



## AGRICULTURAL TRANSFORMATION: POLICY AND INSTITUTIONAL EXPERIENCES FROM ASIA

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### I. Background

Recent studies confirm that agriculture not only remains relevant to growth and poverty alleviation but growth in agriculture is two to three times more effective in reducing poverty than an equivalent growth in non-agriculture sectors (Christiaensen and Martin 2018)<sup>i</sup>. Growth in agriculture disproportionately benefits the poorest at lower levels of economic development (Ligon and Sadoulet, 2018)<sup>ii</sup>. Heady 2013<sup>iii</sup> suggests that growth in agriculture is more effective in addressing malnutrition. However, it is argued that not all agriculture is good for poverty alleviation and nutrition. Context and disaggregating agriculture growth are important to assess the efficacy of agriculture in poverty alleviation and nutrition impact (Kirk, Kilic and Carletto, 2018)<sup>iv</sup>.

Over the past few decades, some countries in Asia have been more successful in addressing poverty and malnutrition than others. Key question arise as to what policies, strategies, legislations and institutional arrangements have led to a transformed agricultural sector effectively contributing to poverty alleviation and addressing malnutrition. The great majority of national policy makers within and outside the Asia-Pacific region are keen to understand the causes of agricultural development and transformation in successful countries in Asia. A large number of studies have been conducted and some of them link specific public policies and interventions to successful agricultural transformation. However, there seems to be lack of focus on the policy, legislative and institutional environment that have enabled or impeded agricultural transformation in Asia. National policy makers are likely to significantly benefit from adequate and convincing information on successful and relevant experiences that have led to intended transformation. It has been demonstrated many times that countries are more interested in what their neighbours and peers have done and why some countries have managed to achieve some eye-catching results. The main purpose of this study is to take stock of public sector experiences in facilitating and enabling agricultural transformation in selected countries in Asia. The study focusses on key public sector interventions in particular policies, legislations and institutions simply because these areas have not been adequately researched.

A note of caution might be in good order to highlight the fact that challenges of the past and experiences may not necessarily address current and emerging issues facing the food and agriculture sector. Climate change, international trade regime, food safety issues and natural resource management among others are some of the challenges that would redefine agriculture, natural resource management and how food is produced, processed, traded and prepared for consumption. Some of the experiences may be relevant and inform a subsequent or parallel study on emerging challenges and the necessary adaptation of the food and agriculture sector. The latter is a forward looking study and policy agenda, which would require a different set of analysis leading to adaptation and mitigation recommendations, which are not within the scope of the proposed study. Instead the proposed study is an attempt to understand the processes, enabling environment, including policies,



institutional arrangements and legislations that have led to certain transformative outcomes. This is done with a view to inform policies, institutional arrangements and legislations among other enabling environment measures in countries lagging behind in transforming their agriculture sectors.

### 1.1. What is Agriculture Transformation?

Agriculture transformation may be broadly defined as the process over time by which the agri-food system transforms from subsistence oriented and farm centred into more commercialised, productive and off-farm centred (Laborde et al, 2018<sup>v</sup>). Transformation is said to be inclusive if the results lead to food security, poverty alleviation and reach the socially and economically disadvantaged, in particular women, minorities, the disabled and the elderly. Agricultural transformation is a key component of structural transformation and the linkages between the two are such that isolating one from the other is either problematic or not feasible. Timmer, 2012 posits that structural transformation historically follows a remarkably uniform pattern, namely:

- (i). A decline in the [relative] share of agriculture in GDP and a decline in the labour/land ratio in agriculture. Misinterpreting this paradox and ignoring the agricultural sector in some countries may have caused stagnation, relative decline and enhanced poverty (Timmer 1988, 2002<sup>vi</sup>, and Vos 2018<sup>vii</sup>).
- (ii). A commensurate rise in non-agriculture sectors in particular urban/industrial/modern service activities. A number of scholars have pointed out that the non-farm sectors grow much faster hence causing income disparity between farm and non-farm sectors, which have at times caused pockets of persistent poverty (Otsuka, 2012)<sup>viii</sup>. Johnson, 1991<sup>ix</sup> and Timmer, 2012<sup>x</sup>, argue that policies to reduce the income gap between farm and non-farm sectors have usually derailed the process of transformation by artificially keeping inflated labour force in the farm sector, which may have migrated to other sectors in the absence of such interventions.
- (iii). Rural to urban migration of labour – this directly relates to the preceding point.
- (iv). A demographic transition defined by falling mortality rates, gradual decline in fertility rates and a subsequent period of rapid population growth.

