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# GIS Based Multi criteria Decision Modelling for Selection of Basins in Balochistan

PROJECT- REVIVAL OF BALOCHISTAN'S WATER RESOURCES

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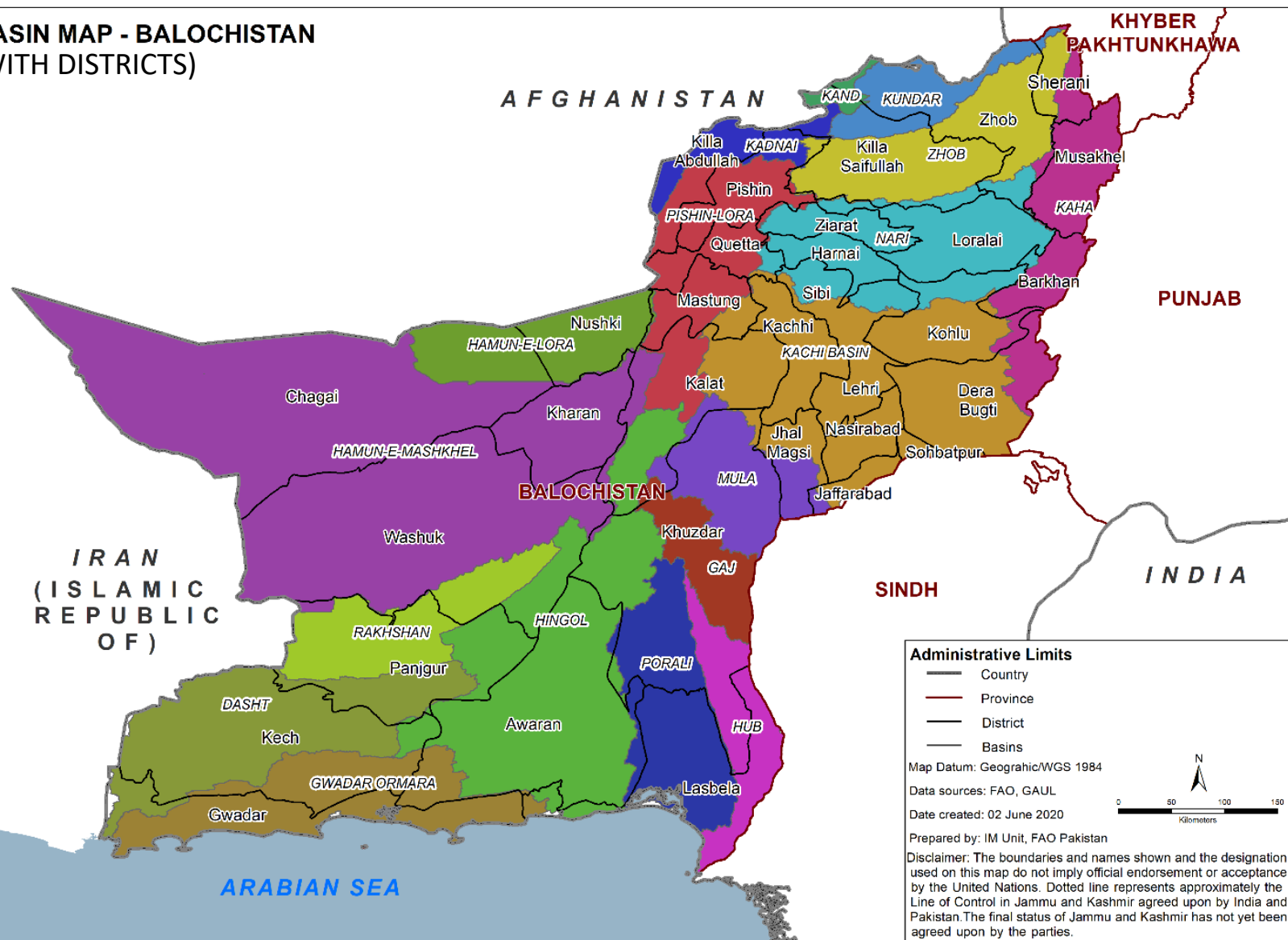
## OUTLINE

