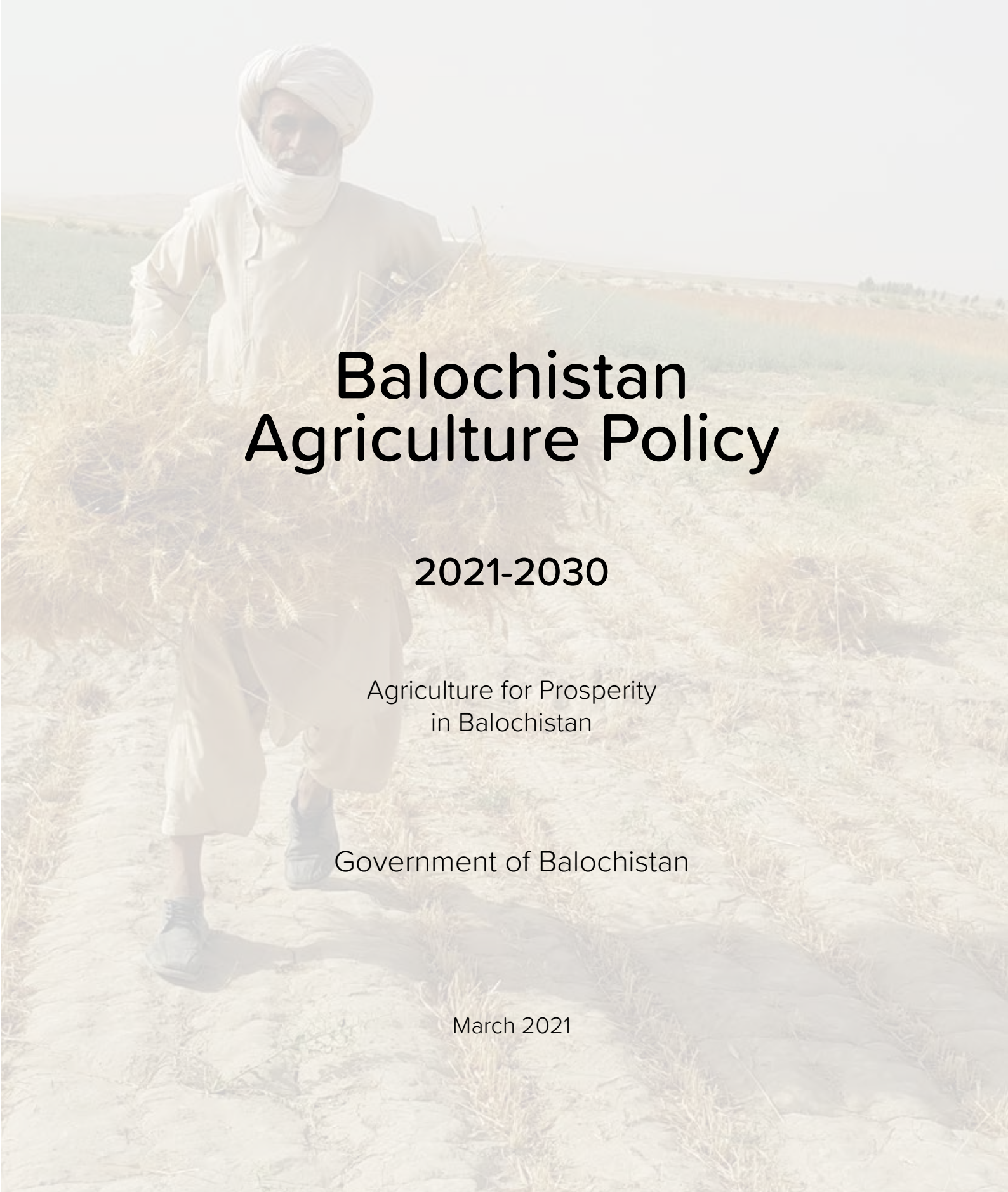
Balochistan Agriculture Policy

2021-2030

Government of Balochistan

March 2021

Agriculture for Prosperity in Balochistan



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Message from Chief Minister Balochistan

Honourable Mr

Jam Kamal Khan

Agriculture is one of the four major pillars of the economy of Balochistan and contributes more than 25 per cent of Balochistan's Agriculture Gross Domestic Product (GDP). This economic performance is achieved even though crop production has been neglected. The agriculture sector has not been prioritized for the rural community's socioeconomic development or for the overall development of the province. However, this is changing and nowadays the Government of Balochistan acknowledges that the agriculture sector can contribute much more to the economic growth and development of Balochistan provided it is managed in a systematic way and the proper priorities are addressed. Unfortunately, for many years, the sector was managed in a conservative way with farmers using outdated practices and not realizing their potential. The agriculture sector in Balochistan can only be transformed into a modern and revenue generating sector through reforming the Government of Balochistan's Agriculture and Cooperatives Department, as well as the sector, its actors, and its value chains overall. The Government of Balochistan is delighted to launch the Balochistan Agriculture Policy 2021- 2030, which is a steppingstone towards: "rapid growth in the prosperity and wellbeing of families and businesses involved in its major cropping value chains". I am confident that, under the umbrella of this policy and the leadership of the Government of Balochistan's Agriculture and Cooperatives Department, the sector will advance and generate income and jobs for men and women in Balochistan.

Message from the Minister, Agriculture and Cooperatives, Government of Balochistan

Honourable Mr

Zamrak Khan

on behalf of the Government of Balochistan

Almighty Allah has bestowed on Balochistan precious soil and water resources that can be used for its development. Used wisely and sustainably, these natural resources can be harnessed for agricultural production that will enhance the economic development of Balochistan and enrich its people. However, it is noted with concern that the agriculture sector in Balochistan has been neglected during the last few decades and has not lived up to its potential. Simultaneously, the Agriculture and Cooperatives Department of the Government of Balochistan has not progressed the sector and its actors sufficiently. As a whole the agriculture sector has the potential to contribute significantly to economic growth, poverty reduction, and reduction of food insecurity. The current Government of Balochistan, under the leadership of His Excellency, Mr. Jam Kamal Khan Aliani has set the stage to transform the agriculture sector in Balochistan, through empowering, modernizing and transforming the Agriculture and Cooperatives Department as well as the male and female farmers and other actors across the Districts of Balochistan.

Achieving the goals as outlined in the Balochistan Agriculture Policy 2021- 2030 is now a top priority of the Government of Balochistan. This policy is instrumental to achieving the required changes in the agriculture sector and to bring economic growth and welfare to the people of Balochistan.

Message from the Secretary of the Department of Agriculture and Cooperatives

Honourable Mr

Kambar Dashti

on behalf of the Government of Balochistan

Under the 18th Constitutional Amendment, responsibility for key sectors, including agriculture, now lies with Balochistan itself. The agriculture sector is not only a mainstay of our economy, but is also a way of life for many of our people and an essential part of our culture and tradition. This Balochistan Agriculture Policy 2021- 2030, prepared with the help of national and international experts, tells us that if we use our land, water, climate, and agricultural resources well, we can create a prosperous agriculture sector that can provide employment and good incomes to many of our people. I believe that this is possible and the Government of Balochistan is obliged to make this happen by allocating sufficient public development resources for agricultural development. I would like to thank all those from inside and outside Balochistan who have helped to prepare the Balochistan Agriculture Policy. As part of the policy formulation process, a series of workshops were conducted in Quetta, as well as in the Districts of Balochistan, where the private sector, farmers, NGOs, academics, Government staff and national and international experts came together to talk about agriculture challenges and opportunities. This is the first time that such a deep and comprehensive consultation process has been undertaken in the agriculture sector and the quality of the output reflects the hard work. Now that the problems have been discussed, solutions formulated and a clear development pathway identified for the agriculture sector of Balochistan, it is time to move from planning to action. The Government of Balochistan (under the leadership of His Excellency, Mr. Jam Kamal Khan, and the Minister of Balochistan for Agriculture and Cooperatives, Mr Zamrak Khan), is determined to achieve “Prosperity for Balochistan through Agricultural Development”. The Agriculture and Cooperatives Department will facilitate the required changes and will closely cooperate with the Private Sector, including farmers, Universities, Training Institutes, UN organizations such as the Food and Agriculture Organization (FAO) and Donors.

Acknowledgements

The development of this policy was led by the Government of Balochistan Department of Agriculture and Cooperatives (DAC) and the Food and Agriculture Organization of the United Nations (FAO) and supported by the Australian Government (through the Australia Balochistan Agri Business Program, AusABBA Phase II).

The team who developed this Policy worked closely with the relevant agencies within the Government of Balochistan, including the Agriculture and Cooperatives Department and Planning and Development Department. The staff of these departments, both in Quetta and in the Districts, generously gave their time and support to facilitate the development of the Policy.

Special thanks must also go to the agricultural entrepreneurs, traders, processors, farmers, and other agricultural value chain actors from across Balochistan, who generously gave their time to discuss their issues and constraints, and helped develop solutions that contributed to this Policy.

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Acronyms and Abbreviations

ADB	Asian Development Bank
BCGDP	Balochistan Comprehensive Growth and Development Plan 2020–2025
BISP	Benazir Income Support Program
CPEC	China Pakistan Economic Corridor
CSA	Climate Smart Agriculture
DAC	Department of Agriculture and Cooperatives (Government of Balochistan)
DFAT	Department of Foreign Affairs and Trade (Australia)
DFW	Department of Forest and Wildlife (Government of Balochistan)
FAO	Food and Agriculture Organization of the United Nations
FMC	Farmer Marketing Collective
GDP	Gross Domestic Produce
GoB	Government of Balochistan
HEIS	High Efficiency Irrigation System
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural development (United Nations)
M&E	Monitoring and Evaluation
MIS	Management Information System
MMO	Mutual Marketing Organization
MNFSR	Ministry of National Food Security and Research (Government of Pakistan)
MRL	Minimum Residue Level
MTR	Mid-Term Evaluation
NGO	Non-Government Organization (Government of Pakistan)
NSA	Nutrition Sensitive Agriculture
PARC	Pakistan Agricultural Research Council (Government of Pakistan)
PFVA	Pakistan Fruit and Vegetable Exporters Association
PHDEC	Pakistan Horticulture Development and Export Company
PIC	Policy Implementation Committee
PKR	Pakistan Rupee
PPP	Public Private Partnership
PSC	Policy Steering Committee
PSDP	Public Sector Development Program (provincial and federal)
PSQCA	Pakistan Standard and Quality Control Authority
SBP	State Bank of Pakistan
SDGs	Sustainable Development Goals
SMEDA	Small and Medium Enterprise Development Authority
TDAP	Trade Development Authority of Pakistan (Government of Pakistan)
USAID	United States Agency for International Development
USD	United States Dollar (1 USD = 159 PKR (dd January 31, 2020))
UNICEF	United Nations International Children's Emergency Fund
WFP	World Food Program (United Nations)
WHO	World Health Organisation (United Nations)

Executive Summary: Balochistan Agriculture Policy 2021-2030

The Balochistan Agriculture Policy 2021-2030 provides a roadmap for the development of Balochistan's annual and perennial crop value chains, be they for subsistence or commercial purposes. The Policy will also help the Department of Agriculture and Cooperatives (DAC) to reform its vision and mission, and align its services with sector needs.

Agriculture contributes around one quarter of the provincial GDP, employs more than 40 percent of the labour force, and contributes to the livelihoods of more than half of the population. It therefore forms the backbone of the provincial economy. Within the agricultural sector, crops contribute about three-fifths of Balochistan's agricultural value-added. Furthermore, nearly one in two rural households is headed by a crop farmer or an agricultural labourer. Crop production is thus crucial to raising rural incomes and reducing poverty.

Yet, the upscaling and competitiveness of Balochistan's crop sector faces many challenges including:

- Entrenched levels of food insecurity and poor nutrition.
- Increasing competition for scarce water resources.
- Poor production and value chain efficiency.
- Limited access to essential agricultural inputs and services.
- Poor recognition of the huge contribution that women currently make to the agriculture sector, and limited appreciation of the benefits that their increased engagement and management could bring.
- Poor planning and preparation for the sector to cope with the challenges of predicted climate change.

Balancing these constraints is the significant potential for increase domestic and international marketing which are generated by the suite of infrastructure investments supported by the China Pakistan Economic Corridor (CPEC investments.

Given these challenges, and with due regard to weaknesses as well as opportunities, Balochistan's Agriculture stakeholders believe that, with concerted effort and careful use of their combined resources, the following vision can be realized over the next ten years:

> **Balochistan will experience rapid growth in the prosperity and wellbeing of families and businesses involved in its major cropping value chains.**

To achieve this vision, six inter-related strategic outcomes must be achieved, as outlined in the diagram.

