



EARTH DAY

WHAT WE NEED TO PRESERVE

INSTITUTION OF ENGINEERS

PAKISTAN

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Historical- Earth Day

- Senator Gaylord of Wisconsin, USA
- The first Earth Day - United States in 1970 led to the creation of the United States Environmental Protection Agency and the passage of the Clean Air, Clean Water and Endanger Species Acts.

Our Earth

- Land 30%
- Water 70%
 - Sea 97%
 - Fresh 3%



Out of the 3 % fresh water, most of it is in the polar regions and glaciers

Only 0.01% available for us

Some Water Trivia -1

- Pakistan is already a water stressed country < 1000 cubic meters/year/person
- Water usage/person/day (personal)
 - USA 400 L
 - Europe 200 L
 - Africa 10 L
 - Pakistan 50 L ??

Some Water Trivia -2

To make one >

- Car 160,000 liters
- T-Shirt 2800 Liters
- Milk 1 liter 1000 Liters
- Bottled Water 3x

- **Water usage figures**

- Tap Flow 10 L/min
- One drop/sec 12000 L/year
- Commode Flush 30 L

Pakistan Coast

1

- Coastline about 1000 km

2

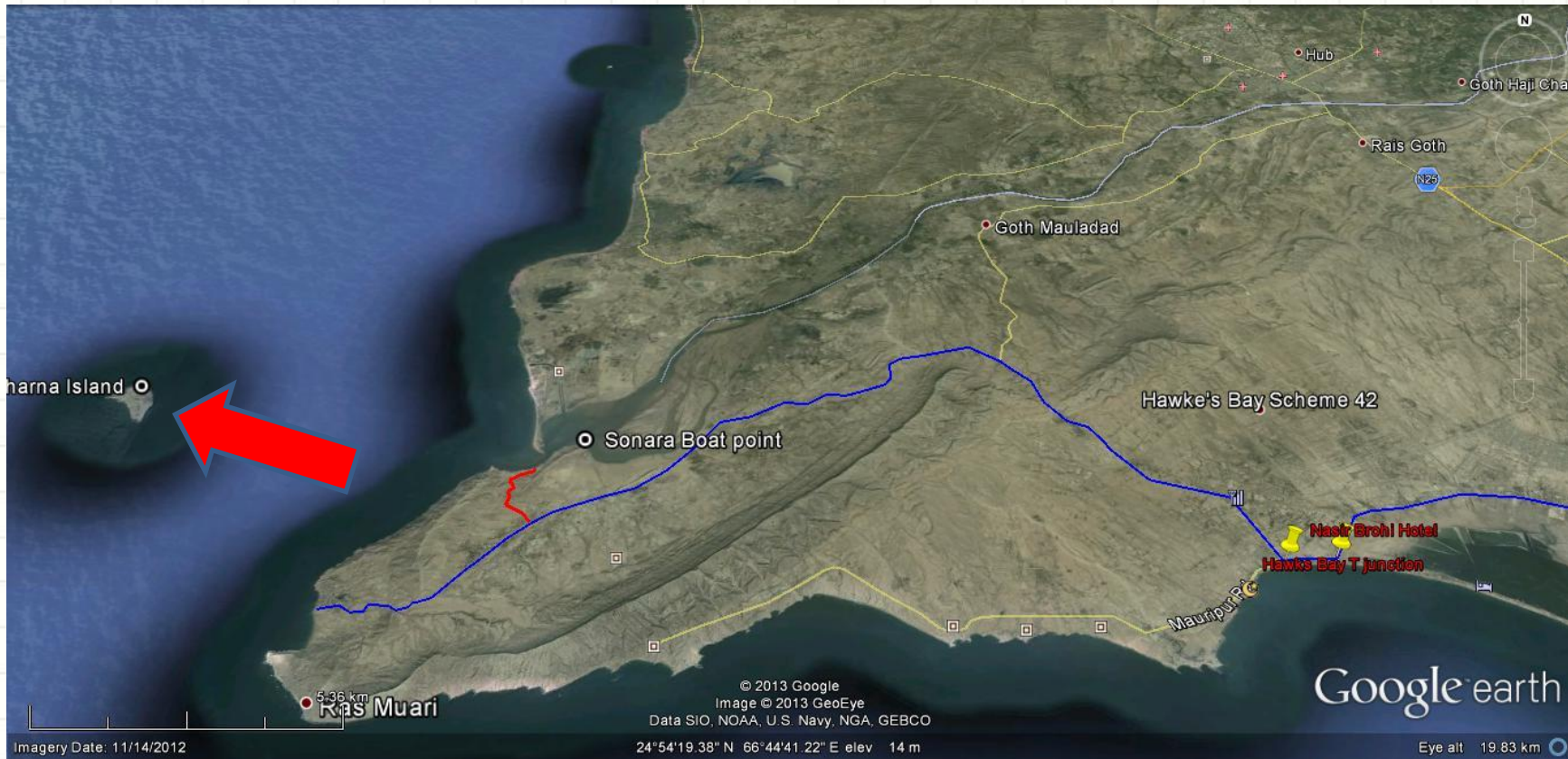
- Two Islands
- Charna
- Astola

3

- How to Conserve ???

Karachi to Charna Island

1-2 x 0.5km



Karachi to Astola 1x4km



What these Islands have !!

- Coral
- Marine Life
- Fish Breeding
- Recreational > over 300 persons /week
now going for snorkeling and cliff
jumping
- Future Tourist spot

Hurdles !

- Local Population around that area
- Fishermen
- Politicians > Legislation
- Financial sustainability
- Turf Wars > Navy / MSA / Fisheries / Govt