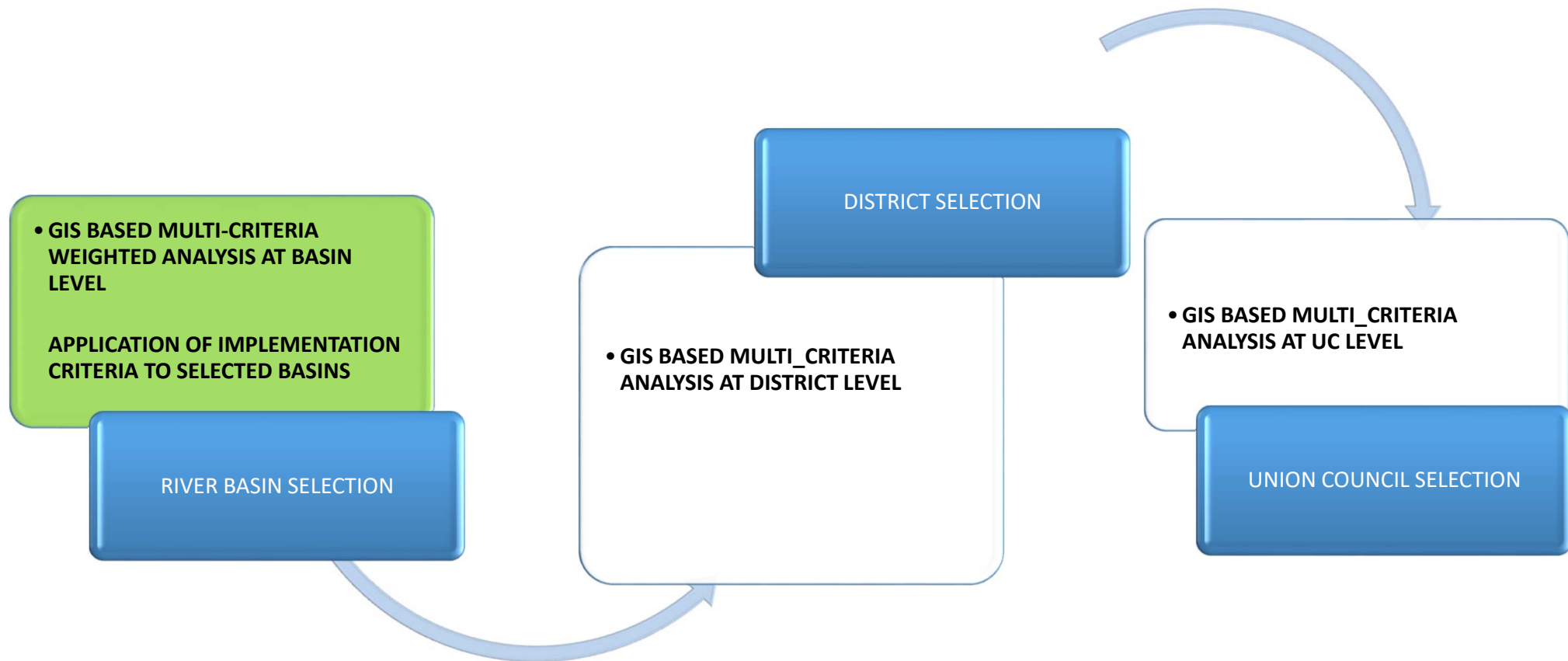
- INTRODUCTION TO APPROACH
- INDICATORS/INPUT MAPS
- WEIGHTED ANALYSIS AND RESULTS
- NEXT STEPS

## BASIN MAP - BALOCHISTAN



# **BASIN MAP - BALOCHISTAN** (WITH DISTRICTS)





## WEIGHTED ANALYSIS AT BASIN LEVEL

### MEDIUM PRIORITY

Potential for rainfed/flood plain cropping

Potential for Surface Water harvesting

Socio-economic Indicators

### HIGH PRIOTY

Potential for Water conservation

Potential for enhancing rangelands production and livestock interventions

### *Project Objective:*

*Improve income and food security in selected river basins of Balochistan through sustainable agricultural and livestock farming systems based on sustainable, equitable management of water and rangeland resources*

