, following the principle of *“highest mean score first and the lowest mean score last”*.

These final rankings are presented to the selected stakeholder working groups for validation. Another presentation is done on the quantitative and qualitative results on prioritised value chains with a wider group of stakeholders. This includes both the public and private sectors, most of whom would have participated from the start of the process.

A final value chain selection is done, informed by the ranking, but occurs in collaboration with stakeholders and policymakers in the country. In the various countries where the approach has been rolled out to date, the ranking was a key consideration in choosing relevant value chains, but the choice was also informed by urgency and the need for action from policymakers. Consequently, while higher-ranking value chains have been chosen, it has not simply come down to choosing the highest-ranking value chains for deep dive analysis. Other interests, such as socio-economic needs, political or regional considerations, influence the final selection.

PHASE 2: VALUE CHAIN DEEP DIVES – PRIORITISING POLICY REFORMS AND INVESTMENTS

Phase two of the PPVC approach involves two steps, namely the deep dive value chain analysis and post-implementation monitoring and evaluation. These two steps are done on the selected value chains. The overview and context of the global, regional, country, industry and value chain is sketched further in detail in this phase. In the post-implementation monitoring and evaluation, support is provided for governments to track and assess the implemented reforms as per recommendations from the PPVC analysis.

STEP 4. Deep-dive value chain analysis and economy-wide impacts

The PPVC deep dives of shortlisted value chains involve a detailed assessment of end-to-end product flows, gross margin estimates, the economic feasibility of establishing improved or upgraded value chains, and the policy and investments required to do so. Deep-dive value chain analysis and economy-wide impacts involve engagement with value chain key actors, product mapping, profitability evaluation and geo-spatial analysis.

The step starts with the identification of critical stakeholders, parts of the value chain they engage in and their relationships throughout the value chain. This is done to determine the associated market shares, operational costs, capacities and constraints of their activities. It also covers a summary of major challenges and constraints faced by the various value chain actors.

Information from key actors is used to develop an end-to-end product flow map that provides a clear route to market from farm-gate, through to trading, processing, and market segments. This product flow map must align with supply and demand estimates in the PE Model to ensure consistency of simulations once value chain upgrades are introduced. If that alignment is missing, then it suggests

there is either missing data or inconsistencies somewhere on the flow map. Then this process can be iterative, involving getting more information or clarification to establish that alignment.

Once the alignment is attained, an evaluation of economic feasibility is done. It involves the estimation of gross margins and economic feasibility under “business as usual” conditions for each node of the value chain. This includes costing of raw materials, relative parity pricing, and price ladder with cost build-up throughout the chain.

The next activity in the deep dive analysis is spatial contextualization. It involves consideration of the locations of production, consumption, processing hubs and public investments. It is about the integration of value chain attributes, such as location of production potential versus actual production, consumption hotspots, infrastructure, ports, and other resources. This is also where some of the potential bottlenecks in the value chain or opportunities are identified. A typical enhancement of this integration through spatial analysis can be seen in Figure 4 where visualisation of areas and infrastructure can be presented to conduct the identification of opportunities and constraints.

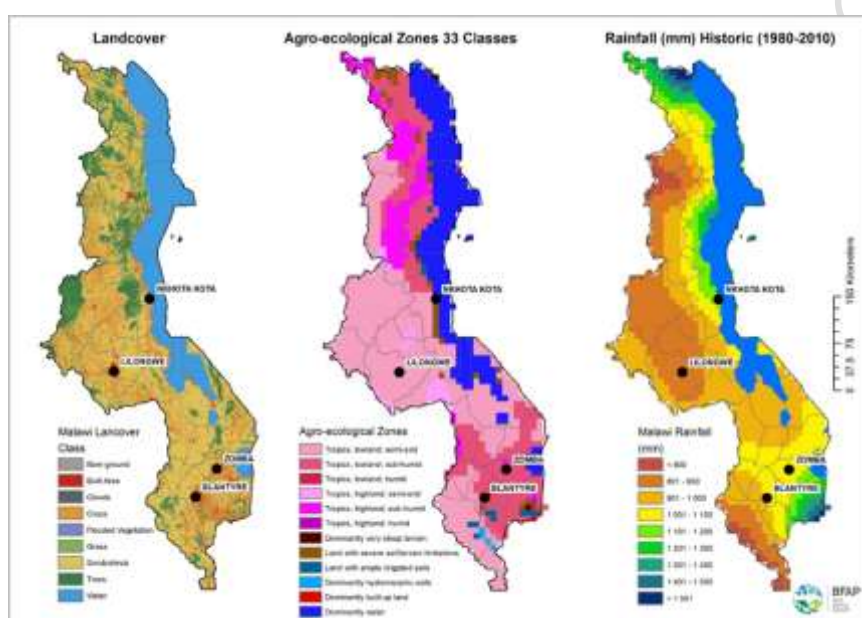


Figure 4: Example of geo-spatial tools used in the PPVC approach

Once those bottlenecks and opportunities are identified, then potential reforms and upgrades are considered through either policy, investments or both. A departure from the current known situation is then determined through what is called an “ideal or improved state” for the value chain. It is where key bottlenecks and constraints are addressed using specific levers of change. The levers can include, but are not limited to, the value chain investments, either by the public or private sectors.