OUTCOME 1: ON-FARM WATER PRODUCTIVITY

All farming households are supported to innovatively reduce water wastage and improve on-farm water productivity.

Outcome 1 aims to improve farmers' appreciation of the critical need for water discipline, by improving on-farm water management and combating on-farm water wastage. The policy seeks to change the attitudes and behaviours of both individual farmers and the wider communities. Farmers, communities, and Government must all accept that they have core responsibilities, and that better water stewardship and water management practices are necessary at all levels if the looming water crisis is to be averted. As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

- Significantly reduce the incidence of uncontrolled flood irrigation practices.
- Regulate ground-water extraction.
- Enhance On-farm Water Management and water budgeting.
- Invest in improved water policy and water productivity research.
- Fundamentally change attitudes and behaviours around water conservation.

OUTCOME 2: PRODUCTION INNOVATION

Commercial farming households and businesses are helped to innovatively and collaboratively improve their crop productivity, product quality and consistency in line with market demands.

Currently, the Government of Balochistan's agricultural research and extension services, information products, and communication tools are well behind those of other provinces of Pakistan in terms of their efficiency and effectiveness. Research and extension are limited, information is poorly formatted for the average user, and the use of modern Information and Communication Technologies (ICT) and electronic tools is lagging. The Policy will address these concerns by:

- Increasing the efficient delivery of extension services through farmer groups.
- Linking applied research and development to the specific needs of farmer groups.
- Linking Private Sector input and service suppliers to these groups.
- Making agricultural information more relevant and accessible.

OUTCOME 3: MARKET INNOVATION FOR HIGH-VALUE CROPS

Balochistan's farming families and businesses involved in high value crops innovate and collaborate to better tap sustainable market opportunity (handling, storage, transport, and processing).

The Balochistan Agriculture Policy 2021-2030 recognises the growth potential that high-value crops such as fruits, nuts, vegetables, and condiments offer for Balochistan and the significant comparative advantage that the Province has for temperate crop production. The Policy also appreciates that high-value crops generate much higher returns for land and water inputs than many field crops. As such this outcome of the policy focuses on significantly growing the contribution that high value crops make to the Balochistan economy. The Balochistan Agriculture Policy 2021-2030 proposes the following interventions:

- Improving product aggregation and quality of high-value crops.
- Improving packing, storage, and post-harvest handling of high-value crops.
- Enhanced Market Information Systems.
- Increased value-addition of high value crops.

OUTCOME 4: SUBSISTENCE FOOD AND NUTRITION SECURITY

Subsistence farming households increase their food security and nutrition through higher production and income.

All of the strategic objectives of the Balochistan Agriculture Policy 2021-2030 will have some impact on the Province's food and nutrition security. However, interventions that target issues related to water (Outcome 1), production (Outcome 2), and marketing (Outcome 3) are insufficient in themselves to fully address the critical food and nutrition insecurity being faced by the Province's subsistence farming households. As such, the Government and its local partners will implement the following activities that have been specifically targeted to the needs of the Province's poor subsistence farmers.

- Emphasis given to Nutrition Sensitive Food and Agriculture Systems.
- Promotion of Kitchen Gardens.
- Behaviour change communication on dietary diversity.

OUTCOME 5: QUALITY AGRI-BUSINESS SERVICES

Local agri-businesses are informed, motivated and supported to improve the access and affordability of key agricultural inputs, services and credit.

The growth of an agriculture sector requires farming families and farming businesses to be able to access affordable inputs, services, and credit. These are, however, currently limited in Balochistan, and even when they are available are all too often concentrated around the major population centres. One of the main drivers of change in this area will be the growth of the sector's potential, which in turn will boost investment, demand, and affordability. In consequence, Outcome 5 of this Policy focuses on increasing agri-business services through:

- Public/Private Partnerships to improve remote input and service delivery.
- Improved regulation and establishment of "Balochistan Fresh".

Improved financial services.

OUTCOME 6: ENABLING ENVIRONMENT AND REFORM OF DEPARTMENT OF AGRICULTURE AND COOPERATIVES

Provincial government agricultural agencies dramatically review and reform their response to enabling environment and climate risks (e.g. improved sector governance, service delivery and collaboration).

A key role for the Government of Balochistan is to establish an enabling environment for the crop sector, the two priority elements of which are:

- Legislative and regulatory reform.
- Reformed roles and functions for the DAC.

The DAC will actively disseminate the Balochistan Agriculture Policy 2021-2030 to all stakeholders, organize a donor conference, and approach selected donors with customized proposals to support specific parts of the Policy.

Once the Policy is confirmed, the DAC will work with all partners to specify the responsibilities and timeframes to deliver its outcomes. These will be detailed through a rolling five-year strategy and intervention plan.

In conclusion, the focus of the Balochistan Agriculture Policy 2021-2030 is on male and female farmers, their families, livelihoods, and emerging agri-businesses. The proposed agriculture sector initiatives will not only contribute to economic growth in Balochistan, but also improve the food security and nutritional status of the population.

The Balochistan Agriculture Policy 2021-2030 is deemed to be both feasible and achievable, provided increased resources are mobilized by both the Government of Balochistan and its development partners. Conservative estimates show that the escalation of these and other interventions could double the value of agricultural production in Balochistan over the next 10 years.

1. Introduction

The Balochistan Agriculture Policy 2021-2030 covers all plant-based primary production in Balochistan including the value chains associated with these products for both subsistence and commercial purposes. The policy not only encompasses men and women farmers, but also actors from across the wide range of public sector agencies, businesses, and community-based organisations that provide essential goods and services to the Province's agriculture sector[1].

While plant-based agriculture is clearly an important sector in Balochistan, it is important to understand that most rural households are not solely dependent on crops for their livelihoods, but also have other resources for their sustenance and income including:

- Other farm-based enterprises (e.g. livestock, fisheries, forestry); and/or
- Intermittent off-farm income (e.g. agricultural or industrial labour) and remittances.

The Balochistan Agriculture Policy 2021-2030 appreciates that mixed livelihoods are the norm for most of the Province's rural households. As such the Policy is a 'sister' document to the Balochistan Livestock Policy and Strategy 2020-2030 which was released in 2019. The Policies need to be considered together to address the needs of Balochistan farmers.

1.1 Development of Balochistan Agriculture Policy 2021-2030

The Balochistan Agriculture Policy 2021-2030 is based on a series of comprehensive, 'bottom-up' consultations over the last five years.

The "Farmers First" Conference on agriculture development in Balochistan was conducted on 6-7 August 2015 in Quetta, as part of the 'Balochistan Year of Agriculture 2015/16'. About 130 farmers

[1] Including policy, standards, research, information, advocacy, mentoring, inputs, finance, transport, packaging, processing, marketing and promotion.

from across Balochistan's six major agro-ecological zones participated, and were joined by the Chief Minister Balochistan, the Federal Minister for Food Security and Research, the Provincial Minister for Agriculture, the Food and Agriculture Organization (FAO) Country Representative in Pakistan, the Chairman of the Pakistan Agriculture Research Council (PARC), along with Provincial Secretaries and Director Generals.

A value chain approach ('from farm to fork') helped farmer participants identify high priority issues across the production, post-harvest, and marketing phases of the supply chains. Farmers identified specific constraints and opportunities as well as solutions aimed at securing food security and sustainable agricultural production.

Following the conference[2], the Government of Balochistan Department of Agriculture and Cooperatives (DAC), together with the FAO, conducted Focus Group Discussions with farmers across 30 districts, under the leadership of the Secretary of Agriculture.

Subsequently, in 2017 and 2018, case studies were undertaken by the DAC and FAO of important opportunities and issues in the horticultural sector including seed, water, and selected commodities, as well as a review of investments in the agricultural sector by the Provincial and Federal Public Sector Development Programs (PSDP).

Then in 2019, at the request of the Chief Minister, a team of agricultural and policy experts was appointed by the DAC and FAO to compile and analyse Balochistan's agricultural sector acts and regulations; as well as undertaking a review of agricultural policies from other Provinces.

Finally, a strategy workshop was organized in October 2019 in Quetta, including public and private stakeholders from the entire agricultural sector. The culmination of this comprehensive consultation process and the final workshop are presented in the Balochistan Agricultural Policy covering the years from 2021 to 2030.

1.2 Alignment and Implementation of the Balochistan Agriculture Policy 2021-2030

The Balochistan Agriculture Policy 2021-2030 complements, and will contribute to:

- The vision of the Balochistan Comprehensive Growth and Development Plan 2020–2025 (BCGDP), which is still in draft form. The BCGDP aims to deliver balanced development and inclusive growth and has identified "Protecting Agriculture and Livestock" as one of its key growth pillars.
- The achievement of the agriculture opportunities being enabled through the China Pakistan Economic Corridor (CPEC) investment.
- The achievement of the Sustainable Development Goals (SDGs) of the United Nations.
- The realisation of the National Food Security Policy of the Ministry of National Food Security and Research (MNFSR).

The Balochistan Agriculture Policy 2021-2030 provides guidelines for annual and perennial crop production and value chain development in the Province, and for the coordination of the interventions of the various stakeholders - Provincial Government, national agencies, bilateral and multilateral donors, and the private sector (including farmer organizations). The Policy will also help the DAC to reform its vision and mission, and align its services with sector needs.

The DAC will actively disseminate the Balochistan Agriculture Policy 2021-2030 to all stakeholders, organize a donor conference, and approach selected donors with customized proposals to support specific parts of the Policy.

Once the Policy is confirmed, the responsibilities and timeframes to deliver its outcomes will be further detailed through a rolling five-year strategy and intervention plan. The mechanisms to achieve these outcomes will be designed with donors and other stakeholders, through participatory, bottom-up processes, rather than through top down "blanket" approaches.

[2] Late 2015 and early 2016

2. The Agriculture Sector in Balochistan

Geographically, Balochistan is a huge Province and Pakistan's largest[3]. It incorporates six distinct agro-ecological zones (Saeed, 2006)[4], ranging from the highland temperate Iranian Plateau in the north to the subtropical coastal lands along the Arabian Sea in the south. While each of these six zones has the capacity for niche production of crops (see Figure 1) (Shahid, et al., 2007), the most important production areas are the highlands between 1200 and 2000 metres, the fertile plains around Nasirabad and Jafarabad, and the coastal lowlands (particularly Lasbella).

Because of the range of its agro-ecological zones, Balochistan produces over thirty different important crops, from peaches to papaya, and cumin to coconuts.

Figure 1: Agro-ecological Zones of Balochistan (Horticulture in Balochistan: Challenges and prospects, 2016)

[3] The province covers 34.72 million hectares, accounting for 44 per cent of Pakistan's landmass.
[4] Saeed, M. 2006. Promising Crops and Water Efficient Cropping Pattern for Irrigated Farming System of Balochistan. Consultancy Report Number 6. {(78-Technical Assistance 4560(Pk)}. Project for Supporting Implementation of IWRM Policy in Balochistan. Government of Balochistan, Asian Development Bank and Royal Government of Netherland.

Table 1: Balochistan's agro-ecological zones and the crops these produce (colour coding refers to the map in Figure 1).

Zone Name	Districts	Elevation	Crops
Highlands-I	Ziarat and Kalat	> 2000m above mean sea level	Wheat, cumin, barley, potato, onion, deciduous fruit trees (apple, plums, cherry, peach, apricot, etc); grapes, forages
Highlands-II	Quetta, Killa Abdullah, Musa Khel, Barkhan, Killa Saifullah, Pishin, Loralai, Zhob and Mastung	1200–2000m above mean sea level.	Pulses, sorghum, wheat, barley, cotton, sunflower, potato, onion, tomato, melons, fruit trees (apple, plums, cherry, peach, apricot, almonds, pomegranate, pistachio, fig, olive, etc.), grapes, forages
Sub-Highlands	Khuzdar and Kohlu	900–1200m above mean sea level	Sorghum, pulses, wheat, barley, sunflower, onion, fruit trees (figs, etc.), melons, forages
Deserts	Chagai, Nushki, Panjgur, Awaran and Kharan	700–900m above mean sea level	Dates, onion, grapes, pomegranate
Plains	Jhal Magsi, Nasirabad, Jafarabad, Bolan, Sibi and Dera Bugti	100–400m above the mean sea level.	Pulses, wheat, rice, rapeseed, cotton, sunflower, potato, onion, tomato, dates, fruit trees (citrus, ber, fig falsa etc.), vegetables, forages
Coastal Zone	Gwadar, Kech, and Lasbella	Low altitude - mild to warm in winter and very hot in summer	Pulses, sorghum, wheat, rapeseed, cotton, onion, dates, fruit trees (coconut, fig guava, mango, papaya etc.), banana, forages

As with most of South Asia, Balochistan has two main harvest seasons. The winter (rabi) season is the major harvest time for wheat and gram (chickpea). The summer (kharif) season is the main harvest time for tree fruits, vegetables[5], and rice.