### *Analysis Objective :*

*The basins with higher potential for water conservation, high Ground Water depletion and potential for enhancing rangelands production will be prioritized for the revival of water resources.*

*Additional criteria do include and potential for rainfed/flood plain cropping, surplus water harvesting and socio-economic indictors.*

### *Weights*

*are assigned considering the importance of an indicator to project's objective*

*20% - High Weightage*

*15%- Moderate Weightage*



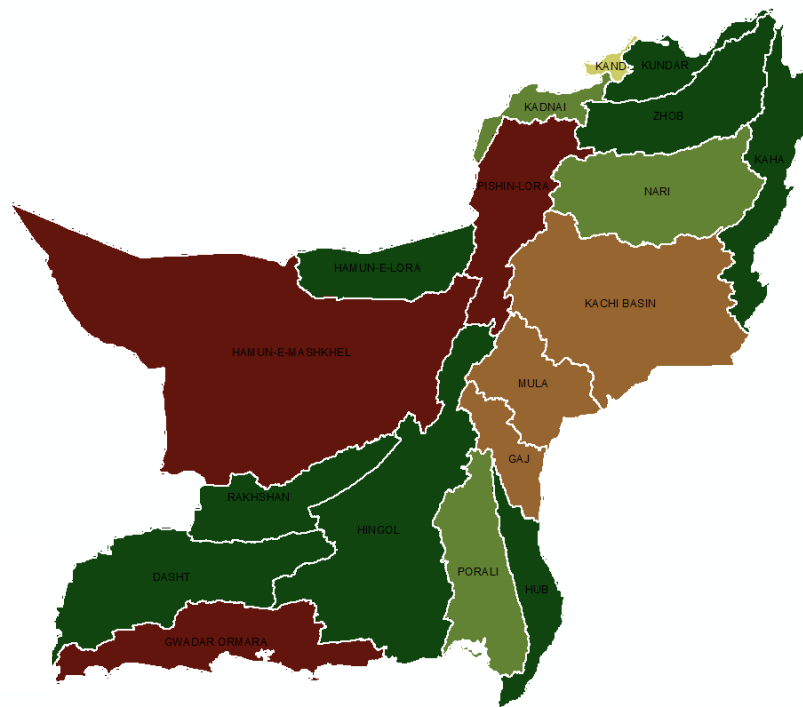
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# INDICATOR MAPS