Rising labour productivity is the basic tenet of the agricultural transformation, which can be raised in three key ways (Timmer, 2012). These key drivers are: (i) New and improved technology for a given amount of labour; (ii) More labour absorbed in other sectors away from agriculture ensuring the same or higher output with fewer labour in agriculture; (iii) Improve agriculture terms of trade – higher real income for farmers. One could add (iv) agricultural livelihood diversification from mono-cropping staple crops to more diversified, intensive and high-value crops as well as value chain development, and (v) land tenure.

### 1.2. Agricultural Transformation Key Factors

It is understood that each country may have followed a distinct path to agricultural transformation. Key factors contributing to agricultural transformation would potentially vary across countries, which should be taken into consideration when analysing individual or a group of countries. Literature review, by no means exhaustive,



suggests the following key factors that typically contribute to agricultural transformation. These may or may not be relevant to the country/countries of interest for the purpose of this study.

### 1.2.1 Farm Mechanisation

Farm mechanisation has been taking place but accurate estimates may be questionable for lack of adequate data (Dawe, 2015<sup>xi</sup>). Pingali (2007<sup>xii</sup>) using a categorisation of operation according to their power and control intensities following from Pingali and Binswanger (1987<sup>xiii</sup>) have found that except Sub-Saharan Africa, developing regions have adopted labour-saving technologies at unprecedented levels. A number of other studies have concluded that mechanisation in Asia have accelerated over the recent past, though there are significant variations across countries and regions in each country (Soni P and Ou Y<sup>xiv</sup>, 2010, IFPRI 2014<sup>xv</sup> among others). Otsuka, 2012<sup>xvi</sup> suggests that farm mechanisation and improved technology use accelerated with the green revolution but has been kept in check for declining optimum farm sizes in Asia.

Despite some data shortcomings there seems to be consensus that mechanisation has occurred at an accelerated rate at earlier stages of agriculture transformation and at a slower but positive rate later on. It is important to understand the contributions of policy, legislation and institutions to the process of mechanisation and hence productivity. This may include policies and institutions related to the promotion of agriculture mechanisation, such as subsidies (direct price subsidies, credit, supplier incentives among others), farm machinery provided to individual or groups of farmers, hire purchase schemes, machinery hiring services, farm machinery parks and others.

Farm mechanisation may be assessed using the Pingali 2007 framework, which is reproduced below for ease of reference.

<b>Nature of ops and source of power</b>	<b>Low control intensity, High power intensity</b>	<b>Intermediate Intensity</b>	<b>High control intensity, Low power intensity</b>
Stationary operations	Grinding, milling, crushing, water lifting, threshing, wood cutting	Cold storage/cold chain, Sorting and Labelling/1.	Sifting, winnowing
Mobile operations	Transportation, primary tillage (land preparation, harrowing, levelling)	Harvesting root crops, harvesting grain crops, Secondary tillage and inter-culture	Weeding and harvesting tea, coffee and perennial orchards, Seeding and transplanting

*1. cold storage/cold chain, sorting and labelling have been added for their importance in transforming the agricultural transformation.*

### 1.2.2. Labour Absorption in Non-Agriculture Sectors

Evidence suggest that prior to structural transformation in most developed countries agriculture usually accounts for much of the GDP and labour force. The share of agriculture in total GDP however falls short of



its share in total labour force because of higher productivity in non-agriculture sector. The inter-sectoral differential in labour productivity widens with higher productivity in the industrial sector (Timmer 2009<sup>xvii</sup>; Binswagner 2012<sup>xviii</sup>). During structural transformation labour is pulled out of agriculture at a speed that depends on labour intensity of industry, skill compatibility, wage differentials and the flexibility of the non-agricultural sector to attract and absorb the excess labour from agriculture. Without the labour absorption in non-agricultural sector, including migration, labour productivity is unlikely to improve, under and unemployment are likely to rise. In Asia labour exit from agriculture has been closely linked with growth in non-agriculture sector over nearly the past six decades (Vos, 2018). The elasticities of labour exit from agriculture have varied across countries in Asia (Briones and Felipe 2013<sup>xix</sup>).

Taking stock of experience in Asia with regard to managing an inclusive transformation process – ensuring a smooth transition from agriculture to other sector jobs requiring new sets of skills while being careful not to undermine the transformation process is very important. Countries in Asia have had varying experiences with the shifts in employment, in particular the public sector role in ensuring a smooth transition is of fundamental importance to many. Some countries in Asia have been highly successful in promoting skill development to increase the likelihood of off-farm employment, supporting start-up businesses and providing conditional support to non-agriculture sector to promote employment. Experiences from Vietnam, China and Thailand are highly instructive in this regard.