Across both seasons irrigation is applied to over 96 percent of the productive area. However, a few important Kharif crops, including sorghum, maize, melons, and pulses, are also produced as rainfed crops where this is feasible.

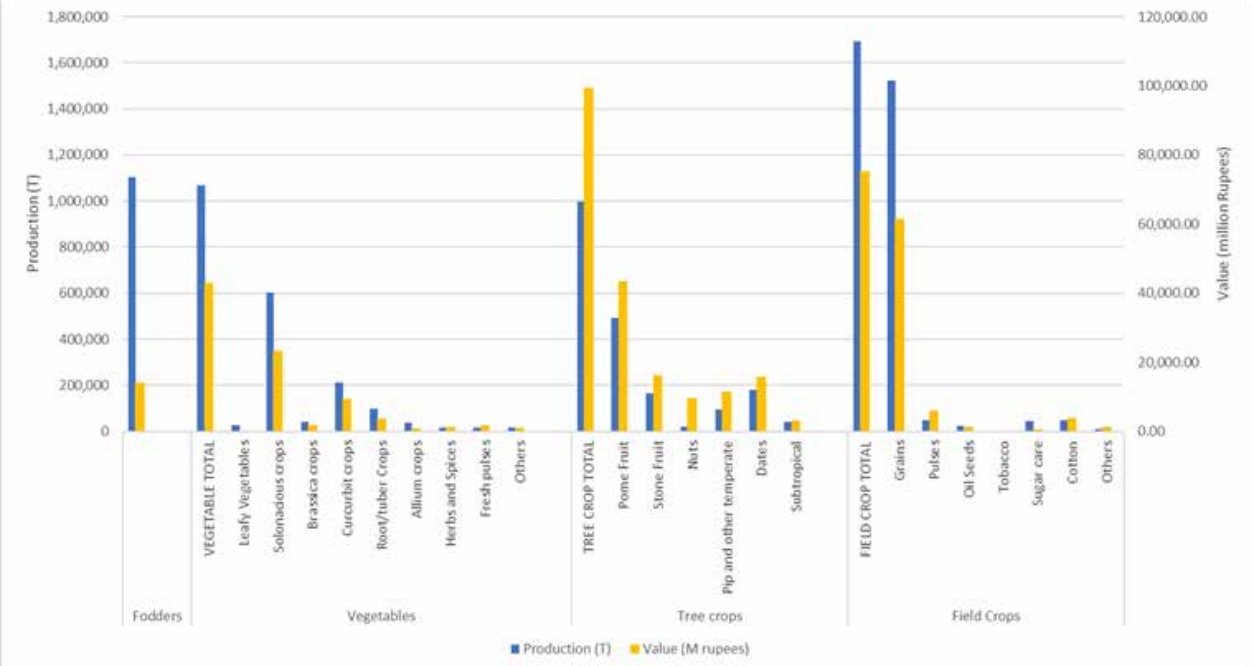
Crop	Rabi Season				Kharif Season			
	Rabi Area 2017-18 (Hectares)		Rabi production 2017-18 (Metric tons)		Kharif area 2017-18 (Hectares)		Kharif production 2017-18 (Metric Tons)	
	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed
Grains (wheat and barley)	395,900	9,200	939,100	10,400				
Pulses (chickpea, peas, lentil)	50,100	0	39,600	0				
Vegetables (onions, potatoes, cucurbits, solanaceous crops, etc)	17,200	0	274,500	0				
Oil seeds (rape, canola, sunflower)	17,100	600	12,900	300				
Fodder	17,100	0	565,500	0				
Spice (cumin)	4,800	0	2,200	0				

[5] Including

Crop	Rabi Season				Kharif Season			
	Rabi Area 2017-18 (Hectares)		Rabi production 2017-18 (Metric tons)		Kharif area 2017-18 (Hectares)		Kharif production 2017-18 (Metric Tons)	
	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed
Tree crops (fruits and nuts)					996,000	0	203,200	0
Grains (rice, sorghum, maize, millet)					182,900	11,400	566,900	7,500
Vegetables (including potato, onions, and garlic)					54,900	0	833,400	0
Cotton					35,500	0	47,100	0
Fodder					15,600	1,800	511,200	26,800
Pulses (mung, moth, and guar)					10,600	5,300	8,900	2,900
Melons					8,000	600	95,500	5,000
Spices (chili, coriander)					5,900	0	7,300	0
Oil seeds (sesame, castor)					4,900	2,000	3,300	1,800
Tobacco					1,000	0	1,400	0
Sugarcane					900	0	43,400	0
TOTAL	502,200	9,800	1,833,800	10,700	1,316,200	21,100	2,321,600	44,000

Grains and pulses are central to subsistence livelihoods in Balochistan and make up the largest cropped area (around 665,400 ha) (Table 2), with much of this production being consumed in the home. Cash cropping of high value fruit, vegetables and spice crops on the other hand occurs on less than half of this area (about 294,600 ha) (Table 2). Yet in terms of value of production, these high value crops far exceed other crop sectors, being valued at 153 billion rupees in 2018-19 (Figure 2).

Figure 2: Balochistan crop production 2018-19 (MNFSR, 2020)



Balochistan is in fact rightly known as the fruit bowl of Pakistan, producing as it does most of Pakistan's temperate fruit and nut crops, including almonds, apples, apricots, cherries, grapes, pistachios, and pomegranates, and over a third of the country's peaches, plums and dates (Table 3). In addition, Lasbela, in the south, is the major source of the country's coconuts and papaya. The Province also supplies a significant proportion of the national production of vegetables, including onions, tomato, beans, carrot, and spinach.

Agriculture contributes around one quarter of the provincial GDP, employs more than 40 percent of the labour force, and contributes to the livelihoods of more than half of the population. It therefore forms the backbone of the provincial economy. Within the agricultural sector, crops contribute about three-fifths of Balochistan's agricultural value-added. Furthermore, nearly one in two rural households is headed by a crop farmer or an agricultural labourer. Crop production is thus crucial to raising rural incomes and reducing poverty. When the associated agricultural goods and service sectors are also factored in, the food crop sector (and horticulture in particular) is not only an increasingly important component of the provincial economy, but is currently contributing more to the provincial GDP than natural gas, coal, and mining.

Table 3: Proportion of Pakistan's fruit production sourced from Balochistan over the five years (2013/14 to 2017/18) ((MNFSR, 2020)

FRUIT	Balochistan % of Pakistan production (2014-15 to 2018-19)
Cherry	100%
Pistachio	100%
Grapes	99%
Almond	95%
Apricot	93%
Coconut	88%
Apple	85%
Pomegranate	72%
Papaya	58%
Plum	51%
Chikoo	45%
Dates	39%
Peach	26%
Melons	19%
Fig	18%

Across Balochistan, farm sizes tend to be marginally larger than in other provinces of Pakistan, and land ownership (as opposed to tenancy) is higher. Nevertheless, a significant spectrum of livelihoods is present, from those of farmers with little or no land who are dependent on subsistence production intermittently supplemented by off-farm income, to those with more land/ assets producing crops or livestock on a fully commercial scale.

This complex matrix of farm size, agro-climatic zones, and varying levels of commercialisation means that the Balochistan Agriculture Policy 2021-2030 needs to avoid focusing on just one class of stakeholder, or on one value chain to the exclusion of others. The focus is instead be on addressing priority issues that impinge on the five main cropping systems (Table 4).

Table 4: Balochistan's five target cropping systems

Cropping System	Description
Subsistence farming	Subsistence farmers often own smaller areas of land (less than two hectares) and grow a range of crops primarily for household consumption. Inevitably, staples such as wheat predominate, along with fodder for livestock. Kitchen garden vegetables are also grown, although less than is desirable for optimal nutritional outcomes. This is the cluster where food and nutrition security are major concerns, and where the stunting and wasting of children is highest.

Cropping System	Description
Commercial field crop farming (wheat, rice, maize, pulses and oil seeds)	Field crops (grains, pulses and oil seeds) are widely grown across the Province, and are often associated with other commercial endeavours (horticulture or livestock). Margins are low, and production practices are very traditional. Many of these crops depend on the larger scale canal irrigation systems for their water. There is limited scope for significant expansion.
Cropping System	**Description**
Commercial arid-zone date or grape farming	The arid zone areas are famous for their dates and, increasingly, grapes. These farms are generally dependent on groundwater (aquifers) for irrigation. Traditional practices prevail, and more innovative approaches to water management, improved productivity and marketing would improve returns.

Cropping System	Description
Commercial tree fruit and nut farming	Commercial orchards are important throughout the Province, from the temperate zone in the north to the sub-tropical zone in the south. These farms are larger and generate significant ongoing and seasonal employment. Few farmers are, however, innovative, there again being a tendency to depend on traditional farming practices and varieties. Once again, innovative approaches to water management, improved productivity and marketing would improve returns
Commercial vegetable farming	Intensive vegetable production is rapidly increasing, with a range of field and protected production systems now in place. However, limited access to quality inputs (seeds, fertilizers, and chemicals) is a major limitation. Also concerning is the poor use of on-farm chemicals resulting in residues on produce, and detrimental impacts on the environment.

3. 3 Current Challenges and Constraints

It is essential for the Balochistan Agriculture Policy 2021-2030 to establish a framework for the sector's future growth that addresses current and looming concerns, and that can capture opportunities as these arise.

The upscaling and competitiveness of Balochistan's crop sector faces many challenges and opportunities such as:

3.1 Food and nutrition insecurity

Even though Balochistan has significant cropping potential the prevalence of food and nutrition insecurity is a huge problem that is resulting in ongoing intergenerational morbidity and underperformance. The prevalence of stunting among young children in Balochistan was 46.6% in 2018 - 6.6% higher than the national average (40.2%). The prevalence of wasting among young children in Balochistan is also increasing, reaching 18.9% in 2018, which is not only higher than the national average (17.7%), but is currently considered one of the highest levels in the world (FAO, MNFS&R, WFP, WHO, UNICEF, 2019)[6].

The Government of Balochistan is acutely aware of these problems, and has done much to integrate its services to try and address the issues of stunting and wasting. Yet with food and nutrition insecurity still on the increase, it is pleasing to see Government and donors collaborating on programs that target the many root causes, including problems related to agricultural production, food diversity, consumption habits, health, water, sanitation,

[6] Wasting is more than twice the global average for Least Developed Countries (8.5%), and even higher when compared to the global average for all countries (7.3%).

and education. Several programs are employing nutrition sensitive food and agriculture approaches, which have shown promising preliminary impacts. The introduction of kitchen gardens by FAO and other agencies has improved food diversity and thereby nutrition, at the same time as providing women with new, if modest, income streams. Nevertheless, much more needs to be done if the supply of nutritious foods to all the people of Balochistan is to be increased, stabilised, and made resilient in the face of future uncertainties.

The food and nutrition insecurity that many households in Balochistan regularly face is being currently aggravated by the three interrelated drivers of climate variability, conflict, and economic downturn (FAO, IFAD, UNICEF, WFP, and WHO, 2019). The worsening drought of 2019 has left 48% of the rural population (some 1.79 million people) across fourteen districts facing an imminent food crisis or worse (FAO, 2019). While 2020 has brought welcome snowfall and rain, the brunt of this food insecurity, and the resulting poor nutrition, is being felt by subsistence households. Furthermore the significant damage caused by plague locusts has compromised yields.

3.2 Water scarcity

Given that the majority of cropping systems are heavily dependent on irrigation, the biggest constraint on production that Balochistan is currently facing is scarcity of water. Fluctuations in cropping production and area over the past three decades is strongly correlated with the availability of water. The value of production, for instance, grew sharply between the early and the mid-1990s, only for the production volumes to decline by about 7% per year between 1998/99 and 2002/03 due to a severe drought. Furthermore, over 45% of the Province's arable lands are currently idle, primarily due to the ongoing and deepening water shortages that many districts are facing.

Water scarcity is, however, not just a problem in itself. Subsidiary problems include increasing competition for available sources; poor governance of the resource; and significant migration, primarily to the urban centres.

Balochistan's water economy is highly segmented, with eighteen catchments supplying water[7], either through seasonally intermittent stream flows, or as underground water. Groundwater reserves are very heavily exploited across the Province, in almost all cases extraction rates being well above recharge rates. This overuse of a limited/ finite resource is being exacerbated by the ongoing government electricity subsidies for tube wells; by the lack of any effective regulations; and by groundwater wastage. Stream flow water on the other hand is being underutilised. A shift in priorities is therefore needed, with significant increases in both storage and spate irrigation presenting the best opportunity.