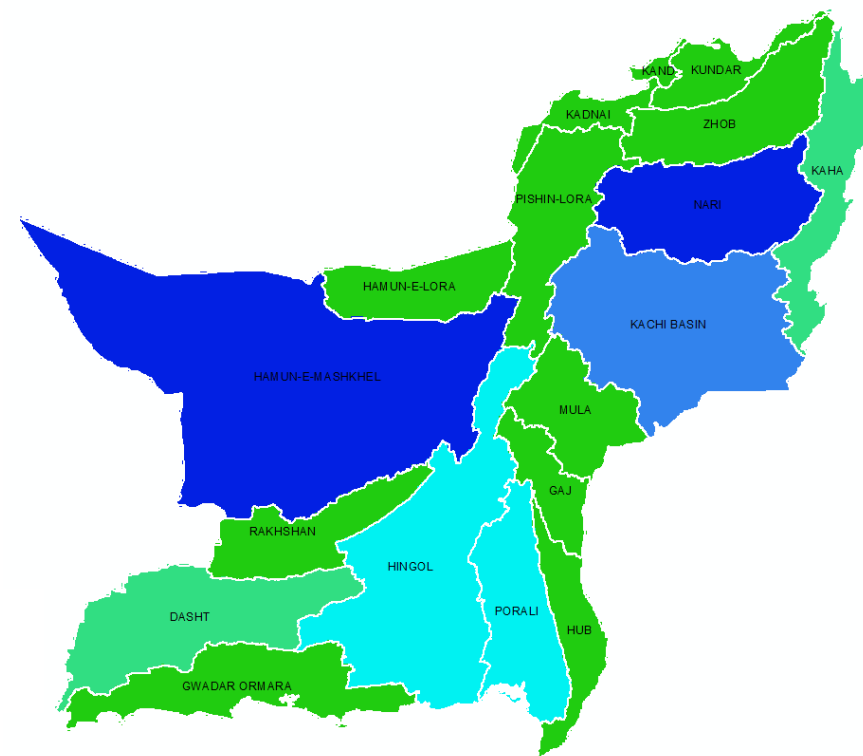
INPUTS FOR ANALYSIS



## GROUNDWATER DEPLETION INDEX



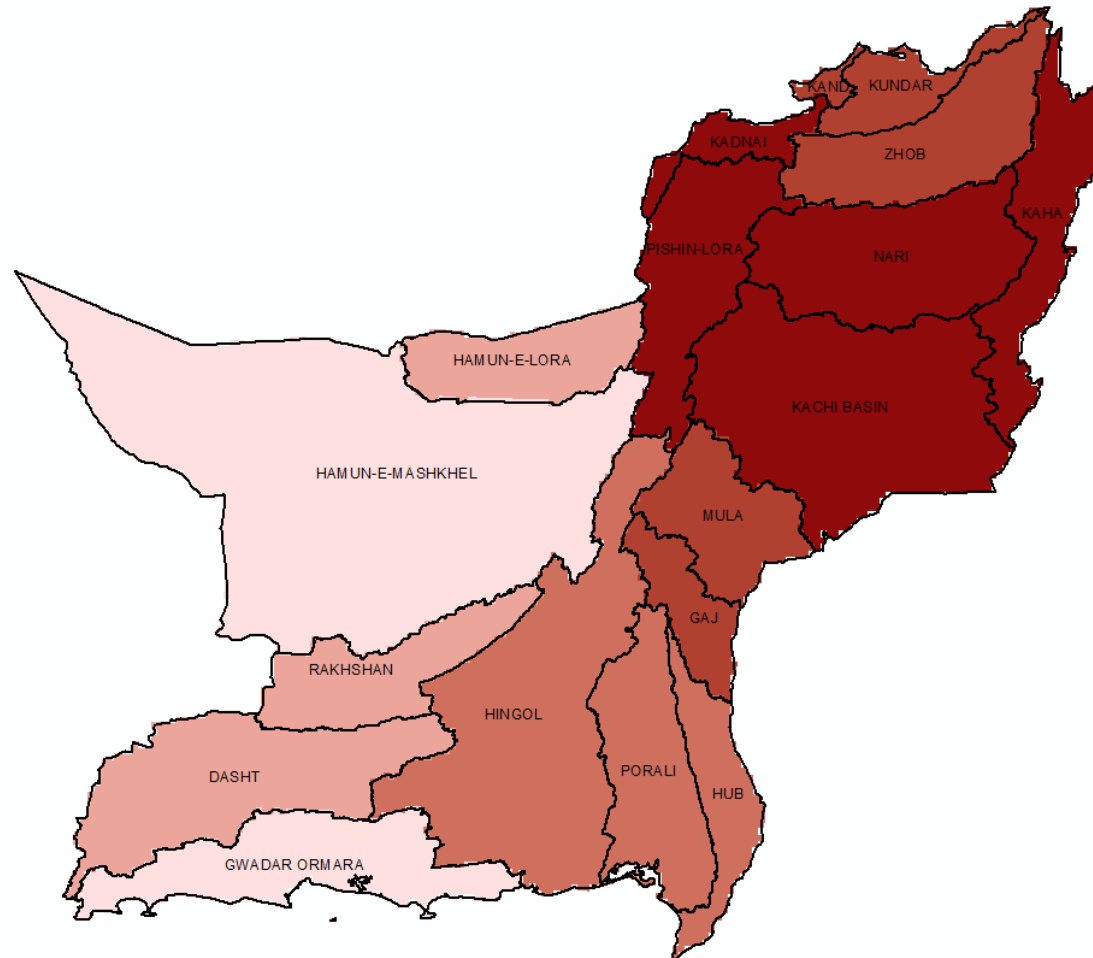
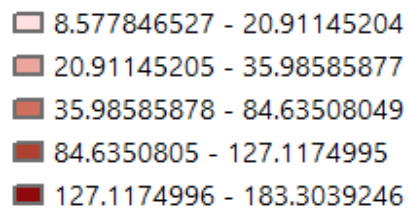
## SURPLUS SURFACE WATER (BCM)