### 1.2.3 Technical efficiency

Technical efficiency refers to improved input-output ratios, in other words the amount of outputs obtained for a given amount of inputs on average and at the margins hence the average and marginal rates of productivity. Technology-based agricultural growth tends to increase income for both farmers, through improved productivity for a given level of resources, and consumers by making more food available (Mellor and Ahmed, 1988<sup>xx</sup>, Timmer 2015<sup>xxi</sup>). This simultaneity, equivalent to an increased prices for farmers and decrease prices for consumers is not shared by the pricing policy where a choice needs to be made between farmers or consumers.

### 1.2.4 Agricultural commodity prices

Farmers' income is affected by a myriad of factors, including technology, weather, pests and diseases as well as prices, but the latter has more immediate effect and subject to control by the political system (Mellor 2017<sup>xxii</sup>). Public policies related to productivity-enhancing investments and pricing policies can influence supply-demand balances. In this context agricultural prices serve as important signals for farmer decisions on farm investments, choice of crops and related livelihoods. Such policies may impede or facilitate agricultural transformation. In this regard, the experience of Asia is highly instructive and policy makers in other developing countries would significantly benefit from such policy experiences. Agricultural prices, in particular staple cereals, are important as a political tool and can affect real income of low-income households, much of whose income is spent on staples. Political expediency has proved in a number of countries to take



the better of policy makers and adopt policies with short-term gains at the expense of long-term agricultural transformation and economic growth.

#### 1.2.5 Farm and crop diversification

Farm diversification is the most important element of agricultural transformation and poverty alleviation particularly among small holders in Asia (World Bank and FAO, 2001<sup>xxiii</sup>). Economic growth, urbanisation, globalisation and rapid growth in middle-income households are causing significant shifts in diets, which signal commensurate changes in farming systems (Pingali 2004<sup>xxiv</sup>, Dorjee et al 2003<sup>xxv</sup>). Policies in much of Asia have favoured cereal self-sufficiency, which may have blunted the response for opportunities afforded by the rapid economic growth and urbanisation. Some countries have successfully managed the process of diversification and hence transformation while others continue to grapple with the inertia in the system. South Asia and some countries in Southeast Asia may fall in the latter group. Nevertheless, it is important to take stock of specific policies and strategies that have facilitated or inhibited the process of farm diversification and hence transformation.

#### 1.2.6 Agri-Food Value Chains

The set of actors and activities that deliver a basic agricultural product from production in the field to final consumption adding value in each stage to the basic product (FAO, 2005)<sup>xxvi</sup>. Similarly, Devaux et al, 2018<sup>xxvii</sup>, define the value chain as “the sequence of interlinked agents and markets that transforms inputs and services into products with attributes that consumers are prepared to purchase”. The agri-food value-chain development approach gives equal attention to production/productivity, value addition through processing and marketing in a holistic manner. The value-chain development approach is said to address a key impediment to agri-food development and transformation, namely the piecemeal and unsynchronised approach to input supply, production, processing, finance and marketing. The approach instead holistically addresses challenges and opportunities along the value chain. Successful value chains tend to create employment and attract services such as capacity development, input supply, technology, finance, insurance, transportation and integration of smallholders to markets.

In Asia shifting demographics, urbanisation and changing diets have had significant implications for agri-food systems (FAO, 2018<sup>xxviii</sup>, Vos, 2018). The changes in agri-food systems and value chains have created new income and employment opportunities in wholesale, retail, processing and logistics of supplying food to increasingly urbanised population (Vos, 2018, Reardon and Timmer, 2014<sup>xxix</sup>). As a result additional labour absorption capacity off-farm further fuels agricultural transformation. Experience with agri-food value chain development has varied across Asia. This study shall take stock of specific policies, legislations and institutional innovations that have led to successful agri-food system transformation in Asia.



### 1.2.7 Agriculture Research and Extension

One of the key drivers of technical efficiency is investment in research and extension. The authors are encouraged to highlight investment (public, private or joint) in agricultural research and extension. This will also include an assessment of research and extension institutions, their capacities and capabilities to make new technologies available and facilitate outreach to farmers.

