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**Policies Issues and Questions: Cases of Wheat, Rice, Cotton,
Sugarcane and Oil Seeds- Towards Sustainable and
Competitive Agriculture in Pakistan**

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by

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I. The Background

Agriculture is the mainstay of Pakistan's economy; the sector accounts for 18.9% of the Gross Domestic Product (GDP), provides livelihood to around 44% of the rural population and contributes a major share in the exports earnings. Agriculture GDP is derived from four major subsectors. Livestock is the most prominent contributor accounting for 56% of the total value, followed by crops 40%, and fishing and forestry, accounting for 2% respectively. The five major crops namely, wheat, rice, sugar-cane, maize and cotton contribute about 25.6 % to the agriculture sector and 5.4% to the GDP.

The two types of main oilseed crops in Pakistan are: traditional (rapeseed-mustard, groundnut, sesame and linseed) and non-traditional (sunflower, safflower, soybean). The share of traditional crops is 85% and of non-traditional only 15%. The growth rate of 2.56% over the last 20 years in the domestic edible oil production falls much short of the increase in domestic consumption and demand of 7.7%. The domestic edible oil production fulfills only 36% of the total national requirement. The gap between production and demand is bridged by importing edible oil at a huge cost to national exchequer and foreign exchange.

Despite sector's major contribution to the national economy and its critical importance for the national food system, food security and livelihoods, the enormous potential of the sector has not been fully harnessed, inter alia, owing to lack of policy and institutional stability, ad hoc technological interventions, inadequacy of budgetary resources and unfavorable and extractive terms of trade to the detriment of agriculture. Historically, the sector seems to have fluctuated between periods of high and low growth with considerable impact on production, revenues and farmer's income. Overall, the farmers, especially the small ones, continue to experience poverty and declining income.

These inherent structural problems of the sector show up intermittently especially in times of crisis e.g., the recent poor growth due to COVID-19, locust, change in the rainfall pattern as a result of

climate change with deleterious impact on food security, rural employment and vulnerability of livelihood assets. Further, past policies were not geared to benefitting the small farmers who are a major part of the farming system. A large set of misguided policies over decades are to a large extent responsible for a sector which is not resilient to economic and natural disasters/shocks. Agriculture productivity as key drivers – labor, land and water productivity remains low, with significant yield gaps compared to global averages in key crops like wheat, rice, cotton and sugarcane. In 2016, for the first time in past 15 years, the sector experienced a negative growth rate of 0.2% -- suggesting it is time to pause, analyze, and put in place policies that can take the sector out of this quagmire. Further, climate change with too much (floods) or too little (droughts) water, extreme events are introducing additional uncertainties and risks. There is a need to develop policies that support climate smart agriculture and incentivize adoption and synchronization of research and cost-effective technologies to sustainably increase farmers' production opportunities, profitability and competitiveness.

A great deal of bias seems to exist both at provincial and federal levels as revealed by lack of credible policy studies on strategic crops and consequently formulation of core policy decisions on an *ad hoc* basis without due regard to making agriculture profitable, competitive, sustainable and inclusive. It is not profitable largely due uncertain output prices, rising costs and lack of good agriculture and marketing practices. It is not competitive as decades old cropping processes and patterns with hardly any value addition continue to be pervasive. Further, we are not producing what growing markets demand and quality that international markets demand and thus selling in low end markets. The sector sustainability is in question as adding more and more chemicals (fertilizers and pesticides) fail to contribute to productivity gains, rather it is destroying the soils. We are a very poor user of our natural resources --adding very low value to huge water availability including groundwater which is heavily dependent on energy, not to mention the underutilization of energy derived from agriculture (biogas, solid waste, bagasse). Then Climate change and environmental issues are adding to the problems. Finally, it is not inclusive – the farm sector still carries a subsistence outlook after four decades of interventions/donor support with small and fragmented land holding owing to huge urban migration of young population. There is ample evidence in literature that small farmers are left out in the development paradigm, if there was one.