**LIVESTOCK DENSITY  
(NUMBER OF ANIMALS/250 SQ  
KM)**

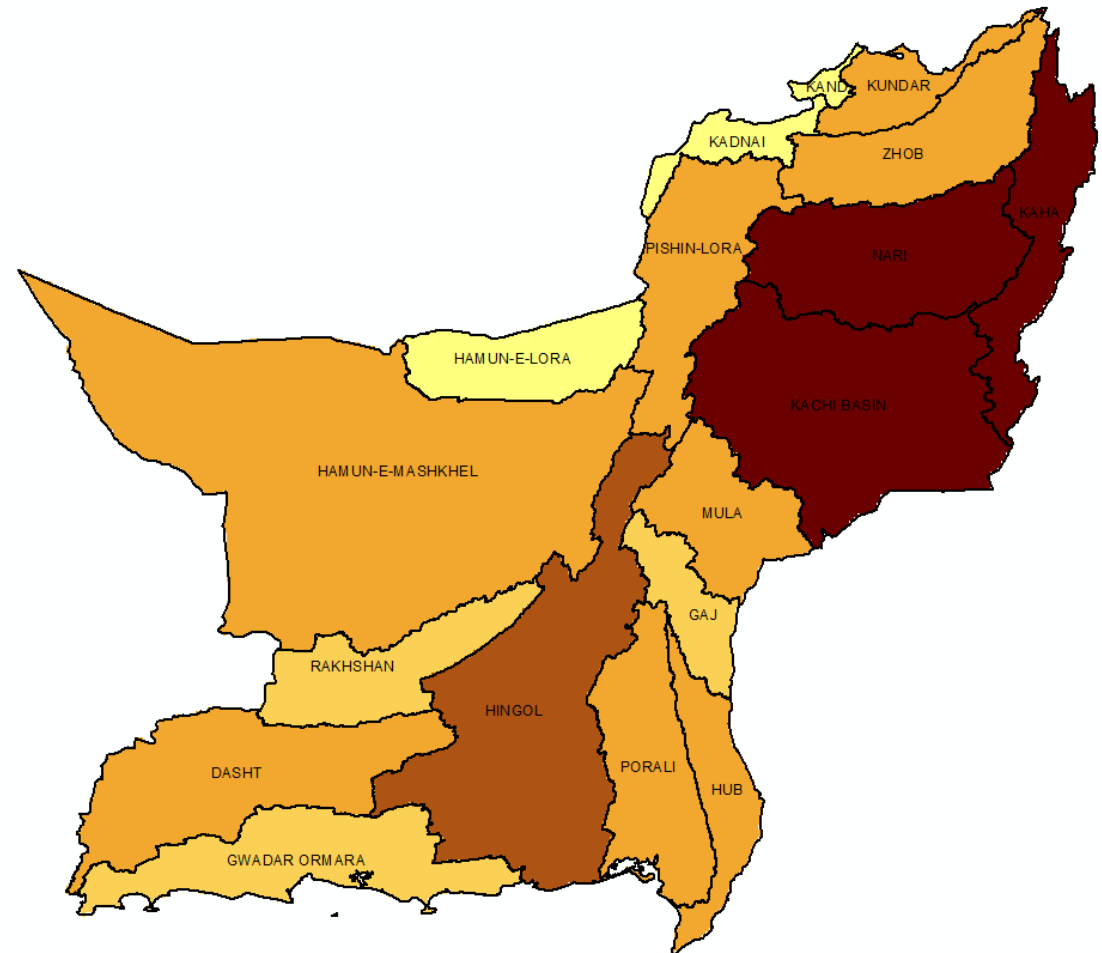
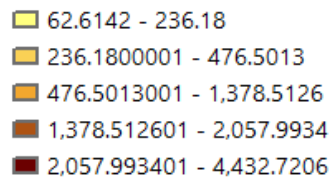