### 1.2.8. Land Tenure

Land tenure security plays a key role in agricultural transformation and economic growth in a number of ways (Deininger 2003<sup>xxx</sup>). These are (i) incentive to invest and improve land productivity as risk of appropriation is minimised; (ii) efficient land markets, as a result of tenure security, facilitate land to be transferred to the most productive and efficient farmers; and (iii) facilitating access to credit as well as input and output markets. Asia's experience have, by and large, followed this pattern where relatively secure land tenure has led to efficient land markets, provided more incentives to invest in land and facilitated access to financial services (Jayne et al, 2016<sup>xxxi</sup>).

Land tenure and its impact on agricultural transformation shall be studied as part of the cross-country review paper but also as a stand-alone paper taking stock of experiences in some detail. The study shall focus on the Asian policy, legislation and institutional experiences that have led to land tenure security or otherwise.

### 1.2.9. Other Policies and Legislations

Most of the key policies as well as related legislations and institutions shall be studied under the aforementioned factors, as the key focus of the study. However, agri-food policies not covered under the preceding sections shall be specifically highlighted. This is to ensure important and relevant public policies are not overlooked, which may fall outside the key transformation factors mentioned in this section. This may include agriculture trade policy, trade facilitation and others.

## 1 Objectives, Hypothesis and Methodology

### 1.1. Objectives

The main objective of this study is to retrospectively take stock of key lessons in policies, legislations and institutional innovations that have led to successful and inclusive transformation in the agricultural sector. The study is expected to support policy makers and practitioners in less developed countries in developing Asia and elsewhere build on successful experiences while attempting to facilitate and navigate agricultural and rural transformation.

### 1.2. Hypothesis

The key hypothesis is that the public sector plays a key role in facilitating or impeding transformation in agriculture by adopting enabling policies, legislations and institutional arrangements. Moreover, the role of



the public sector varies over the different stages of agricultural transformation process as specified by Timmer, 1988.

### II. 3. Methodology

Agricultural transformation evolves through at least four distinct phases, and the role of public policies, strategies and investments vary accordingly (Timmer 1988). The stylised phases, though not always feasible to clearly define, are very useful to analyse public intervention at different stages of agricultural development. The defined phases would also help policy makers determine the relevance of certain policy measures to specific settings/countries. The transformation phases and some of the key associated policy instruments may be roughly defined as:

- (i) *'getting agriculture moving'*- Typically at the lower stages of agricultural development when agriculture productivity per worker begins to increase, improved technologies are adopted and some of the labour is released from agriculture. Key policy options at this phase are typically – institutional change, new technologies, structure of markets and incentives as well as significant investments in rural infrastructure.
- (ii) *'agriculture as a contributor to growth'* – the surplus generated in the first phase is tapped and invested in non-agricultural sectors, hence increasing the labour-absorption capacity and facilitate labour exit from agriculture. The agricultural sector continues to adopt productivity enhancing technologies and innovative institutional change, including legislation and other enabling environment continue to define this phase. Key policy settings may include – establishing agriculture-industry market linkages, technology and incentives in support of creating a sustainable agriculture sector.
- (iii) *'integrating agriculture into the macro economy'* - Progressive investment in rural infrastructure, market linkages and integration of factor and product markets between agriculture and other sectors facilitate the integration of agriculture in macro economy. Factor productivity and income differentials between agriculture and non-agriculture sectors diminish and market signals are transmitted to rural areas with relative ease. Managing trade, protectionism, shocks in commodity markets and related issues continue to become the focus of policy in agriculture.
- (iv) *'agriculture in industrial economies'* – consumer budgets include smaller shares for food, income distribution is a political issue, unemployment in industrial sector creates pressure to keep labour in agriculture, environmental concerns and way of life issues are key policy concerns. However, some of the issues in phase iii, in particular agricultural protectionism, commodity market shocks, health and environmental issues continue to be of concern and the focus of policy agenda.



Laborde et al, IFPRI 2018 suggest additional two phases to the four mentioned by Timmer 1988. These are (i) subsistence agriculture and (ii) moving labour out of agriculture. In the Timmer formulation the first is ignored and the second is present throughout the transformation process. Nevertheless, the countries of interest for the purpose of this study do not seem to have any significant pockets of subsistence agriculture and hence including this stage may not be relevant (Country Reports, EIU, WB-country at a glance).

This study suggests using the Timmer framework for analysis and taking stock of policies institutional innovations and legislations related to the six key factors of agricultural transformation mentioned in section I. The study would attempt to correlate specific public sector involvement in each of the transformation phases.

### III. Process, Expected Output and Division of Labour

#### III.1. Process

The following process is suggested to conduct the study.