The Government of Balochistan, through its own resources and the assistance of donors, is making some efforts to address the critical issues, with a particular focus on the recharging of the significantly depleted groundwater in three key river basins (the Pishin Lora, the Nari, and part of the Zhob)[8]. Water is, however, such a critical issue for Balochistan, both now and even more so into the future, that the Province needs a much stronger and more coordinated response to water usage that carefully balances all needs: urban, industrial, cropping, livestock, and environmental (including aquifer recharge). The Government needs to craft policies that protect the groundwater, promote good stewardship, and support investments that expand storage from current stream flows. This, however, is a huge task that is beyond the scope of the Balochistan Agriculture Policy 2021-2030 alone. These and other issues can only be fully addressed if the Government develops a comprehensive Balochistan Water Policy.

3.3 Poor value chain efficiency and market competitiveness

The Province has a significant seasonal competitive advantage in the high value production of fruits, nuts, and vegetables. Many of the varieties being

[7] World Bank Report No: ACS2258 v2 Islamic Republic of Pakistan, Balochistan Needs Assessment, Development Issues and Prospects, Part II - Water and Agriculture
[8] http://www.pshsciences.org/wp-content/uploads/2018/05/ICHS2016Proceedings_32.pdf

grown, however, are older and less productive, and more prone to disease and/ or spoilage. The production, post-harvest handling and marketing techniques are also often basic, time consuming, and compromising of product quality. In consequence, despite Balochistan being a major national supplier of fruit and vegetables, it is finding it increasingly difficult to compete with imported products (both from the wider Asian region and globally), which are often of equal or better quality, and lower in price.

The reasons for this relate, however, as much to value chain efficiency as they do to quality. Balochistan's farms are generally small, production volumes are modest, and farmers act independently of each other when dealing with traders. The result is significant variability in the volume , quality and scheduling of the product entering each market chain. Inconsistent and variable supply also makes improved cold chain or bulk storage innovations uneconomic, thus further reducing product quality and shelf life, at the same time as increasing the length and steps involved in the market chains. The longer chains in turn increase the handling costs, the increased handling costs increase the marketing costs, and yet because consumers are only willing to pay modest prices for the often-mixed quality being delivered, the net result is that the returns to farmers tend to be very low. Hence, if Balochistan farmers are to be competitive, the entirety of the value chains must be reformed through a focus on both on-farm and market-based innovations.

Initiatives are currently underway that are doing just this - improving on-farm performance and market access. Farmer Marketing Collectives (FMCs) and Mutual Marketing Organisations (MMOs) are resulting in improvements to the volume, market diversification, information flow (especially market prices), consistency and quality of products, the result of which is reduced market chain costs

and thus greater returns. In addition, on-farm productivity and quality are being improved through the introduction of improved varieties and other production innovations.

A further element that constrains value chain efficiency is the limited avenues for value addition that exist in Balochistan at present. constraint

3.4 Limited agricultural inputs and services

As Balochistan's agriculture sector expands, farmers and other value-chain actors are finding it increasingly difficult to source services and inputs of reliable quality. The supply and delivery of inputs and services are, in fact, challenging in every aspect, with poor service availability, access or quality seen in:

- The machinery available for land preparation, cultivation, product transport and handling.
- The equipment available for irrigation (including high efficiency systems e.g. drip irrigation), crop health, pruning, harvesting, grading and packing.
- The contractors available for cultivation, pruning, and harvesting.
- The available germplasm e.g. seeds, vegetable seedlings, and tree saplings.
- The available agrichemicals e.g. pesticides and fertilisers.
- The technical advice and farm consulting services on offer e.g. for irrigation, pest management, nutrient management.
- The credit and insurance on offer to the various actors.

In the long term, the private sector should be the leader in all of these areas. However, because of the varied and considerable risks they are facing, private sector businesses are currently focused on the major population centres and/or on a limited range of traditionally profitable products and relationships. Few businesses employ field agents, and their reach into most of the major production areas is poor.

The Government of Balochistan has therefore been expected, and even pressured, to support basic input supply to remote and poor farmers, often at subsidised prices. This is not a task that the Government has been well equipped or resourced to undertake, inevitably resulting in intermittent and unreliable supply. Furthermore, Government subsidies are crowding out any private sector operators that might otherwise have taken up the slack, resulting in a vicious cycle.

Furthermore, many quality inputs are expensive, which puts them beyond the resources of poor farmers, for whom the supply of sub-standard inputs

is therefore the norm (equipment, seeds, agri-chemicals, and fertilisers). To add to the burden, the Government's low capacity to effectively regulate the sector has led to ongoing exploitation, poor results, and increasing concerns regarding on-farm chemical safety and product residues. There is, nevertheless, a current opportunity for Balochistan to establish a profile as a clean and green supplier of agricultural products. This opportunity is dependant, however, on the Government regulating the sale of agrichemicals, and particularly their off-label use.

3.5 Critical cross cutting issues

3.5.1 Agriculture and Gender

Women in Balochistan play an important role in crop production at both the subsistence and semi-commercial levels. Most of the day-to-day agronomic, harvesting and packing activities within the horticulture sector in particular, are conducted by women. Yet despite the success of most crop enterprises being heavily dependent on the effective involvement of women, their efforts are often underappreciated, and their contribution is often overlooked or undervalued. Furthermore, women often have little influence within households over how the crops they have helped to produce are disposed of/ sold.

Yet it is increasingly appreciated that improving women's access to resources and income, such as from cropping, increases the enthusiasm of their engagement in tandem with the likelihood of an enterprise's success. In addition, any income that is earned/ controlled by women is more likely to be used to preferentially enhance the nutritional and educational wellbeing of a household's children.

Consequently, within the Balochistan Agriculture Policy 2021-2030, all stakeholders have agreed that greater emphasis must be placed on engaging women across the entire plant-based value chains. This includes advocating for their ability to access inputs and other resources, technologies and innovations, and markets. It also includes advocating for their preferential management of at least a share of the generated income.

3.5.2 Agriculture and Adaptation to Climate Change

Unexpected weather conditions, prolonged droughts, floods, and scarcity of groundwater significantly affect the agricultural production systems in the province.

The ecological diversity of Balochistan provides some resilience to climate change, but the lack of water, gradual increases in temperature, and likely increases in the frequency and severity of drought are of huge concern. Increased temperatures, reduced snowfall, coupled with more intensive rainfall events, will increase the vulnerability of agriculture.

The BCGDP outlines four major impacts of climate change on agriculture:

a) Shift in the areas where crops can be commercially grown due to increasing temperature and changing precipitation patterns.

b) Rise in crop water requirements. This will put further pressure on scarce water resources.

c) Reduced productivity due to more frequent, harsher, and longer drought events.

d) Increased pest and disease pressure (e.g. locusts).

Over the past few decades, economic downturn, natural disasters, insecurity, and instability have endangered food security in certain parts of the province. In recent years, recurring droughts, followed by devastating floods have added to the destruction of irrigation infrastructure, decreased crop yields, and led to food shortages. In addition, reduced nutritional quality is firmly linked with economic adversity and low literacy which is reflected in low productivity, food insecurity, and insufficient access to health services.

Various stakeholders, including farmers, recognize the damages and threats posed by climate change on agriculture in the region and have started adopting different Climate Smart Agriculture practices e.g. tunnel farming, and the change to high value low delta crops. "The concept of climate-smart agriculture (CSA) reflects an ambition to improve the integration of agriculture development and climate responsiveness. It aims to achieve food security and broader development goals

under a changing climate and increasing food demand". CSA interventions enhance sustainability, crop productivity and resilience, and minimize greenhouse gases. CSA practices and technologies provide the opportunity to mitigate the impacts of climate change. Increasingly many farmers have been incorporating the latest CSA methodologies with their traditional techniques. For example, some farmers in the region:

- pave switched over to crops with reduced chilling requirements.
- Now use more weather tolerant varieties; or
- Grow shorter season crops such as pulses.

However, they are still not fully equipped to adapt to the new climate patterns and to ensure that their crop yields, productivity, and food security are not compromised.

The Balochistan Agriculture Policy adopts CSA as one of its cross-cutting themes and promotes interventions that mitigate the impacts of climate change, and thus enhance the resilience of agriculture farmers and also the society at large.

4 Current Opportunities

The most significant long-term opportunity for the crop sector in Balochistan revolves around the China Pakistan Economic Corridor (CPEC) and its associated transport, communication, and power investments. Amongst a range of initiatives, CPEC aims to open the corridor between the Chinese city of Kashgar, near Pakistan's northern border, and Balochistan's Gwadar Port on the Arabian Sea. The strategic importance of the deep-water Gwadar Port is increasingly recognised for its potential for agricultural export.

This opportunity could stimulate the much-needed investment that Balochistan needs in its agricultural value chains (e.g. aggregation, cool storage, transport) and the associates value-addition to products ranging from better grading and packing to the processing of agricultural commodities for domestic and export sale.

Partly in response to CPEC, and partly in response to the unrealised scope for value-added investment in the province, the Chief Minister of Balochistan has championed the Public Private Partnership investment initiative[9]. Under this, the Government is ready to invest up to 50% of the cost needed for private sector businesses to establish value-added infrastructure. Significant opportunity exists for the private sector to capitalise on this investment.

[9] Public Private Partnership Amendment Bill 2020 and the Balochistan Public Private Partnership Policy 2020.

5 Vision, Outcomes and Objectives of the Balochistan Agriculture Policy 2021-2030

5.1 Vision

The Policy envisages that the value of agricultural production will double over the next decade up until 2030, equivalent to an increase of 7% per annum over the duration of the polity and strategy period. This is in line with the expectations of the draft Balochistan Comprehensive Growth and Development Plan 2020-2025.

This vision will be achieved through a focus on six interrelated outcomes (Figure 3).

5.2 Outcomes

As outlined in Figure 3, six strategic outcomes have been identified. These outcomes, along with their associated objectives, strategically address the major constraints outlined in Section 3. This discussion should be read in conjunction with Annex 2, which details

Figure 3: Vision and outcomes (6) of the Balochistan Agriculture Policy 20212020-2030

the Objectives and Indicators of Success for each of these outcomes.

5.2.1 Outcome 1: On-farm water productivity

All farming households are supported to innovatively reduce water wastage and improve on-farm water productivity.

The Balochistan Agriculture Policy 2021-2030 is only capable of addressing the issues of water use, management, and wastage at the farm level. Nevertheless, to do even this is a vital contribution to more responsible water productivity. The lack of individual, community and government stewardship of a scarce and all-important resource is the critical issue facing agriculture in Balochistan. In fact, if farmers act responsibly and collaboratively within their communities there are huge gains to be made. Currently, farmers manage their water use in isolation, with only a few examples of effective community-wide collaboration. In general, most farmers exploit the available water, knowing as they do that the current regulations set a low bar, are not enforced, and that if they fail to immediately use the available water then it may not be around for future use.

Outcome 1 aims to improve farmers' appreciation of the critical need for water discipline, by improving on-farm water management and combating on-farm water wastage. The policy seeks to change the attitudes and behaviours of both individual farmers and the wider communities. Without a change in attitudes to water stewardship, then the promotion of water-saving technologies alone will be ineffective. This policy therefore aims to change attitudes in tandem with improving water management and introducing water-saving technologies. Farmers, communities, and Government must all accept that they have core responsibilities, and that better water stewardship and water management practices are necessary at all levels if the looming crisis is to be averted. In particular, the Government of Balochistan needs to demonstrate leadership, and be an exemplar of coherent and consistent management. It is also important for Government and donors to not only support these initiatives by actively promoting improved technologies, but to celebrate good practice.

As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

5.2.1.1 Significantly reduce the incidence of uncontrolled flood irrigation practices

Flood irrigation is not only hugely wasteful, but is bad practice that makes farm management more difficult by reducing trafficability, by increasing soil compaction, and by accelerating the spread of weeds and diseases. While the best improved practice is a shift to high efficiency drip or micro-sprinkler irrigation, this is not only expensive, but requires skilled management if it is to be made sustainable. As such, it is best suited to high value fruit trees and intensive vegetable production (e.g. using plastic mulch or greenhouse systems). For more extensive crops (grains, pulses, oil seed, onions and dates) the use of furrow irrigation and raised bed technologies needs to be promoted

along with the basic necessity for land levelling. The provision of DAC engineering services for land-levelling and spate water storage should be conditional on farmers upscaling their water management practices.