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## POTENTIAL FOR ENHANCING RANGELANDS PRODUCTION

### AREA UNDER RANGELANDS (SQ KM)

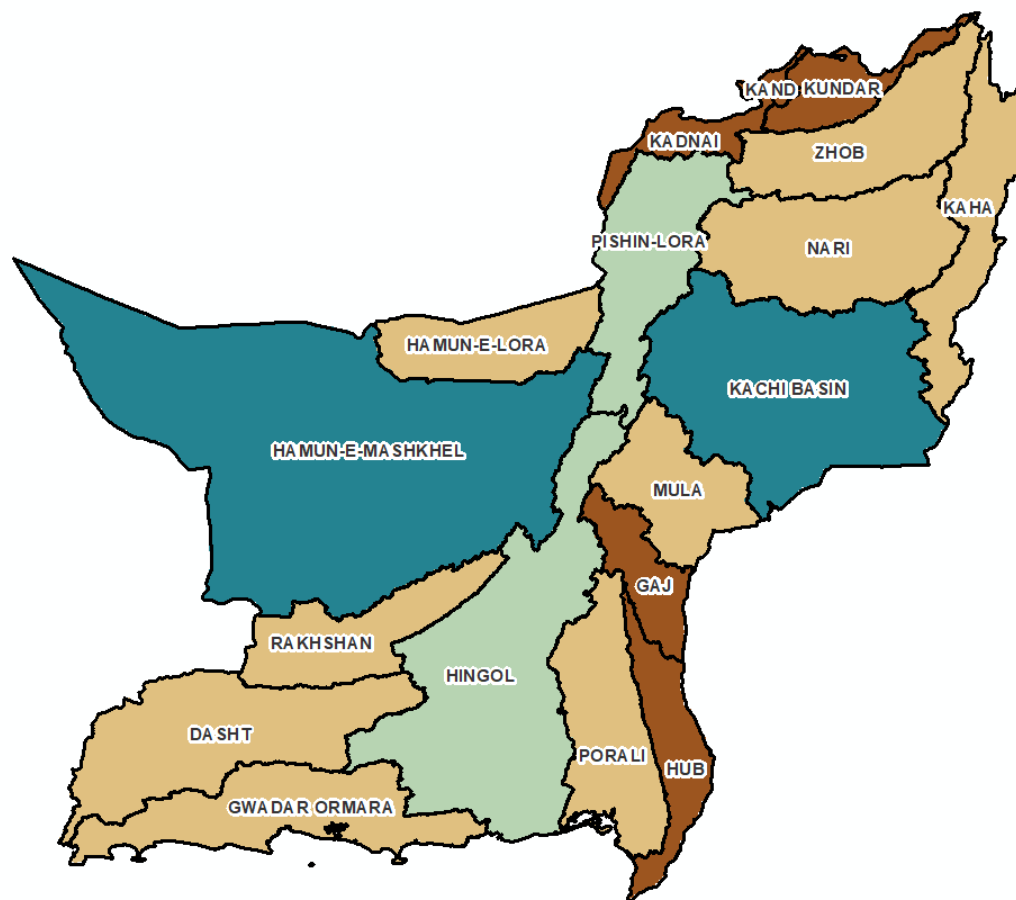
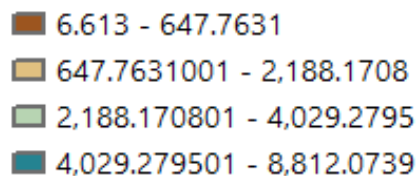




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## POTENTIAL FOR RAINFED/FLOODPLAIN CROPPING

AREA UNDER  
RAINFED/FLOODPLAIN  
CROPS  
(SQ KM)



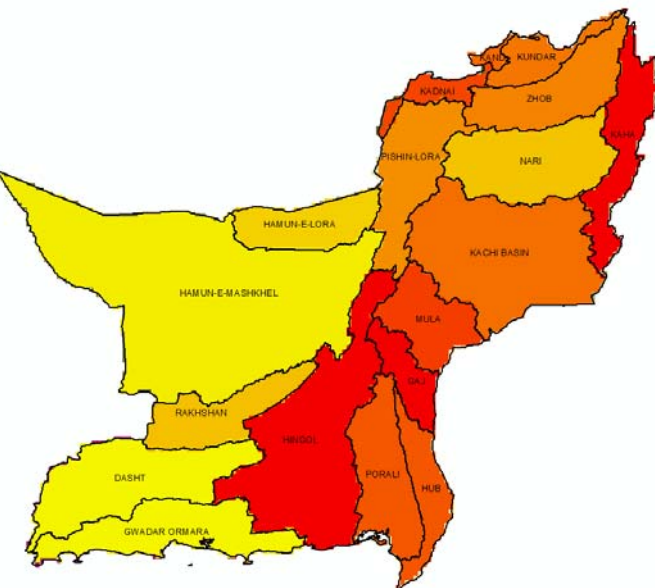


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## SOCIO-ECONOMIC INDICATORS

