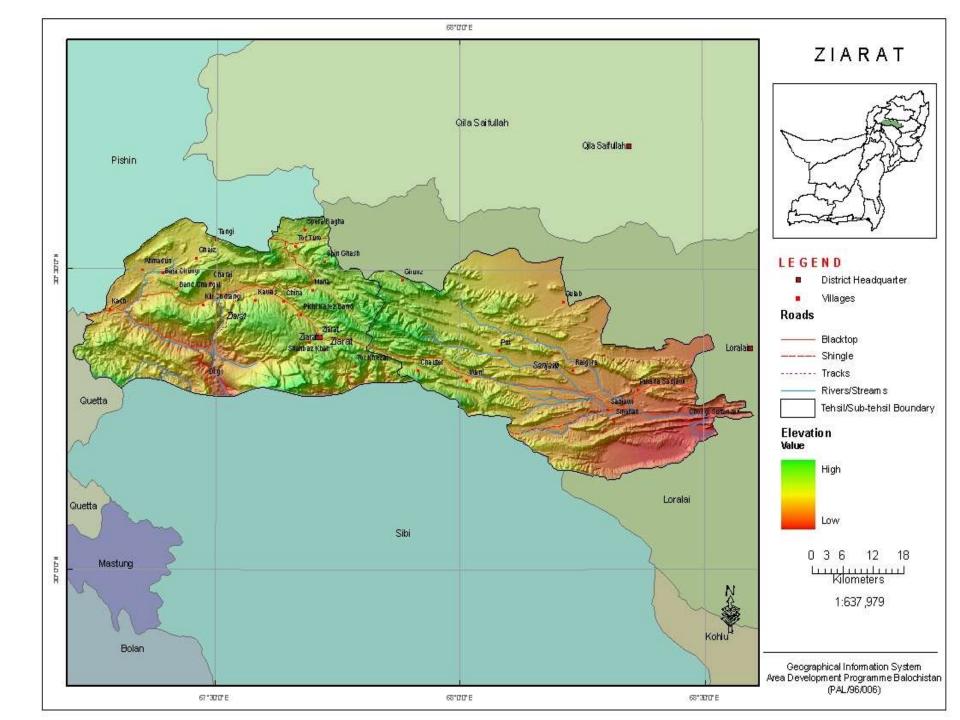


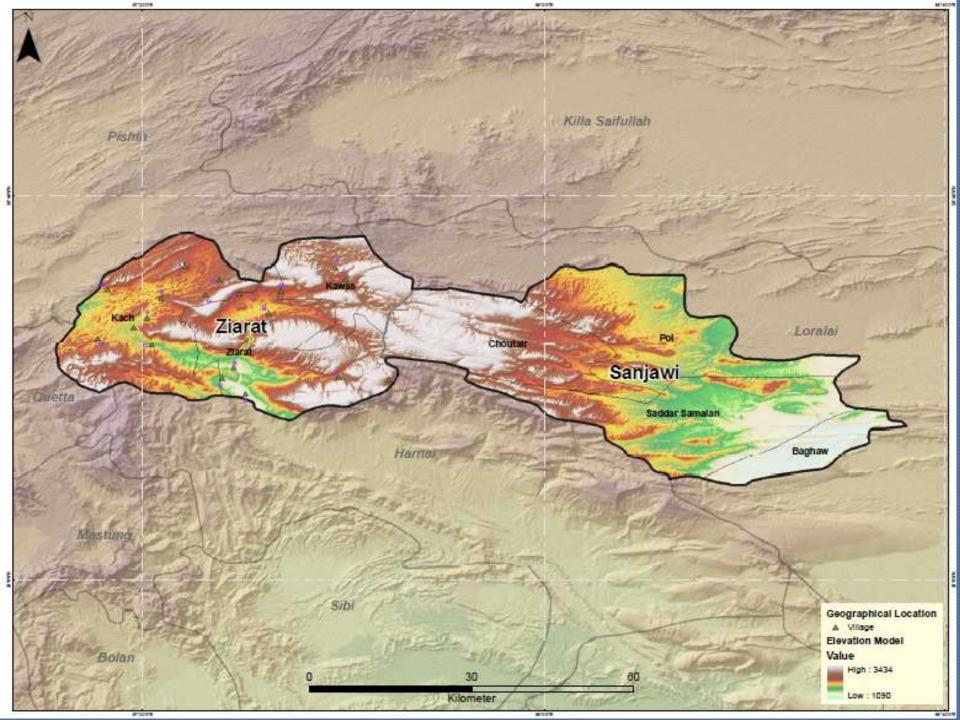
Presentation Layout

- Introduction to the Ziarat Juniper Ecosystem, area, climate etc.
- Introduction to Junipers
- People & their livelihoods.
- Biodiversity in Juniper forest ecosystem
- Legal status
- Ecosystem services
- Threats and implications
- Potential for Man and Biosphere Reserve Programme

Introduction to the Ziarat Juniper Ecosystem

1.	Forest Area:	66,726 HA.
2.	Climate:	DRY TEMPERATE CLIMATIC ZONE WITH ANNUAL RAINFALL FROM 8" TO 15"
3.	Altitudinal Range:	ELEVATION RANGES FROM 5000' to 11755'





Junipers

- Junipers belong to family Cuppressee in Gymnosperms.
- There are 54/62 species of Junipers in the world. They have got their distribution in North America, Europe, North Africa, West Asia, South Asia and Central Asia.
- Six species of Junipers are found in Pakistan. One of these is Juniperus excelsa polycarpos



People and their livelihoods Major tribes in the Juniper forest ecosystem



Ghilzai

Dotani

Kakar Tareen Sayed

Sarngzai Venachi Taran

Panezai Raisani Pechi

Dummar

Yasenzai

Sanzerkhail

Sanarzai

Livelihoods of the local communities

Major livelihood sources are:

- Agriculture (mainly horticulture).
- Livestock rearing.
- Tourism (hotels, shops, transportation, etc.).
- Business (retailers, shopkeepers, contractors, etc.).
- Services.
- Mining.