5.2.1.2 Regulate ground-water extraction

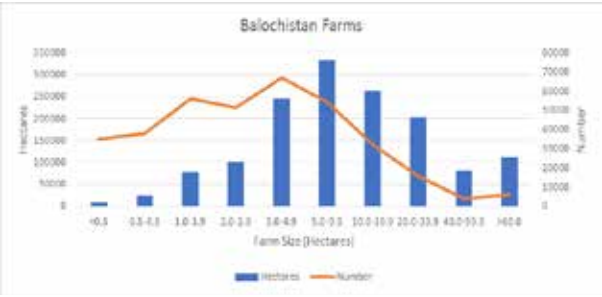
Government has been providing an electricity subsidy for tube wells which has seen their proliferation across the Province. In recent years there has also been a significant increase in solar powered tube-wells given the unreliability of grid power, and the reducing costs of solar technology. Yet the unregulated proliferation of these tube wells has led to exploitation of the groundwater

resource, compounded by the fact that the water that is extracted, is all too often wasted by farmers. There is a worrying tendency for solar tube wells to be left running continuously whether needed or not. As a first step, the Government should register all tube wells. DAC will increase its research efforts to better understand groundwater hydrology, identify threshold levels for key aquifers and monitor these regularly. Farmers will also be supported to responsibly manage tube wells by regulating their use (e.g. by incorporating storage tanks, or installing automatic cut-off switches into their solar-powered systems).

5.2.1.3 Enhance on-farm water management and budgeting

Currently most farmers do not monitor the water requirements of their crops. Water is often applied when available, and all of it at once. This is not only hugely wasteful, but leads to waterlogging and disease. The introduction of simple water budgeting technologies and decision-support tools (e.g. crop water requirement calendars and soil tensiometers for larger farms), will help farmers to understand and better monitor soil moisture levels, adjust water rates to crop phases, and introduce water budgeting, thereby helping them to apply irrigation at appropriate times and in appropriate amounts. While all farms need to improve water management the focus of this Policy over the next ten years will be on larger farms (those greater than 5ha). These larger farms account for about one third (31%) of the farms in the Province but manage over two thirds (68%) of the farmed (and irrigated) area (Figure 4). These larger farmers also have more resources and skills to invest in improved management of their water resources.

Figure 4: Farm size and number in Balochistan



5.2.1.4 Improve water policy and water productivity research

The DAC needs to support change in the medium to long term by:

1. Reviewing its land use policy and particularly approval processes for land development to ensure that these align with sustainable water management.
2. Significantly invest in increased understanding of groundwater hydrology and sustainable extraction thresholds.
3. Increase its research effort on crops and varieties with lower water use requirements.

5.2.1.5 Stimulate behaviour change

If farmers' attitudes and practices are to be changed, not only is appropriate regulation necessary, but so is the need for readily available information, local support, and positive incentives. The DAC extension team will work closely with producer groups (see also 4.2.2) to promote techniques that improve water productivity such as better irrigation technologies, better water management, irrigation scheduling, and crop/variety selection. The DAC must begin a significant behaviour change campaign that combines good information, the promotion of positive champions, and rewards for good practice. Tying any subsidies to improved practices is one initiative.

5.2.2 Outcome 2: Production innovation

Commercial farming households and businesses are helped to innovatively and collaboratively improve their crop productivity, product quality and consistency in line with market demands.

Currently, the Government of Balochistan's agricultural research and extension services, information products, and communication tools are well behind those of other provinces of Pakistan in terms of their efficiency and effectiveness. Research and extension are limited, information is poorly formatted for the average user, and the use of modern Information and Communication Technologies (ICT) and electronic tools is lagging.

As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

5.2.2.1 Increase the efficiency of extension services

The challenges that extension services are facing in Balochistan are significant, and the DAC therefore aims to improve its efficacy by focusing its extension activities onto groups of farmers (whether formal or informal), and stop using the inefficient and unaffordable one-on-one delivery systems. By targeting groups rather than individual farmers, the best use can be made of the available extension officers and field assistants (currently 1,300 plus), who can be allocated to facilitate, support, and improve the performance and aspirations of their allocated group(s). This will include facilitating trainings, on-farm and other demonstrations, and other services provided by government agencies. Many of these groups already exist, either as the result of past government and/ or development partner activity, or as a result of the aspirations of the communities themselves[10]. In addition, development partners will be encouraged to support existing groups wherever possible, and establish new groups as required in accordance with the guidelines of this Policy. Consideration should be given to the farmer groups meeting at least part of the operational and transport costs of their allocated extension officer/ field assistant. It is also important for DAC to establish good records that include: the name and registration details of each group, contact details of the group leaders, a list of men and/or women members, and their allocated extension officer. The electronic data of registered groups will help in communicating extension messages, and link groups with development or value chain partners.

The emphasis within the groups will be on self-help and advocacy that encourages local resource mobilization through cost-sharing mechanisms. The groups will drive their own agendas, and, with the help of their allocated extension officers, seek

additional support, advice, or market information from wherever this can be found.

5.2.2.2 Link applied research and development to need

In parallel, the DAC will run a responsive adaptive research and technology program that will centre on these groups. The emphasis will be on Climate Smart Agriculture to help position Balochistan farmers well to meet the increasing challenges of Climate Change and the increased frequency of adverse weather and pest problems (e.g. the locust build-up in 2020). The groups will make their needs known, and the DAC scientists, technologists and engineers will work with them, and their allocated extension officer, to undertake trials, testing, and farmer field schools, demonstrations or workshops that address their concerns. The focus of such applied and on-farm R&D might include demonstrating:

1. New varieties and crops particularly those that increase water productivity.
2. Improved irrigation management, land levelling and engineering.
3. Improved agronomic practices and technologies.
4. Enhanced mechanisation.
5. Pest control and integrated pest management.
6. Post-harvest handling and packaging.

5.2.2.3 Enhance private sector linkages

Private sector actors (such as agricultural and input supply businesses) will be encouraged to deliver their services through these groups, and to provide them with technical training and field support as required.

5.2.2.4 Develop more accessible Information Management Systems

The outcomes of this Agriculture Policy are

[10] Examples include Farmer Marketing Collectives (FMCs), Mutual Marketing Organizations (MMOs), and Farmer Producer Organizations (FPOs).

highly dependent on the DAC packaging and disseminating knowledge and information that is appropriate to each target group, thereby building the capacity of the member farmers, at the same time as empowering and capacitating the DAC extension officers/ field assistants, who will play such a vital role in linking knowledge and services with the farming communities.

The DAC will establish a central information and communication office that will work to collate and/ or package information products, both existing and new. Given the widespread availability and use of cellular networks, emphasis will be given to sharing media content in a timely fashion via mobile phone mechanisms, the groups being responsible for the dissemination of information to any members who are without mobile phones/ coverage. Audio visual and printed material (including posters) will be provided only to crop groups and their members (potentially at a minimal cost).

5.2.3 Outcome 3: Market system innovation for high-value crops

Balochistan's farming families and businesses involved in high value crops innovate and collaborate to better tap sustainable market opportunity (handling, storage, transport, and processing).

The Balochistan Agriculture Policy 2021-2030 recognises the growth potential that high-value crops such as fruits, nuts, vegetables, and condiments offer for Balochistan and the significant comparative advantage that the Province has for temperate crop production. The Policy also appreciates that high-value crops generate much higher returns for land and water inputs than many field crops. As such this outcome of the policy focuses on significantly growing the contribution that high value crops make to the Balochistan economy.

The national market will be the most important for Balochistan's high-value crop products in the short-term, although regional and international markets may become important given time. There is a need, however, for Balochistan farmers to upgrade both their production efficiency and their product quality to ensure that they can effectively compete against the increasing quantities of imported vegetables and pome, stone and pip fruits that are currently entering the national market. Farmer groups (including FMCs, MMOs and cooperatives) are already demonstrating the significant gains to be made by focusing on value chain efficiency, and on ensuring that products meet consumer expectations. For example, significant recent advances have been made in onion, date, and temperate fruit production. Yet sizeable growth in local, provincial, and national markets is possible for almost all high-value products, if improvements are made to the production efficiency and effectiveness of every step of a product's value chain from field to plate. The functioning of the national value chains will therefore be the focus of Government, donor, and agriculture sector actors. The Government must, however, avoid protectionist policies, and work instead to stimulate market innovation in concert with its partners.

As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

5.2.3.1 Improve product aggregation and quality

The Policy will support farmer marketing groups that have committed to consistent supply, product aggregation and improved quality along the value chain. Efficiency and competitiveness will only arise when farmers collaborate to deliver larger and more consistent volumes of quality fruit and vegetables to the value chains. Larger, more consistent volumes of uniform quality product will attract larger buyers to doing business directly with farmer groups, thus cutting out the current middlemen whose businesses focus on aggregation and re-sorting.

5.2.3.2 Improve packing, storage, and post-harvest handling

Many losses currently occur because of poor handling, packing, transport and storage techniques. For example, the limited availability of flat-bed trucks and bulk handling result in significant transport and handling damage. While many current techniques are 'traditional', they deliver a very mediocre product with a marginal shelf life. Farmer groups will therefore be supported by the DAC field assistants to work with wholesalers and transport firms to identify quality improvements for which consumers are willing to pay a premium. Work will then focus on packing, handling, transport, and storage

techniques that optimise returns. Once again, it is only where farmers work together to aggregate product of an agreed quality, that they will be able to invest in items such as improved packing and grading lines, cool storage, and transport.

5.2.3.3 Enhance Market Information Systems

An important supporting element will be the need for timely and quality market information and the DAC will work closely with provincial markets and national authorities to improve the platforms for market information and e-commerce.

5.2.3.4 Increase value-addition

Currently in Balochistan, there is little value addition through processing and preservation for high-value crops. Significant need exists for specific value chains to invest in freezing, drying, canning, juicing, or minimal preparation (e.g. fresh cuts) of fruit and vegetable products. Yet many of the products currently being grown offer significant potential for these sorts of value addition. Such processing would also help to address the problem of lower grade or poor-quality product entering the national market chains, and acting to both temper prices and confirm consumer perceptions of Balochistan as a supplier of 'bulk' rather than 'elite' product. Mechanisms associated with the China Pakistan Economic Corridor (CPEC) offer businesses the opportunity to consider significant provincial processing for both domestic and international markets.

5.2.4 Outcome 4: Subsistence food and nutrition security

Subsistence farming households increase their food security and nutrition through higher production and income.

All of the strategic objectives of the Balochistan Agriculture Policy 2021-2030 will have some impact on the Province's food and nutrition security. However, interventions that target issues related to water (Outcome 1), production (Outcome 2), and marketing (Outcome 3) are insufficient in themselves to fully address the critical food and nutrition insecurity being faced by the Province's subsistence farming households. As such, the Government and its local partners will implement the following activities that have been specifically targeted to the needs of the Province's poor subsistence farmers.

As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

5.2.4.1 Develop Nutrition Sensitive Food and Agriculture Systems

The Balochistan Agriculture Policy 2021-2030 will promote the mainstreaming of nutrient sensitive food and agriculture approaches across all provincial agricultural interventions. This is particularly important for interventions that target subsistence farmers. The same principles will apply, however, to interventions at all levels, including commercial operations. Nutrient sensitive approaches across all agricultural interventions will result in increases in the quantity, quality, diversity, availability, and affordability of nutrient rich, culturally appropriate foods in both households and local markets, and in this way will benefit the health and wellbeing of all of the people of Balochistan.

5.2.4.2 Promote Kitchen Gardens

The Balochistan Agriculture Policy 2021-2030 will promote and support the development of kitchen gardens in all poor communities at the village level. Kitchen gardens managed and run by women, have repeatedly been shown to improve the availability and diversity of nutrient rich foods. Furthermore, the training and support provided to women during the development of these gardens, not only betters the women's understanding of nutrition, production techniques, and how best to utilise these foods, but by increasing their knowledge and confidence, and by providing them with small amounts of supplemental income, these women are empowered. Moreover, many women feel encouraged to establish household gardens of their own. Over the course of the next ten years all poor rural villages will therefore be supported to establish communal kitchen gardens. Availability of

Kitchen garden quality seed packs will be enhanced through partnerships with localized private sector entrepreneurs and major seed companies.

5.2.4.3 Enhance behaviour change communication

The Province is already providing poor rural households with information packages that promote and integrate the nutrition needs of all household members of all ages with good agricultural, health, feeding, water and sanitation practices. The Province will work to widen the coverage and uptake of these packages, with a primary focus on the nutrition of women of reproductive age, and of girls and boys under five. Furthermore, the DAC will train their entire extension unit in the importance of these practices, who will in turn ensure that the communities are both understanding and engaging with these practices.

5.2.5 Outcome 5: Quality agri-business services

Local agri-businesses are informed, motivated and supported to improve the access and affordability of key agricultural inputs, services and credit.

The growth of an agriculture sector requires farming families and farming businesses to be able to access affordable inputs, services, and credit. These are, however, currently limited in Balochistan, and even when they are available are all too often concentrated around the major population centres. One of the main drivers of change in this area will be the growth of the sector's potential, which in turn will boost investment, demand, and affordability.