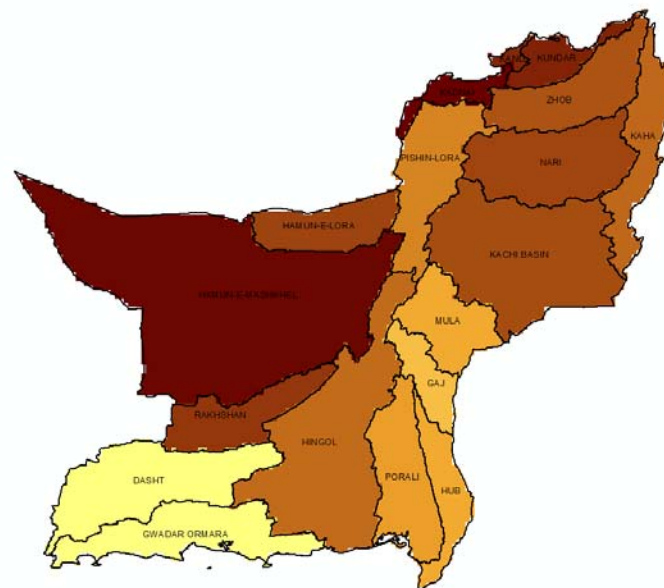
### FOOD INSECURITY (FIES)

(% of households with severe and  
moderate food insecurity)



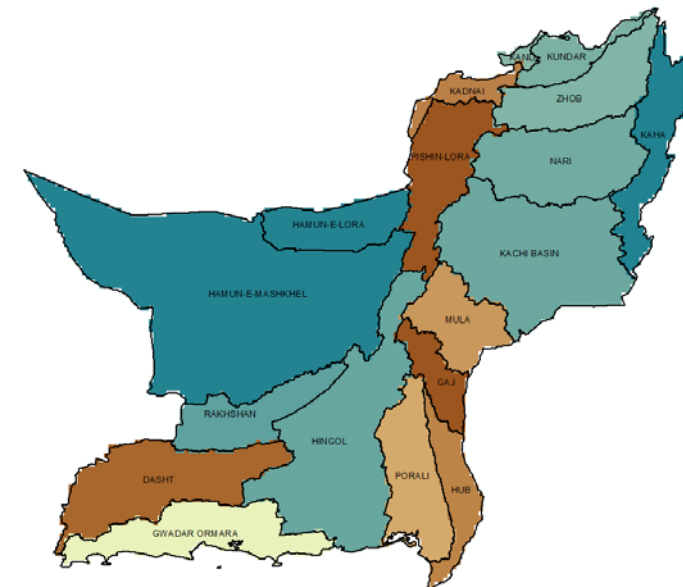
Value  
High : 34.748  
Low : 11.4511

### MULTI DIMENSINAL POVERTY INDEX (Incidence of Poverty % )



Value  
High : 89.9598  
Low : 19.4603

### POPULATION DENSITY



Value  
High : 882145  
Low : 198867



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## WEIGHTED ANALYSIS

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CRITERIA	INDICATOR (BASIN LEVEL)	WEIGHTS/INFLUENCE (%)	SOURCE		
Potential for Water conservation Potential	Ground water Depletion Index	20	Department of Irrigation, Government of Balochistan		
Potential for Surface Water harvesting	Surplus Surface Water- (MAF)	15	Department of Irrigation, Government of Balochistan		
Potential for Livestock based interventions-	Livestock Density	20	FAO Geonetwork		
Potential for enhancing rangelands production	Area under rangelands	15	FAO, SUPARCO-		
Potentail for rainfed/marginal and flooplain crops	Area under rainfed crops, marginal crops and floodplain crops and natural vegetetaion in wet areas	15	FAO, SUPARCO-		
Socio-Economic Indicators	Multidimensional Poverty Index	15	UNDP,Ministry of Planning		
	FIES		National Nutrition Surveys		
	Population Density		Census 2017		
	<b>TOTAL</b>	<b>100</b>			