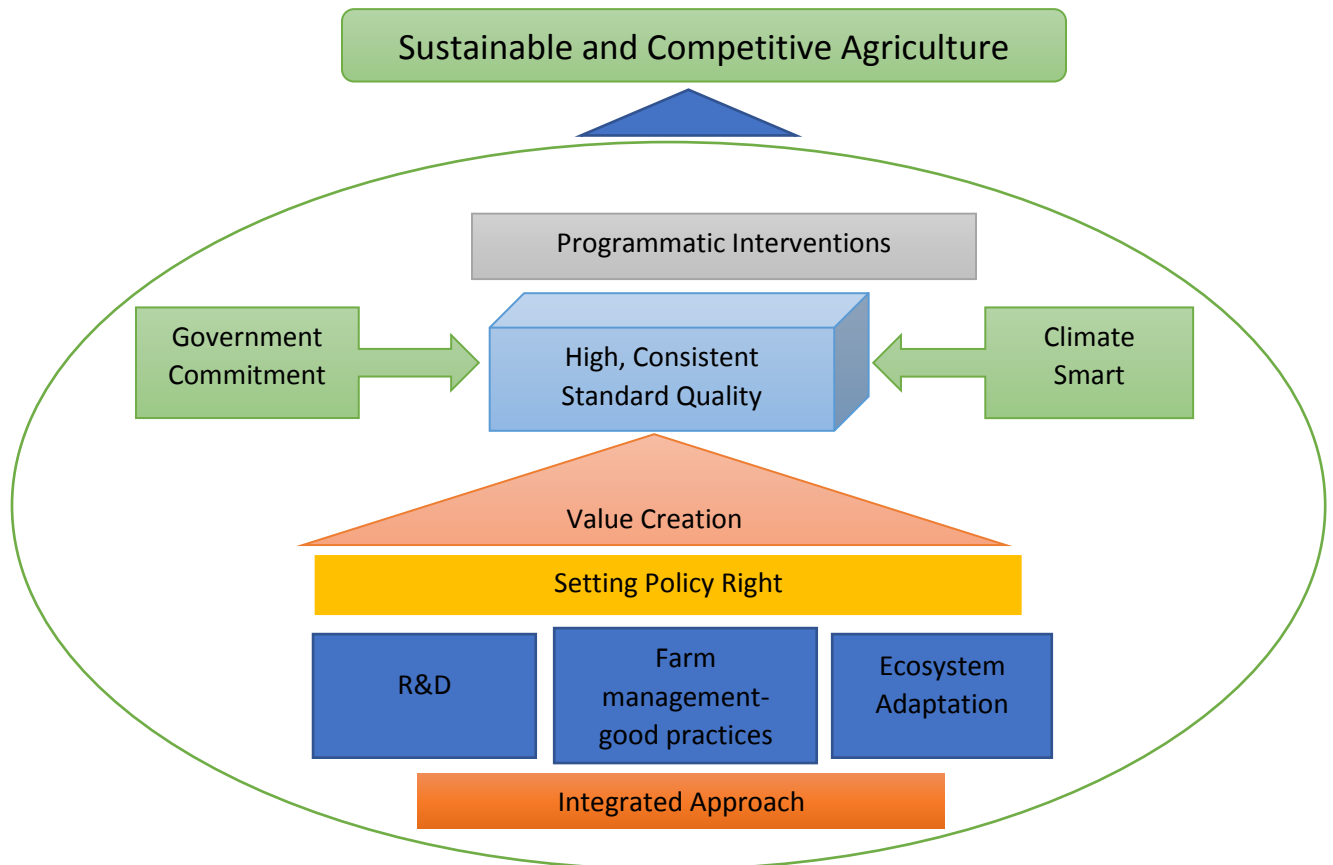
This dismal performance has been the case in spite the fact that farming conditions in Pakistan are among the best in the world, provided that the quality of its soil and water is maintained and farmers' skills are at par with global standards. Pakistan has the resource base for achieving at least a 5 percent growth rate in agriculture - a potential which cannot be achieved without first changing development path and priorities. This, a priori, entails a shift of farming from industrial agriculture to ecosystem based or climate smart agriculture and rational and efficient water management driven. It also warrants an imperative evidence-based reforming of the five strategic crops - cotton and rice as major agricultural exports, wheat and sugarcane as food security crops and oil crops as import substitution crops in this paradigm shift.

The Federal government needs to give due weight to competitiveness of above mentioned commodities in domestic and export markets and acknowledge the growing adverse impact of climate change on agriculture. Enhancing productivity in a sustainable mode is key to competitiveness. Little effort, if any, seems to have been made by research institutions to produce and propagate crop varieties sensitive and resilient to climate change. The core policy objective in revitalizing agriculture should not necessarily be to maximize the growth of production in any particular sub-sector/commodity but to create the necessary and sufficient conditions for the agricultural sector/farmers to adjust to more competitive and sustainable environments. The production structure as well as the agro-processing industry and inputs delivery system should be allowed to adjust rapidly to changes in domestic/foreign market conditions (output and input) and technologies, through changes in cropping patterns and farm structure that carry greater resilience to economic and non-economic shocks as opposed to focusing on a few crops as has been the case. This would require policy choices, among others, to enhance comparative advantage and sustainable competitiveness of the sector.