- **So let us look at a Successful Marine Reserve !**

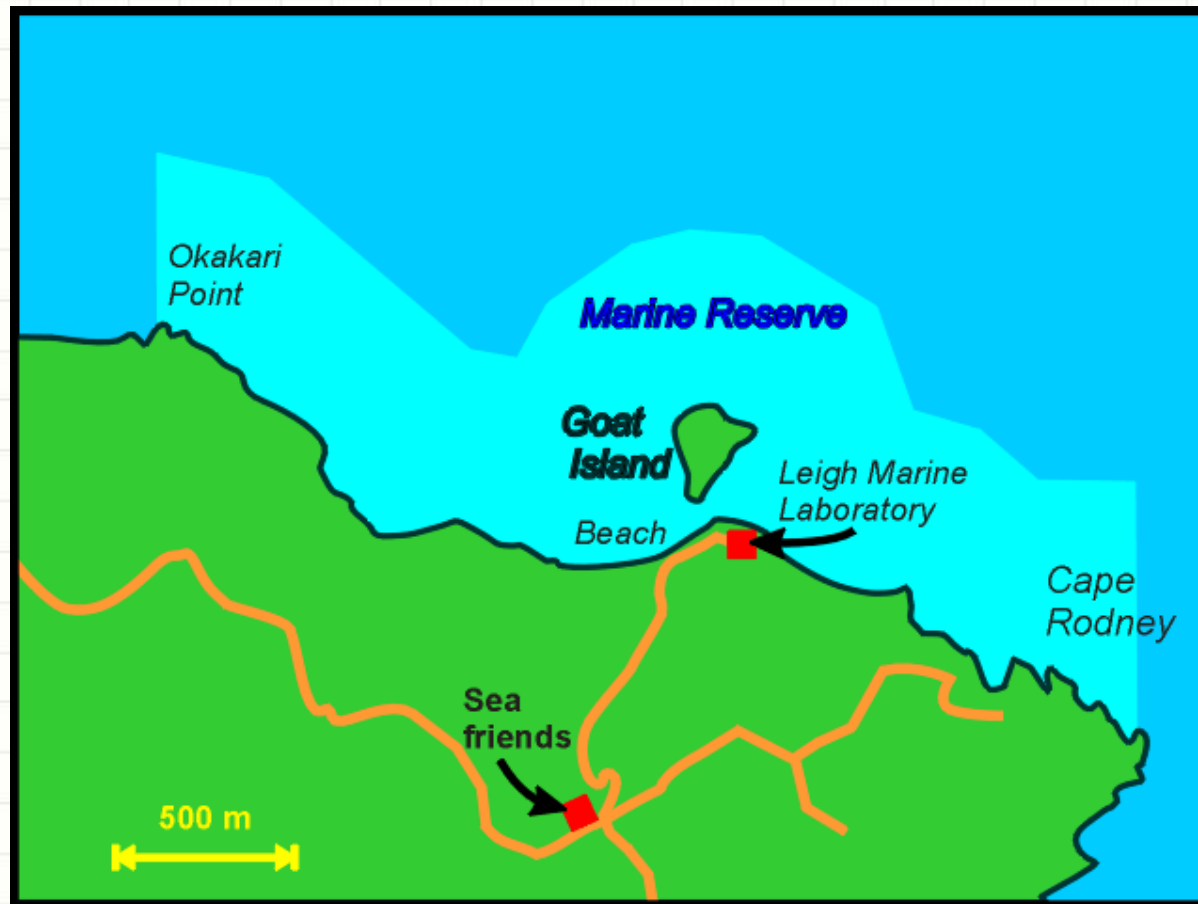
New Zealand's Experience -1

- **Goat Island or Cape Rodney-Okakari Point Marine Reserve**
- Area 5.18 km² . It was created in 1975 as the first [marine reserve](#) in New Zealand through an Act of Parliament.
- Took ten years to push it through against bitter opposition of Fishermen
- This stretch of sea was to be totally **free from human interference**. That meant no line fishing. No spearfishing. No hooking a lobster out of its lair. No prying off a clump of rock oysters.

New Zealand's Experience -2

- Within two years **spillover** effects started and marine life started recovering
- Marine life density is up to 15 times more than that outside the reserve.
- Former skeptics are now its staunchest defenders because of spillover fishing
- New Zealand has now 31 marine reserves.
- <http://ngm.nationalgeographic.com/print/2007/04/new-zealand-coast/warne-text>

New Zealand's Experience -3



New Zealand's Experience -4

- Annual **200,000** visitors
- Marine education center
- Lobster spillover
- Larval Export
- Restoration of the natural predator and prey balance
- NZ Area is only **5 sq** km vs 16 for Charna and 40 for Astola

Now back to Pakistan ! And what we can do?

- Proposing a Marine reserve of 4 x 4 km around Charna Island
- A Marine reserve of 10 x 5 km around Astola Island

How?

- Put in 4 buoys around Charna to demarcate the marine reserve and year round policing by the local Fishermen