1. Initial internal review of the draft concept note culminating in a revised final draft following a meeting with the RAP management.
2. Sharing the final draft with external partners, initially with IFPRI and subsequently with national think tanks of selected countries.
3. A technical meeting is organised in Bangkok (FAO/RAP) with the participation of FAO, IFPRI and selected national think tanks. This meeting would discuss the substance of the concept note, the way forward, contents of the proposed country studies, the expected final output and the division of labour.
4. Based on the agreement for the division of labour work on the two key papers and the country studies begin in a consultative manner. Close supervision shall be provided to the country think tanks to complete the intended studies based on the agreed content. Regular contact and collaboration shall be encouraged among the authors to ensure high quality content and schedule expectations.
5. A final technical meeting in Bangkok to present salient features of the study and launch the publication.

#### III.2. Output and Division of Labour

Key output from this study is a one or two volume publication inclusive of the following papers.

1. Agriculture transformation in Asia: Key issues and lessons from public sector interventions<sup>1</sup>. This paper shall highlight theoretical underpinnings, the processes that have led to successful transformation or otherwise and highlight emerging issues for agricultural transformation. A synthesis of findings from country studies.

**Authors:** Joint paper by FAO and IFPRI.

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<sup>1</sup> This would include a number of country and not limited to the three selected focus countries. The study suggests to highlight experiences from South and S.E Asian countries.





2. A paper on land tenure and agricultural transformation – theory and selected experiences. This paper shall also cover more countries than the three suggested for country papers.

**Authors:** FAO (Bicchieri, Arya) with a review function for IFPRI.

3. Country studies could potentially focus on the six key factors of agricultural transformation mentioned in section IV of the concept note. As mentioned these factors are only indicative and may not fully capture the picture in the country of interest. Indeed other factors may be more important and some of the mentioned factors may not even be relevant to the country of interest.

**Authors:** National policy think tanks with close supervision provided by both FAO and IFPRI throughout the process.

### III.3. Proposed Schedule and Deliverables

1. An agreed final draft of this concept note: No later than 15 June 2019.
2. A one-day technical meeting in FAO-RAP: Early August 2019 (this will allow sufficient time for country think tank identification and selection, arrangements with IFPRI and taking into consideration key RAP staff schedules).
3. First draft of the two key papers: 30 November 2019.
4. Country studies, first draft: 15 December 2019
5. Final draft of the publication: April 2020.

## IV. Country Studies

### IV.1. Country Selection

The following countries have been tentatively selected for the study and are subject to change if necessary.

1. **Vietnam:** The process and achievements of agriculture and rural development in Vietnam is fascinating with some eye-catching results. Within one generation, Vietnam has managed to jump from food deficit low income country to a middle income and food exporting country with a particular focus on rice and coffee among other commodities. This has certainly had some costs in terms of malnutrition<sup>2</sup>, environmental degradation, unsustainability and lost opportunities in some cases. It would be of significant interest to highlight achievements and failures in the agricultural transformation process as well as what contributed to each.

The Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), an independent policy think tank has already been involved in similar studies. It might be useful to partner with IPSARD to conduct the Vietnam country study.

2. **Thailand:** Agricultural transformation in Thailand does not seem to have been a smooth ride but rather punctuated with swings. The policy, regulatory and institutional environment has certainly had a lot to

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<sup>2</sup> Many studies have pointed to the fact that under-nutrition have been significantly reduced but obesity and pockets of under nutrition, in particular, stunting seems to be prevalent.



do with success and failures. In addition, international trade in agricultural commodities and their volatile situation may have also contributed to the up and downward trends in the transformation process. Thailand's success in value chain development, in particular processing and marketing, has been impressive and would make a good case to draw lessons.

A number of think tanks and universities in Thailand have been involved in similar studies, some of them in collaboration with FAO. It would be ideal to engage some reputable institutes for the purpose of this study and build on some past work.

- 3. Republic of Korea:** The agricultural transformation process in the Republic of Korea seems to have covered all four phases of the Timmer framework in a relatively short period of time. The achievements of Korea seems to be of significant interest to many policy makers and the proposed study will attempt to highlight specific policies, institutions, legislations and public sector role in general that facilitated one of the most successful agricultural transformations.

#### IV.2. Suggested Annotated Outline for Country Studies

An annotated outline has been developed, which shall soon be shared with partners for their inputs and subsequently shared with country think tanks. The main purpose of the annotated outline is to guide the work of the think tanks as well as specify expectations.



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