To reach the ideal state, a combination of investments and policies is formulated at specific nodes of the value chain. This is aimed at unlocking more value out of the market system and to boost the level of participation and being inclusive. To improve inclusivity, it is important to assess the gender or age category implications (ex-ante) of a value chain upgrade. Then one can assess the differential impacts on men and women value chain actors, or by age category. Identifying the potential state of the value chain is made possible by engaging industry specialists and private sector actors with local and international knowledge and expertise.

The **modelling of the alternative future states is done with the PE and RIAPA recursive dynamics with a handshake (alignment) between value chains, PE, and RIAPA tools.** This activity is the most challenging component of the PPVC approach from a modelling and analytical phase because value chain models, PE models and RIAPA are all linked in a recursive approach to develop alternative future states for a value chain. The alternative future state is based on the prioritized policy reforms and investments that are introduced in the value chain, PE and RIAPA models. The value chain models provide new gross margins under the alternative state, the PE Models simulate a new market equilibrium in the outlook period, which presents new product flows to the various markets (demand).

From the RIAPA model perspective, the simulation analysis entails constructing very small, hypothetical value chains and “inserting” them into the model. The cost structures and margins, value-addition activities, and market penetration of these hypothetical value chains are based on information from the deep dives. Once the new value chains are established, they are brought to scale and start competing with existing value chains. The costs associated with policies and investments required to bring the upgraded value chains to scale are also internalized in the model. The modeling analysis provides results on the economy-wide returns to policies and value chain investments, for example, in terms of growth, employment, or poverty.

Once an ideal state is determined, then a clear articulation of policy and public investment to be considered for the pursuit of that state must be stipulated. This implies a presentation of a set of prioritized reforms that each value chain should follow, for restructuring and optimising competitiveness, profitability and transformational outcomes. The reforms also provide details on timing and possible implementation structures.

STEP 5. Post-selection and implementation support

The active engagement with private sector investors as well as industry forums is invaluable not only during the analytical phase, but also during post-reform implementation support. The engagement allows tracking of the impact of reforms on real-world market dynamics, investments and critical insight in the development of further proposed interventions.

Post-selection and implementation support to governments helps with the tracking and assessment of the adopted reforms, which were informed by PPVC analytics. It provides an opportunity to receive feedback from stakeholders, the public and private sectors. As a support structure, the PPVC team can then facilitate possible changes in the policy landscape.

Presentation to key stakeholders is a structured and focused approach for continuous engagement with a wider platform. The **in-country engagement with the public and private sector** continues around the same time, assessing changes that are associated with the reforms.

Another activity that of post-implementation support is the tracking and assessment of reforms that have been implemented based on PPVC deep-dive results and the consequent impact of these reforms on value chains. It is done through an end-to-end value chain tracking and assessing market-led indicators like product flow, profitability, competitiveness, investments and development indicators depending on the availability of data.

Summary of the PPVC

As global shocks such as the pandemic, climate change events and geopolitical tensions increase, they influence the way countries are allocating resources for various policy programmes. Besides external shocks, developing countries are faced with challenges of addressing poverty, food insecurity, economic growth, employment and many others. Therefore, the need to prioritise as a way of balancing the trade-offs increases. The PPVC was developed as an analytical approach that supports the rationale for prioritising using multiple models that enhance support for policymaking and investment decisions. This is done by ensuring that value chains that are prioritised contribute towards inclusive agricultural transformation.

The techniques that are used within the PPVC approach include value chain analytics, geospatial contextualisation, PE and RIAPA models. The approach is implemented in two phases that have a total of five steps. What makes PPVC different from most value chain approaches is the fact that it encompasses the post-implementation support, monitoring and evaluation. This is a phase that allows the continued engagement with the government, private sector and the key stakeholders. It is participatory in nature through several engagements with these stakeholders as well as the in-country research institution and non-governmental organisations. As PPVC is implemented, it also provides an opportunity for building capacity internally.

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