- Put in 6 buoys around Astola and do the same as above

Guesstimate Cost

- Charna 4 buoys = Rs 4 million
- Astola 6 buoys = Rs 6 million
- Video Monitoring = Rs 300k/site

- Cost /year of policing by boat for each site may be Rs 1 million each
- Compensation to local fishermen for two years = ????? (Fisheries)

Possible Stake holders

We need a law to be passed

- Local Fishermen of Mubarak and Manjhar and Pasni
- Baluchistan Government and Assembly
- Baluchistan Coastal Development Authority
- BEPA
- Baluchistan Fisheries
- MSA
- Navy
- WWF
- IUCN

Financing ?

- Baluchistan Government and Assembly
- Baluchistan Coastal Development Authority
- BEPA
- MSA
- WWF
- IUCN
- Multinational CSR
- Crowd Funding
- Entry tax Rs 100/person (6 month x 4 weeks x 2 days x 300 persons x 100 = Rs 1.5 Million/year)

Summary – this just a start

- Copy experience of New Zealand
- Pass a Law to protect these islands
- Fixed cost = 12 Million
- Annual Recurring cost = 2 Million
- Will be self sustaining in 2 to 3 years by spillover effect and eco tourism
- Entry tax Rs 100/person (6 month x 4 weeks x 2 days x 300 persons x 100 = Rs 1.5 Million/year)
- The above are **just guesstimates** so that at least we make a start

Resources

- http://foreverindus.org/pdf/awarness_material/factsheets/fs_eartday_08.pdf
- <http://environment.nationalgeographic.com/environment/freshwater/freshwater-crisis/>
- [Lt Cmd Imtiaz Afzal for approx buoys cost](#)



QUESTIONS?