As such, the Balochistan Agriculture Policy 2021-2030 proposes to:

5.2.5.1 Support Public/Private Partnerships to improve remote input and service delivery

The Government and its donor partners are currently providing direct input subsidies to certain groups of farmers e.g. the provision of farm inputs, on-farm land levelling and earthworks. The use of hand-outs and subsidies should only occur:

1. In response to abject poverty, disasters, or other cases of extreme need; or
2. Where it leverages a clear step in the transition from current farmer dependence to their more sustainable long-term livelihoods.

Although some of these subsidies should continue, a study is needed of how to better target these benefits. It is clear that some extremely poor subsistence households are still losing out. It is also clear that the Government is disincentivising the private sector by establishing parallel input distribution streams.

The Government and its donor partners will not directly supply subsidised or free goods and services themselves. Instead, the Government and its donor partners will co-invest with businesses and social enterprises that have a long-term relationship with Balochistan's producers to establish innovative and sustainable approaches to inputs and service delivery. Consideration will be given to working collaboratively with the private sector to enhance and expand their regional reach by issuing poor farmers with redeemable vouchers that allows them to access discounted inputs from local suppliers (where this is available). This co-investment will reduce the risk that agri-businesses and enterprises face in expanding to meet the needs of remote producers for quality inputs and services.

In addition the Government will co-funded internships for new Agriculture graduates from Balochistan. This short-term internship would link new graduates to input companies on a 50:50 cost share basis between the company and the Government and would aim to increase input services in the Province while also providing work-entry experience for graduates.

5.2.5.2 Improve regulation and establishment of Balochistan Fresh

The DAC and other Government agencies will collaborate to improve the standards and regulations relating to the use of agri-chemicals and fertilisers by farmers and others involved in Balochistan's field crop and horticulture value chains. This will include a significant increase in the use of integrated pest management (IPM) practices aimed at effective pest control, while minimising the use of agri-chemicals. This will involve partnerships with farmer groups and major packing facilities to introduce new field and post-harvest practices and deliver training that improves understanding and compliance. DAC will also work with farmer and private sector interests to establish an industry certification scheme, "Balochistan Fresh". Balochistan Fresh would be a Government accreditation process for farmer groups and businesses who adhere to industry standards that ensure minimal residues in food, and also adhere to proper pesticide handling and disposal[11] protocols.

[11] Particularly for used pesticide containers.

5.2.5.3 Improve financial services

Currently, because banking operations in Balochistan face considerable risks, there are no finance or insurance products that are commercially available to the Province's farmers. Hence there is a strong push for the State Bank of Pakistan (SBP) to make such options available.

The following three streams of work are therefore proposed:

1. Development partners (and particularly NGOs) will be encouraged to work with formal or informal groups of farmers to develop community-run savings and loan schemes that can fund small-scale family farm investment. At least some of these schemes would target women's groups, including the funding of kitchen garden or greenhouse production. In some cases this would simply entail scaling up an existing local savings and loan scheme[12].
2. The Balochistan Government will work with commercial banks, other credit providers, and the State Bank of Pakistan as a regulatory body, to consider, determine, and launch innovative, reasonably priced, and customized credit products for agricultural households, farmer groups, and small businesses looking to scale up their production through:
    a. More intensive high-value crop production.
    b. Improvements to the supply of inputs or services.
    c. Local level aggregation/processing schemes (e.g. grading services, packing sheds, or cool storage).

However, because many farmers will be unable to offer traditional collateral for these loans, these credit schemes will need innovative solutions that make them accessible. One option is to work with the existing agriculture commission agents (who already provide loans to the farmers), to reduce their risks while simultaneously providing a cheaper product – thus creating a win-win situation for both parties.

3. Lastly, the DAC in collaboration with its development partners[13] will commission a study to investigate the feasibility of insurance for agricultural producers in Balochistan, including the obvious questions of affordability and available options, one of which could be for the Government to underwrite commercial insurance schemes for the extremely poor.

5.2.6 Outcome 6: Enabling governance and reform of the Department of Agriculture and Cooperatives

> Provincial government agricultural agencies dramatically review and reform their response to enabling environment and climate risks (e.g. improved sector governance, service delivery and collaboration).

A key role for the Government of Balochistan is to establish coherent governance for the crop sector, the two priority elements of which are:

1. A conducive **legislative and regulatory** framework in which businesses can confidently, transparently, and effectively invest and function; and
2. Reformed **roles and functions** for the DAC to ensure that it can deliver the priority Policy initiatives in partnerships with other stakeholders.

An enabling environment predicated on reform of the DAC is, in fact, essential for the delivery of the other five elements of the Balochistan Agriculture Policy 2021-2030.

As such, the policy proposes to:

5.2.6.1 Support legislative and regulatory reform

The Government of Balochistan is responsible for reviewing current agricultural legislation and regulations, and enacting the necessary light-touch laws and statutes that are needed to enhance the sector. The Government will therefore undertake a comprehensive study of all current provincial agricultural policies and regulations, identifying what

[12] Successful current examples include funding for small solar powered irrigation systems in communal kitchen gardens. These have the dual benefit of providing irrigation and also saving women's labour.
[13] This will be done collaboratively with the Livestock and Dairy Development Department who are also considering a similar strategy under the recently approved Livestock Policy and Strategy.

is effective, what is ineffective, and what has had unintended consequences that may have hindered the development and growth of the cropping sector (e.g. tube well electricity subsidies).

The results of this study will be translated by the DAC into legal reforms. The objective will be to recast the current maze of legislation and regulation into a body of law that supports the Policy goals, while at the same time being as straightforward and unambiguous as possible. This would include mechanisms to closely monitor policy implementation to ensure it is generating the desired results.

5.2.6.2 Reform the DAC

The second element of the enabling environment reform relates to the roles and functions of the DAC. Currently, the DAC is struggling to deliver its services. It is underfunded and under-resourced, and the farming population it services is widely scattered in regions that are often insecure. Yet while the DAC appreciates that fundamental reform is necessary, there is also significant departmental inertia resulting from strong internal resistance to changes in the existing state of affairs. Nevertheless, only by reforming its vision will the DAC ever be able to comprehensively facilitate crop sector development and investment.

The Balochistan Agriculture Policy 2021-2030 requires the DAC to become the enabler of systemic change within the crop sector of Balochistan. The DAC must therefore increasingly focus its resources on policies that promote the public good and market/consumer standards, as well as on its research and extension services.

The DAC has such an important role to play, in fact, that the facilitation and delivery of this Policy is certain to be compromised if the DAC is unable to fulfil its tasks. Hence there is a need to discuss the reform of the DAC in some detail.

As a first step, a major institutional review needs

to investigate the DAC's organizational structure, performance, and services. The DAC needs to then develop a reorganization plan that is carefully thought through, appropriately prioritized, and realistically costed, and that refreshes its structure and services in ways that can accommodate the increased funding from Government necessary for it to deliver the Agriculture Policy goals coherently and consistently over the next ten years. Both the institutional review and the reorganization plan should include the key public sector roles already discussed under the Policy's six objectives. Both also need to consider other factors including:

1. **Private Sector Investment:** The DAC must encourage and negotiate with the private sector to increase investment in priority crop initiatives such as improved input services and processing. At the same time, the DAC must avoid any action that undermines or distorts these markets. As already discussed, DAC's current delivery of agricultural inputs will need to be reconsidered as it compromises private sector delivery of these same services (see Outcome 5).
2. **Market Access:** The DAC needs to lead a realistic assessment of the market opportunities for Balochistan's produce. As outlined in Section 4.2.2 and 4.2.3, this will initially focus on national markets, but could expand to regional and international markets given time. It will include a management information system (MIS) to communicate market price and product information.
3. **Consistent Oversight:** An issue that could continue to hamper the effectiveness of the DAC once it is reformed, is its frequent changes of senior staff. Currently, the average tenure of the departmental secretary is less than 12 months. These short tenures diminish the deep understanding that is necessary for effective decision-making regarding the complex technical, policy and market issues

that are confronting the crop sector. As such, it is probable that the continuity of policy implementation is also being compromised.

4. **Links with Federal agencies:** The DAC will require strong linkages with its related federal ministries, such as the Ministry for National Food Security & Research (MNFSR), the Ministry of Commerce, Federal Board of Revenue, and other institutions. A good working relationship with these ministries is essential if Balochistan is to be helped to develop networks with partners both inside and outside Pakistan, and if common learning and the adoption of best practices are to be promoted.
5. **Capacity Building:** Professional and technically qualified DAC staff are vital to the delivery of the goals of the Balochistan Agriculture Policy 2021-2030. As such, the Government:
    a. Will appoint and retain individuals who have relevant skills.
    b. Support both formal training and on-the-job specialization.
    c. Establish mechanisms for coaching, mentoring and formal performance review.
    d. Refocus hiring strategies to encourage field-based women staff

The areas where DAC staff currently have only limited capacity include:

a. Regulatory and legal reform.
b. e-Governance and ICT applications.
c. Regulation and testing of labelling and quality standards for agricultural inputs (e.g. seeds, fertilizers, and pesticides).
d. Inspection for the appropriate use of registered pesticides, and protocols to test for breaches of minimal residue limits (MRL).
e. Approved inspection and certification protocols for product purity and quality.
f. Certified inspection and traceability protocols for product export.
g. Marketing, using a wholistic value chain approach.

6 Stakeholders and Beneficiaries

6.1 Stakeholders

For the outcomes of the Balochistan Agriculture Policy 2021-2030 to be achieved, the multiple public and private sector stakeholders that are both directly and indirectly engaged in field crop and horticulture value chains in the Province (see Table 5) will need to confirm:

1. Their commitment to the goal and outcomes of the Balochistan Agriculture Policy 2021-2030; and
2. Their willingness to commit their time and resources to its implementation.

The following table lists the main categories/ groups of stakeholders considered essential to the successful delivery of the outcomes of the Balochistan Agriculture Policy 2021-2030. The roles and responsibilities related to each of the six outcomes are further discussed in Annex 2.

Table 5: Agriculture sector stakeholders of Balochistan

Stakeholder category	Organizations
Core Value Chain Actors and Partners	Department of Agriculture and Cooperatives, Government of Balochistan (DAC), including Agriculture Extension Officers and Field Assistants
	All Pakistan Fruit and Vegetable Exporters Association (PFVA)
	Food Safety Authority / Quality Control and Certification Agencies

Stakeholder category	Organizations
	Pakistan Standard and Quality Control Authority (PSQCA)
	Pakistan Horticulture Development and Export Company (PHDEC)
	Department of Forest and Wildlife (DFW)
	Small and Medium Enterprise Development Authority (SMEDA)
	Ministry of National Food Security and Research (MNFSR)
	Pakistan Agriculture Research Council(PARC)
	Ministry of Commerce
	Financial institutes (State Bank and Commercial Banks); Benazir Income Support Program (BISP), Agriculture Development Bank and other micro finance organizations; Insurance Companies
	Agriculture (vocational) Training and Education Centres
	Provincial Research & Development and Training Institutes
	Private (Sector) Services Providers (e.g. input suppliers)
	Private Input Suppliers
	Private Processing and Packaging Companies
	Private Logistics Companies
	Agriculture Farmer Associations (FMCs, MMOs and Cooperatives)
	Agriculture farming households and businesses
Core Delivery Partners	Government of Balochistan Departments
	Donors
	Non-Governmental Organizations (NGOs)
Core Delivery Partners	Federal Government agencies such as: • National Food Security & Research (MNFSR). • Maritimes affairs. • Ministry of Commerce. • Trade Development Authority of Pakistan (TDAP). • Small & Medium Enterprise Development Authority (SMEDA)
Core Development Funders	Government of Balochistan and Government of Pakistan
	Donors (UN agencies, DFID, ADB, WB, Development Banks and Funds, DFAT, USAID, EU, JICA and others)
	Private Sector Organizations and Companies

6.2 Beneficiaries

There are many who will benefit from the implementation of the Balochistan Agriculture Policy 2021-2030, some directly and some indirectly.

6.2.1 Direct beneficiaries:

Male and female field crop and horticulture farmers and their families involved in the five major cropping systems of Balochistan (shown in Table 4) will be the prime beneficiaries of a strengthened and vibrant agriculture sector, as evidenced by the diversification of their production to include choices that provide better nutrition, and improved incomes.

Many value chain actors will also directly benefit from the Policy's implementation, including:

a. Local suppliers of inputs and services: seeds, fertilizers, tools, machinery, and agri-chemicals, as well as advisory and certification services.

b. Contract seasonal workers: the high-value crop sector in particular provides valuable and consistent seasonal employment opportunities (principally harvesting and packing), thereby benefiting thousands of poor rural men and women across Balochistan.

c. Local value addition service providers: categories include local agribusiness involved in packing, processing, and storage, and various forms of cottage activities catering to niche needs, some of which may already exist, but

many of which are yet to be stimulated by the Policy interventions.

d. Private companies interested in investments in Balochistan (including public, private partnerships).