II. Need for a Transformative Shift

The foregoing brief analysis highlights the need to bring about a transformative shift in the agriculture development path from the one dictated by the so called “green revolution” that promoted the extensive and expensive use of chemicals and farms machinery that promoted soil pulverization to more sustainable eco-friendly agricultural production systems and practices. Production systems which are input cost-effective and no longer extractive, i.e. which protect the field from water run-off and soils from erosion, and which maintain soil fertility by restoring organic matter and plant nutrients exported from the field. These farming systems, besides savings on input costs, are more effective in harnessing nature to sustain higher levels of productivity. Raised beds, no till and organic mulch are key elements which replace chemistry with biology. The needed policy reforms and practices to be adopted call for the strategies that rehabilitate natural processes of soil fertility and vegetation or move from unsustainable farming to sustainable farming.

This essentially requires facts and evidence-based set of appropriate policy regimes that would provide the right path for making agriculture profitable, competitive and sustainable as outlined in Figure 1 below.

Figure. 1

There is, in the first instance, a need to review the past work completed in agriculture and rural development including recent commodities studies completed by the Planning Commission. Such comprehensive work has been neglected in the past but is important for conducive investment decisions and in creating right policy environments. More specifically, the possibility of the following three distinct value adds needs to be looked at:

- first to establish comparative and competitive advantages of proposed crop clusters under newly established agriculture ecological zones;
- second to carry out a deeper analysis of the crop rotation and cropping system that now determines yearly profitability; and,

- finally, to assess the economic viability of ecosystem based climate sensitive and smart adaptability to propose crops and associated farming system

III. The Major Issues

Following are the major issues that need to be, *inter-alia*, probed into in detail:

- Identify the major producing clusters for each of the strategic crops in Pakistan;
- Within each cluster, assess and benchmark the current efficiencies in the production system for strategic crops with respect to major producing countries;
- Establish comparative advantage of growing identified crops, their possible crop rotation and competing crops, based on ecological regions/clusters, farm size and technology levels. Also estimating sensitivity of the comparative advantage by different levels of water availability and its pricing;
- Evaluate the impact of climate change, particularly on water availability and agricultural practices/produce, and related matters and how the impact of climate change can be minimized, particularly in the context of developing climate smart agriculture and water policies regime. This would also involve assessment of the impact of agricultural policy on production system under alternative sustainable production practices- with and without environmental polluting inputs and determination of the impact of the policies on competitiveness and efficiency, or comparative advantage, of the production systems in the present and two hypothetical scenarios: a) with the adoption of resource conservation practices, denominated sustainable, and b) with agricultural practices that generate negative externalities that is with use of environment policies, denominated as unsustainable;
- Identify technological, institutional, infrastructure and policy gaps in each cluster and guide agricultural research and technological changes to achieve the cluster potentials.
- Report on the present and future importance of the agro industry involved in these crops, the value leakages and additions, and, in particular the economic, social, environmental and food procurement role; and,
- Assess measures to make these agro-industrial industries resilient in the face of increasing competition from other producing countries and also from alternative sweeteners including synthetic ones.

IV. The Major Policy Questions

The policy analysts and the decision makers must address the following questions to maximize the major crops' potential:

- What type of incentive structure the producers, processors and traders are enjoying and are they being taxed or subsidized?
- What kinds of agricultural production or marketing systems are profitable? How the policy interventions and alternatives can lead to specific production and efficiency gains to the benefit of the farmers especially the small ones?
- How can public investment improve and sustain economic efficiency and accelerate the growth of national income? How the water and environmental concerns can be internalized in the production function?

V. Conclusion

There is immense scope for especially the strategic crops to be viable and sustainable, play their multifunctional role (food security, export earnings, FE savings etc.,) more effectively, and, enhance in a significant manner their contribution to the socio-economic development of the country. Simultaneously, the viability of all the stakeholders of the industry, in particular the more vulnerable ones, i.e. the small " farmers, needs to be safeguarded and augmented so that they carry out the agricultural activity in a profitable and sustainable manner and in so doing support as well the overall development of the sector.

It may be added that relative efficiency in production of each of these crops would depend on three factors: (1) technology (which determines production possibilities and influences rates of product transformation), (2) resource endowments (which affect the value of domestic resources, such as land, labor, water and capital), (3) international prices (which directly determine the value of tradable inputs and outputs and indirectly influence the value of domestic resources).