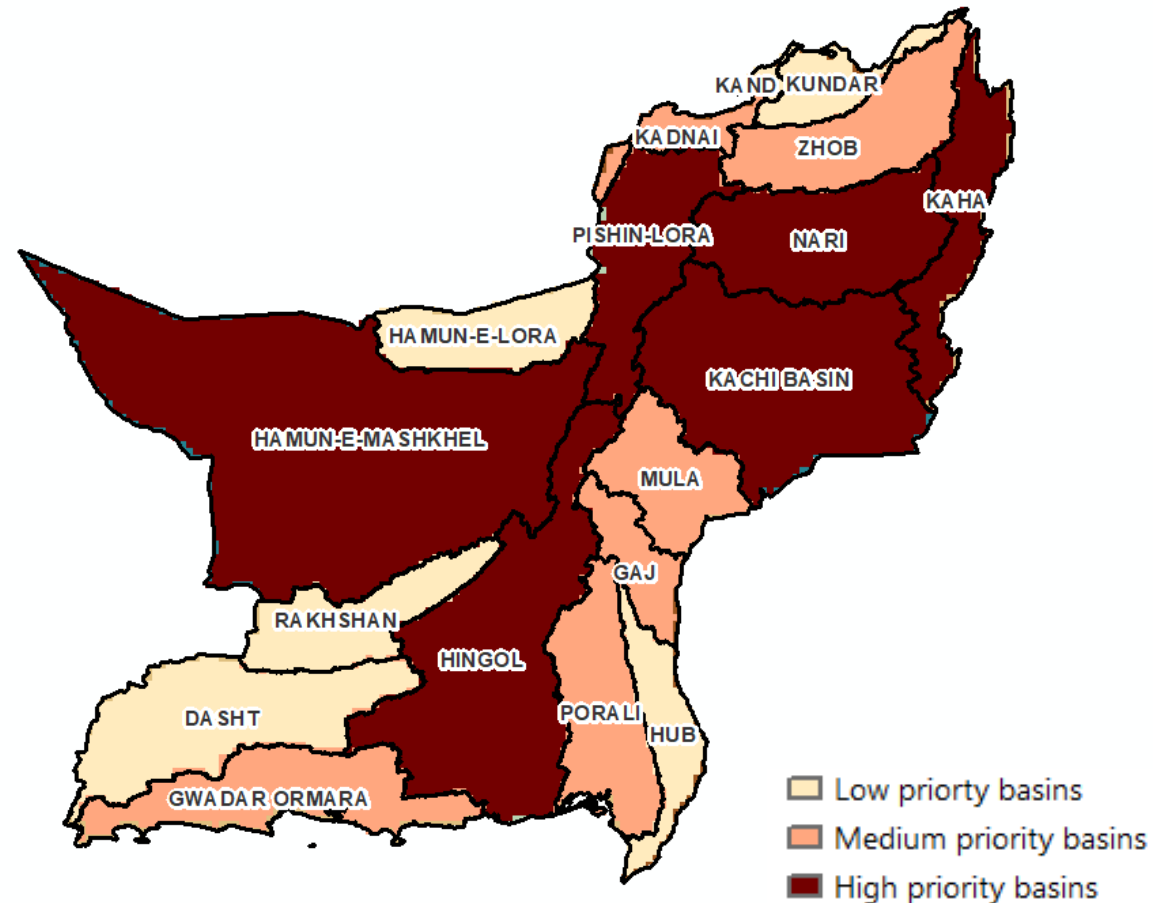
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# OUTPUT



Six basins have high score after analyzing  
multiple project related indicators

1. Kacchi
2. Nari
3. Kaha
4. Pishin
5. Hamun-e-Mashkhel
6. Hingol







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## 2- IMPLEMENTATION RELATED CRITERIA FOR FINAL BASIN SELECTION

1. Security Situation
2. Implementation Complementarity