Biodiversity in Junipers forest ecosystem

- •Among plants major species are Wild Ash, Wild Pistachio, Wild Almond, Wild Olive, Makhai, Zralag, etc. Some of the associated plants of Junipers are of a high medicinal value like *Ephedra spp*.
- The Juniper forests provide refuge to wild mammals like Suleiman Markhor, Wolf, Fox, etc. and birds like Chakur and See See partridge.

Floral diversity

S. No.	Vegetation Zone	Brief description	
1.	Higher hills	On higher mountain areas <i>Juniperus Excelsa polycarpos</i> is the predominantly climax Species associated with <i>Pistacia khinjjak, Ephedra nebrodensis, Ephedra intermedia</i> and <i>Fraxinus xanthoxyloides</i> .	
2.	Foot hills	It comprises mostly of the fertile deep soil areas. It provides summer grazing land for both the local and nomadic graziers. It is dominated by a variety of shrubs like Artimesia meritima (Tharkha), Prunus ebernea (Wild almond), Caragana ambigua (Makhi), Berberis lycium (Zralg) and Sophora grifithii (Ghuzaira) associated with herbs and grasses. On lower hills Zaitoon (Olea ferruginea) and Mazri (Nannorrhops ritchieana) are also present.	
3.	Piedmont plains/ valleys	Mostly modified by the local community for agriculture and other land uses. It consists of more or less flat to undulating plains. The wasteland contains mostly <i>Artimesia meritima</i> (Tharkha), <i>Haloxylon grifithii</i> with sporadic mixture of edible seasonal forage plants; thus supporting thousands of animals, both local and nomadic ones.	
4.	Dry stream beds	Commonly found in the entire district where Tamarix Spp. is commonly seen.	

Faunal diversity

S. No.	Туре	Common Species
1.	Mammals	Straight-horned Markhor (Capra falconeri megaceros), Wolf (Canis lupus), Hill fox (Vulpes vulpes grifithii), Asiatic Jackal (Canis aureus), Cape hare (Lepus capensis), Porcupine (Hystrix indica), Afghan Hedgehog (Hemiechinus auritus megalotis), Afghan Pica (Ochotona rufescens) and Stone Marten (Martes foina) etc.
2.	Birds	Chukar (Alectoris chukar), See see partridge (Ammoperdix griseogularis), Kestrel (Falco tinnunculus), Rosy Starling (Sturnus roseus), Magpie (Pica pica), Golden eagle (Aquila chrysaetos daphanea), a number of sparrows, finches, buntings, seasonal/migratory waterfowls, hawks, bustards and sand grouse etc.
3.	Reptiles	Afghan Tortoise (Agrionemys horsfieldii), Agama (Laudakia caucasia), Brown Cobra (Naja oxiana), Saw-scale viper (Echis carinatus), Dwarf Dark-headed racer (Eirenis persica walteri) Levantine viper (Macrovipera lebetina), etc.

Legal status

 Legally the Juniper forests of Ziarat and the allied biodiversity enjoy the status of State Forests under the Balochistan Forest Regulation, 1890

Ecosystem Services from Juniper Forests

- Sustains local demand for fuel wood
- Provides timber for construction of hutment and hedges
- Protects watersheds and play key role in enhancing groundwater recharge
- Increases soil fertility through humus addition
- Serves as rangelands and contributes toward livestock production

Ecosystem services (contd:)

- Serves as habitat to a variety of wildlife etc.
- Help in maintenance of environmental balance through micro climatic effect
- sustains ecotourism one of the main livelihood source of the local population
- Provision of medicinal plants

Threats to the Juniper Forest Ecosystem

- As a result of increase in human and livestock populations over the years and frequent occurrence of natural disasters, the Juniper forest ecosystem of Ziarat is facing following threats:
- A. Natural
- B. Anthropogenic (man made)

Natural threats

- Drought
- Insect and pest attack
- Mistletoe infestation
- Absence/low regeneration
- Soil erosion and resultant low water holding capacity
- Natural die-back
- Very slow growth rate

Anthropogenic threats

- Demand for energy/fuel wood
- Demand for timber
- Land use change
 - Agriculture
 - Extension of town
 - Road construction
- Livestock
- Mining activities
- Forest fires
- Stripping off barks for roof thatching
- Tourism

Impacts on Juniper forest ecosystem

- Loss of habitat may result in loss of species richness which would ultimately lead to Loss of Biodiversity in the ecosystem
- Reduction in production of agriculture, livestock and other goods and services such as water, medicinal plants and tourism, would definitely affect the livelihoods of resident communities.

Potential for MAB Programme

- Vast stretches of pure stands of Juniperus exclesa polycarpos
- Presence of age old trees about 1500 years or more
- Rich floral and faunal biodiversity
- Cooperative and to some extent organized communities
- The Man and Biosphere Reserve thus presents ones of the best options for restoration as well as improvement of the Juniper forest ecosystem.