6.2.2 Indirect Beneficiaries:

The following categories of partners will indirectly benefit from growth of the agriculture sector in Balochistan:

a. Research and Extension staff as well as consultants.

b. Trainers and business developers (through vocational training in the districts, as well as the business incubation centres in Quetta).

c. The Board of Revenue, and the Provincial and Federal Tax Collection Departments. The agriculture sector of Balochistan is already significantly contributing to the GDP/ revenues of both the Province and the nation as a whole. As the agriculture sector grows, and as the growing professionalism of entrepreneurs results in more registrations, so will tax revenues.

6.3 Governance, monitoring and evaluation of Policy implementation

Following the endorsement of the Balochistan Agriculture Policy 2021-2030 by the Province's Cabinet, a five-year rolling strategy and intervention plan will then be developed. It is envisaged that some interventions will be publicly funded through Provincial and/ or Federal Government Public Sector Development Programs (PSDP). Other interventions (particularly those with well-defined and fenced-off objectives) will be presented to donors for either direct funding, or joint funding with Government.

Budgetary requirements for this Policy will be further defined during the development of the 5-year strategy, and the associated intervention plans. Yet even at a preliminary stage, it is clear that:

- The Government's budgetary allocation to the DAC will need to be significantly increased if the aims of the Policy are to be achieved.
- The DAC appreciates that this will be a progressive process and will only escalate once it has demonstrated its willingness and capacity to improve the efficiency and efficacy of its services, in particular by reforming its current structure and functioning.
- The Policy will be heavily dependent for its outcomes on the significant commitment of donors.
- The Balochistan Agriculture Policy 2021-2030 will be managed by the DAC over 10 years (5 + 5 years), and will include a midterm evaluation (MTR). The MTR will create the opportunity for evidence-based adaptation of policy implementation as it enters its second phase.

Strategic oversight of Policy implementation will be provided through a broad-based Policy Steering Committee (PSC), chaired by the Minister of Agriculture. The PSC will include Government, development partners, and representation from the sector itself (including selected private sector interests). The PSC will meet twice a year.

On a day-to-day basis, a Policy Implementation Committee (PIC) will be established, to be led by the Secretary of DAC, and to include representatives of other provincial collaborating agencies and donor programs. The PIC will report to the PSC.

Within the broad framework of the Balochistan Agriculture Policy 2021-2030, separate teams will implement project clusters or larger individual projects. Technical working groups (per cluster of projects or per outcome) will be established, meeting every three months to discuss operational issues and progress.

Under the six broad outcomes, objectives will be pursued that contribute to the outcomes and overarching vision as specified in Annex 2. Indicators of success and impact, as well as delivery targets (such as increased incomes, reduced malnutrition, the use of innovative technologies etc.) will also need to be defined as the inputs for a comprehensive Monitoring and Evaluation (M&E) system.

7. Risks

The following identified risks may impact the implementation of the Balochistan Agriculture Policy 2021-2030:

7.1. External Risks

External risks are beyond the control of any of the stakeholders engaged in the implementation of the Policy. Such external risks include:

- Extreme and adverse weather conditions in the coming years, droughts in particular, which are likely to be aggravated by the effects of climate change.
- Insecurity in the Districts.
- Regime changes within the Government of Balochistan.

7.2. Operational and implementation risks

Operational risks can be partly controlled by Agriculture Department and stakeholders if these are anticipated, and effective mitigation measures are put in place. Risks that fall within this category include:

- Communities lack trust in Government and/ or development partners.
- There is an excessive turnover of the key leadership within the DAC.
- There is insufficient emphasis placed on gender equity and women's opportunity by Government, local agencies and/ or the communities.
- Market opportunities are insufficient or fragile.
- Government of Balochistan capacities are compromised by institutional, financial, political, and/ or reputational difficulties.
- There is a lack of effective local delivery partners (Government, civil, private sector).
- A non-level playing field and/ or market distortion is created by a lack of foresight of Government or donors.
- There is internal resistance within Government to reform the relevant laws, acts and departments.
- The indecisiveness of the PSC or the PIC

7.3. Other Risks

Another category of risk for the Policy is a shortage of funds for proper implementation due to the lack of interest of either Government (provincial or federal) or donors, or else the unwillingness of its resource partners to financially commit to the longer term.

Annexes

Annex 1: References

- **FAO. 2019.** *IPC Acute food insecurity analysis January-November 2019.* Rome : Integrated Food Security Phase Classification (IPC), 2019.
- **FAO, IFAD, UNICEF, WFP, and WHO. 2019.** *The state of food security and nutrition in the world 2019.* Safeguarding against economic slowdowns and downturns. Rome : FAO, 2019. p. 239. ISBN 978-92-5-131570-5.
- **FAO, MNFS&R, WFP, WHO, UNICEF. 2019.** *Pakistan Overview of Food Security and Nutrition - Improving access to food.* Rome : FAO, 2019.
- **GoB. 2020.** Balochistan Agriculture Statistics 2017-18. Development Statistics of Balochistan 2017-18. [Online] 10 November 2020. https://balochistan.gov.pk/index.php?option=com_docman&task=cat_view&gid=1738&Itemid=677.
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- **MNFSR. 2020.** *Fruit, vegetable and condiments statistics of Pakistan 2018-19.* Islamabad : Economic Wing of the Ministry of National Food Security & Research, 2020. p. 85.
- **Saeed, M. 2006.** *Promising crops and water efficient cropping patterns for irrigated farming systems of Balochistan, Consultancy Report ADB TA4560 (PAK).* Manila : ADB, 2006.
- **Shahid, Ahmad and Ghaffer Khan, Abdul. 2007.** *Sailaba and khushkaba farming systems of Balochistan – Policy support for changing land use and to avoid infrastructure damages caused by flash floods.* Manila: ADB TA4560(PAK), 2007.
- **World Bank. 2013.** *Report No: ACS2258 Balochistan Needs Assessment – Development Issues and Prospects, Part 1 – Main Report.* Washington DC : World Bank, 2013.

Further Reading (List of Reports and Publications)

1. Balochistan Agriculture Sector Policy and Strategy 2015 – 2025 (draft), Food and Agriculture Organization (FAO) of the United Nations, 2016.
2. Balochistan Comprehensive Development Strategy 2020 – 2030, GoB, DeLoitte (Draft), 2019.
3. National Food Security Policy, Government of Pakistan, Ministry of National Food Security and Research (MNFSR), 2016.
4. Balochistan Public Sector Development program 2019 – 2020, Government of Balochistan, Planning and Development Department, 2019.
5. Pakistan Vision 2025, Government of Pakistan, 2017.
6. Long term plan for China Pakistan Economic Corridor (CPEC), 2017-30. Government of Balochistan, Planning and Development Department, 2018.
7. Country Programming Framework for Pakistan 2018 – 2021, Government of Pakistan, Food and Agriculture Organization (FAO) of the United Nations, 2018

Annex 2: Agriculture Policy Results Framework (Outcomes, Objectives, and Indicators of Success)

Under the six broad Policy outcomes, the following objectives will be pursued, contributing to the outcomes and overarching goal[14].

Outcomes	Objectives	Responsibility	Indicators of Success
On-farm water productivity All farming households are supported to innovatively reduce water wastage and improve on-farm water productivity.	1. **Significantly reduce the incidence of uncontrolled flood irrigation practices:** Over the next decade the incidence of uncontrolled flood irrigation practices will reduce by sixty percent through the promotion of, and conversion to, water efficient and carefully monitored irrigation practices (e.g. furrow, raised beds, low volume micro-spray and trickle)	■ Directorate of Agricultural Engineering: The provision of DAC engineering services for land-levelling and spate water storage should be conditional on farmers upscaling their water management practices. ■ Directorate of OFWM. ■ Directorate of Agricultural Extension.	■ Increased awareness of the need to conserve water ■ Increased adoption of on-farm water conservation practices ■ Reduction in the use of unregulated tube wells ■ Incidence of flood irrigation declines ■ Reduced groundwater extraction rates in major agricultural aquifers ■ On-farm water productivity improves ■ Total area of irrigated land increases as a result of water savings
	2. **Regulating groundwater extraction** a. Government to review the unintended impact of electricity subsidies on groundwater. a. Feasibility study of alternative incentive mechanisms completed by 2022. a. Farmers supported to regulate flow from tube wells and introduce on-farm storage.	■ The DAC (Directorates of OFWM and Agricultural Engineering) and Department of Irrigation will collaborate on groundwater hydrology studies for agricultural aquifers. ■ The GoB will also consider registering tube wells, and may consider limiting the volumes extracted. (Crop Reporting System) ■ GoB will review its policy on groundwater and reconsider the unintended consequences of electricity subsidy for tube wells.	
	3. **Water Management and Budgeting** to improving on-farm water productivity particularly on large farms. a. 70 percent of large farms (greater than 5 ha) will schedule irrigation based on water budgets, crop requirements and soil moisture measurement.	■ Introduce and promote simple water budget technologies and decision-support tools for large farms. (Directorates of Research, Extension, and OFWM) ■ Large farmers understand and better monitor soil moisture levels and water budgets, thereby helping them to apply irrigation at appropriate times and in appropriate amounts. (Directorate of Extension, Agricultural Engineering, and OFWM)	
	4 **Behaviour Change:** Significant increase in on-farm water stewardship through awareness of on-farm water productivity: b. 80 percent of all farmers are aware of the need for on farm water conservation. c. 70 percent of larger farmers (greater than 5 ha) have adopted practices that reduce their water wastage	■ GoB ties any subsidies to improved water management practices. (Directorates of Agricultural Extension and OFWM). ■ Directorate of Extension undertakes a significant behaviour change campaign that combines good information, the promotion of positive champions, and rewards for good practice. ■ The Secretary of Agriculture awards a prize for good water management that is celebrated, and publicised across the province	

[14] Activities that are required to achieve these objectives will be formulated later as part of the operational strategy.

Outcomes	Objectives	Responsibility	Indicators of Success
Production innovation Commercial farming households and businesses are helped to innovatively and collaboratively improve crop productivity, product quality and consistency in line with market demands	1. 800 established and 400 new agriculture farmer groups operate as a focus for Government and Private Sector support including applied research, training, sharing, demonstration, and input/service supply. 2 Group members (including women) increase their: a) production by half, b) total factor productivity (TFP) by 20%, and c) incomes by 20-30 percent through the adoption of improved germplasm, agronomic practices, IPM, processing, and grading technologies as well as new approaches to marketing (e.g. electronic marketing). 3. Group member families and consumers improve their food security and nutrition through consistent access and consumption of diverse kitchen garden products. 4. Improved and relevant information products readily accessible to smallholder farmers through their groups and electronic media.	■ One extension officer/field assistant allocated to each group as a coordinator and facilitator (Directorate of Extension). ■ Development partners support existing groups and establish new groups as required, guided by the Balochistan Agriculture Policy 2021-2030. (Directorate of Extension, Registrar of Cooperative Societies). ■ The DAC keeps records of the groups, their allocated extension officer and their members (Directorate of Agricultural Extension). ■ Farmer groups work together with Government to support the organizations aims and objectives (Directorate of Agricultural Extension and Women's Division) ■ Input and service supply businesses support these groups, deliver their services through these groups, and provide technical training and field support as required. (Directorate of Agricultural Extension and Agricultural Marketing) ■ Directorate of Agricultural Research and academia run a responsive adaptive research and technology program that delivers priority innovations through these groups related to: ■ Varietal testing. ■ Improved irrigation management. ■ Improved agronomic practices. ■ Mechanisation. ■ Integrated pest and weed management. ■ Post-harvest handling and packaging. (Directorates of Extension and Research) ■ The groups will make their needs known and the DAC scientists, technologists and engineers will work with the allocated extension officer and the group to undertake trials, testing, demonstrations, or workshops to address their concerns. (Directorates of Extension and Research) ■ Directorate of Agricultural Extension will establish and enhance its information and communication office to collate and/or package existing or new information products. Emphasis will be given to cellular and media-based mechanisms to disseminate this information in a timely fashion. Poster, audio visual and printed material will only be provided to agriculture groups and their members (and potentially at a minimal cost). (Directorates of Information, Extension and Research)	a. Farmer Training and capacity building (skills development) through Farmer Field Schools and Farmer Business Schools operated by Farmer Groups supported by Extension Officers. b. Extension staff empowered (knowledge and supplies) to support agriculture groups in the districts c. Farmers access services and inputs through their groups d. Productivity enhanced e. Nutritional outcomes enhanced for target families and provincial consumers. f. Incidence of food safety incidents due to farm supplied product declines. g. New technologies in production agronomy and crop health adopted through pilots and wide scale dissemination using agriculture groups h. Engagement of women across the sectors/ value chain (production, processing, marketing & business orientation. i. ICT and other smart solutions for disseminating new technologies and extension j. Farmers and other stakeholders use and demand the improved tools

Outcomes	Objectives	Responsibility	Indicators of Success
Market innovation for high-value crops: Balochistan's farming families and businesses involved in high-value crops innovate and collaborate to better tap sustainable market opportunity (handling, storage, transport and processing).	1. **Product aggregation and quality:** Fifty percent of small to medium farmers are members of farmer marketing groups that aggregate and consistently market larger volumes of uniform quality.	■ DAC (including the Directorates of Extension, and Markets) and delivery partners support the formation and strengthening of these aggregation and marketing groups. ■ DAC field assistants and development partners support farmer groups to work with transporters and wholesalers to identify quality improvements for which consumers are willing to pay a premium. ■ DAC works with farmer groups to establish quality standards and quality assurance systems. ■ DAC, along with Provincial and National market authorities improve the quality and timeliness of market information and explore e-commerce opportunities.	a. Number of small to medium farmers who are members of marketing organisations b. Increased market access and returns from aggregated quality assured product.
	2. **Improving packing, storage and post-harvest handling:** All marketing groups will introduce improvements to harvesting, handling, packing, grading lines, and cool storage to improve product quality and shelf life in line with consumer expectations.	■ DAC works with farmer groups to establish quality standards and quality assurance systems to help focus product on standard and premium markets. (Directorate of Agricultural Extension and the Women's Division)	a. Better understanding, relationship and information flow between farmer groups, wholesalers and retailers. b. Farmer returns and profit improve c. Balochistan recognized as a source of quality assured product
	3. **Enhanced Market Information Systems:** 80 percent of farmers producing high value crops can access accurate and timely market information.	■ DAC, along with Provincial and National market authorities improve the quality and timeliness of market information and explore e-commerce opportunities.	a. Number of farmers with access to accurate and timely market information and prices.
	4. **Value addition:** Five-fold increase in the volume of Balochistan farm product that is subject to postproduction value addition through Provincially based freezing, drying, canning, juicing, or minimal preparation (e.g. fresh cuts) of fruit and vegetable products.	■ DAC and development partners to pursue value addition opportunities for Balochistan's major products. ■ Exploration of PPP or other co-investment opportunities (e.g. with CPEC) for significant provincial processing for both domestic and international markets (Directorates of Agricultural Extension and Agricultural Markets).	a. Significant reduction in lower quality fruit and vegetables entering the fresh market b. Significant increase in employment opportunities c. Increased quality and price of fresh fruit and vegetables
Subsistence food & nutrition security Subsistence farming households increase their food security and nutrition through higher production and income	1. **Nutrition Sensitive Food and Agriculture Systems:** Nutrient sensitive food and agriculture approaches mainstreamed across all provincial subsistence agricultural interventions.	■ DAC and development partners promote NSA approaches ■ DAC reviews all development proposals for subsistence farmers to ensure that NSA issues are appropriately addressed	a. increased quantity, quality, diversity, availability and affordability of nutrient rich, culturally appropriate foods in both households and local markets b. Benefit in the health and wellbeing of all of the people of Balochistan.

Outcomes	Objectives	Responsibility	Indicators of Success
	2 **Kitchen Gardens:** Women managed kitchen gardens established in 80% of poor villages.	■ DAC and development partners assist villages to establish women lead communal kitchen gardens. (Women's Division)	a. Improved availability and diversity of nutrient rich foods b. Improved women's understanding of nutrition, production techniques, and how best to utilize these foods c. Increased women's empowerment through small amounts of supplemental income
	3 **Behaviour change communication:** Nutrition awareness of vulnerable households increased across all villages.	■ The GoB will work to widen the coverage and uptake of packages that promote and integrate the nutrition needs of all household members at all ages with good agricultural, health, feeding, water and sanitation practices. ■ DAC will train their entire extension unit in the importance of these practices, who will in turn ensure that the communities are both understanding and engaging with these practices. (Directorates of Information, Extension and Research)	a. Better nutritional outcomes for women of reproductive age and children under two years old.
Quality agri-business services Local agri-businesses are informed, motivated and supported to improve the access and affordability of key agricultural inputs, services and credit	1 **Public/Private Partnerships to improve remote input and service delivery:** Reduce the risk, and increase investments of the private sector to meet the needs of remote producers for quality inputs and services. All input subsidies are restructured to ensure better beneficiary targeting as well as synergy with long-term private sector input services.	■ DAC will review current policies and subsidies to identify areas where market distortion arises ■ The Government and its donor partners will co-invest with the private sector to establish innovative and sustainable approaches to inputs and service delivery. (Directorates of Extension, Research and Engineering) ■ DAC to consider introduction of a voucher system that better targets vulnerable households and complements the private sector to ensure sustainable input services delivery in the future. (Directorates of Extension, Research, Soil Fertility, Plant Protection and Engineering)	a. Input subsidies no longer distort the market and crowd out the private sector. b. Increased private sector investment in inputs and service delivery. c. Improved farmers access to inputs and services. d. Vulnerable households are better targeted e. Reduced hand-out dependency of vulnerable households
	2 **Improved regulation and establishment of Balochistan Fresh:** Balochistan establishes a national reputation as a source of quality safe fruit and vegetables.	■ The DAC and other Government agencies will collaborate to improve the standards and regulations relating to the use of agrichemicals and fertilisers by farmers and others involved in Balochistan's field crop and horticulture value chains. (Directorates of Marketing, Research, Soil Fertility, and Plant Protection) ■ This will involve partnerships with farmer groups and major packing facilities to instigate and deliver training that improves understanding and compliance. (Directorate of Agricultural Markets) ■ DAC will also work with farmer and private sector interests to establish an industry certification scheme, "Balochistan Fresh", this being a Government accreditation process for farmer groups and businesses who adhere to industry standards that ensure minimal residues in and on food. (Directorates of Extension, Markets and Research).	a. Incidence of chemical residues breaching MRL levels is significantly reduced. b. On-farm chemical use is compliant with Government and label recommendations.

Outcomes	Objectives	Responsibility	Indicators of Success
	3 **Improved financial services:** Expansion of small and medium entrepreneurship through access to better financial products and services.	■ Development partners (and particularly NGOs) work with groups of agriculture farmers to develop community run savings and loan schemes (Directorates of Extension and Cooperatives). ■ The Balochistan Government works with the State Bank of Pakistan to consider and launch innovative credit products for agriculture families, groups of agriculture producers, or small businesses looking to scale up their production. (Directorate of Agricultural Cooperatives) ■ DAC commissions a study in collaboration with its development partners to investigate the options, affordability, and feasibility of production insurance for the agriculture sector (Directorate of Research and academia).	a. Agriculture farmers converted to entrepreneurs by linking them to financial institutions (FMCs, MMOs) b. Agriculture producers, processors and traders have access to legal, business support, marketing and financial services c. Customized insurance schemes accessible for small scale agriculture farmers d. Women have access to credit without collateral.
Enabling Environment and Reform of Department of Agriculture and Cooperatives Provincial government agricultural agencies dramatically review and reform their response to enabling environment and climate risks. (e.g. improved sector governance, service delivery and collaboration)	1 Investment and business confidence increase through enabling environment reform.	■ DAC (in collaboration with its development partners and the business sector) will conduct a study on current provincial agricultural policy and regulations that assesses their effectiveness and unintended consequences. (Directorate of Research and academia). ■ Balochistan Government to amend policies that distort of constrain the market. (Directorates of Extension, Research and academia). ■ DAC will undertake an institutional review or its performance and services.	e. Enabling business environment improved and made more conducive f. Restructure & reform laws, rules and procedures to support value chain actors g. Outdated Acts hindering development of sector repealed. h. Long term policies development for increasing the efficiency of sector

Annex 3: Agriculture Development Projects (2019)

i. Wheat Production Enhancement Strategy

Cultivated Area 2019-20 (Ha)	Production 2019-20 (M. Tons)	Expected Cultivated Area 2020-21 (Ha)	Expected Production 2020-21 (M. Tons)	% Increase	
				Area	Production
427,900	0.950	465,019	1.22*	7.9%	22%
* Total Wheat Requirement= 1.55 Million Tons					

ii. Other Rabi Crops Production Enhancement

Cultivated Area 2019-20 (Ha)	Production 2019-20 (t)	Expected Cultivated Are a 2020-21 (Ha)	Expected Production 2020-21 (t)	% Increase	
				Area	Production
0.099	0.55	0.109	0.61	5%	11%
(Other Rabi Crops= Gram, Lentil, Tomato, Oilseeds and Onion, Rabi Pulses)					

On-going projects of PSDP	Million (Rs)
Introduction of low water required crops	200,00

On-going projects	Million (Rs)
Construction of cold storage for fruits at Killa Saifullah And Kalat	300,000
Establishment/construction of dates processing plant and cold store in Panjgur	400,000
Promotion of tunnel farming in Balochistan	500,000
Seed multiplication and certification program in Balochistan	200,000
Promotion & development of olive crop in Balochistan	200,000
Promotion & development of pistachio in Balochistan	40,000
Strengthening of agriculture training institute Sariab Quetta	500,000
Construction of cold storage at Aminabad district Chaghi	250,000

Proposed projects under CPEC	
Establishment of agriculture model farm at Kacchi canal	1085.000
Cold storage and fruit processing facilities in Balochistan	1499.00
Establishment of fruit and vegetable base at command area around Mirani dam, Balochistan	
To establish a special agricultural economic zone by establishing a base for commercial cultivation of high value vegetables and fruits in and around Mirani dam command.	

Proposed projects under southern Balochistan development package	
Establishment of olive zones in Khuzdar, Kharan, Washuk, Nushki, Panjgur & Lasbella on 25,000 acres and strengthening of olive industry in southern Balochistan	2200.00
Introduction of organic crop cultivation (cotton & other crops) and seed production in Kharan, Awaran, Khuzdar, Panjgur, Nushki, Kech & Lasbella Districts of Balochistan	1430.00
Agro markets development including processing, packaging & cold storage facilities in ten districts of southern Balochistan	4046.528
Connecting agriculture markets with the major markets of Pakistan	98.257

Initiatives of agriculture on-farm water management Balochistan	
National program for improvement of WC & WST" project	31.210
National program for enhancing command area of small and mini dams in barani areas	5.137
Kacchi canal command area development project.	1.670
On farm water management & efficiency enhancement program	1.000

Other Initiatives
Prime minister delivery unit: - all complaints stand resolved and score is 100%.
Integrated performance monitoring system IPMS: - total task 197, completed tasks 197
Integrated performance monitoring system IPMS: - total task 197, completed tasks 197

Initiatives of agri-engineering department: Balochistan	
Provision of 200 bulldozers for agricultural land development work in Balochistan.	1000.000
Provision of 800,000 bulldozer hours for farming communities of Balochistan for construction of micro dams, sailaba bandats and earthen ponds .	170.000
Balochistan green tractor program	300.000

Proposed projects of agri-extension under PSDP 2021-22
Project for olive expansion in Balochistan
Construction of apple processing/grading plants in apple growing districts of Balochistan
Date plantation in Makran Division & Washuk, Kharan, Awaran, Noshki, Chaghi And Dhader (Bolan) districts
Establishment of lab and provision of equipment for value addition at women division Quetta, Balochistan
Development of marketing infrastructure facilities at Sibi, Kharan, Dera Allah Yar, Sohbatpur, Kachi, Kalat, Kohlu, Mastung, Hub & Zhob
Establishment of media cell & development of e-agriculture and tele-farming systems in Balochistan
Cotton maximization program in Balochistan
Establishment of Balochistan seed corporation

Other initiatives
GRASP
Value chain development
Promotion of olive, dates, grapes, onion & tomatoes.
Processing & packaging facilities
FAO
Balochistan agriculture policy and strategy 2020-30 is under process of finalization with the coordinated efforts of FAO and agriculture department Balochistan, which will soon be submitted to the government of Balochistan for approval

iii. Initiatives under Organic Cotton Production in Collaboration with WWF Pakistan

Year	Farmers	Area (Acres)	Certification	
			Farmers	Area (Acres)
2016	2500	37000	0	0
2017	4000	49400	0	0
2018	6000 (4000)	66690 (44109)	181	1911
2019	2797	22466	883	7527
2020	2800c	25449	833	7153

Department of Agriculture and Cooperatives

GOVERNMENT OF BALOCHISTAN