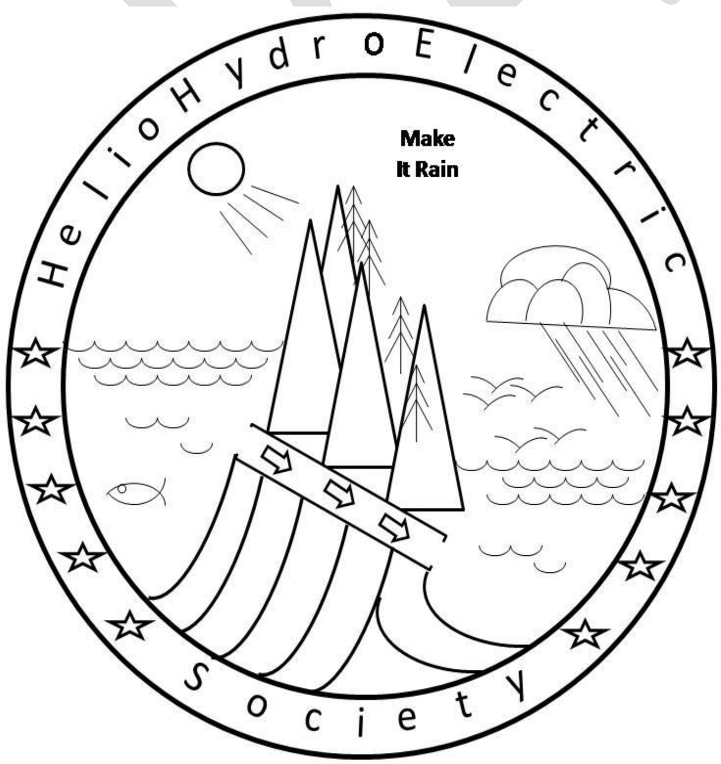
HelioHydroElectric Potential

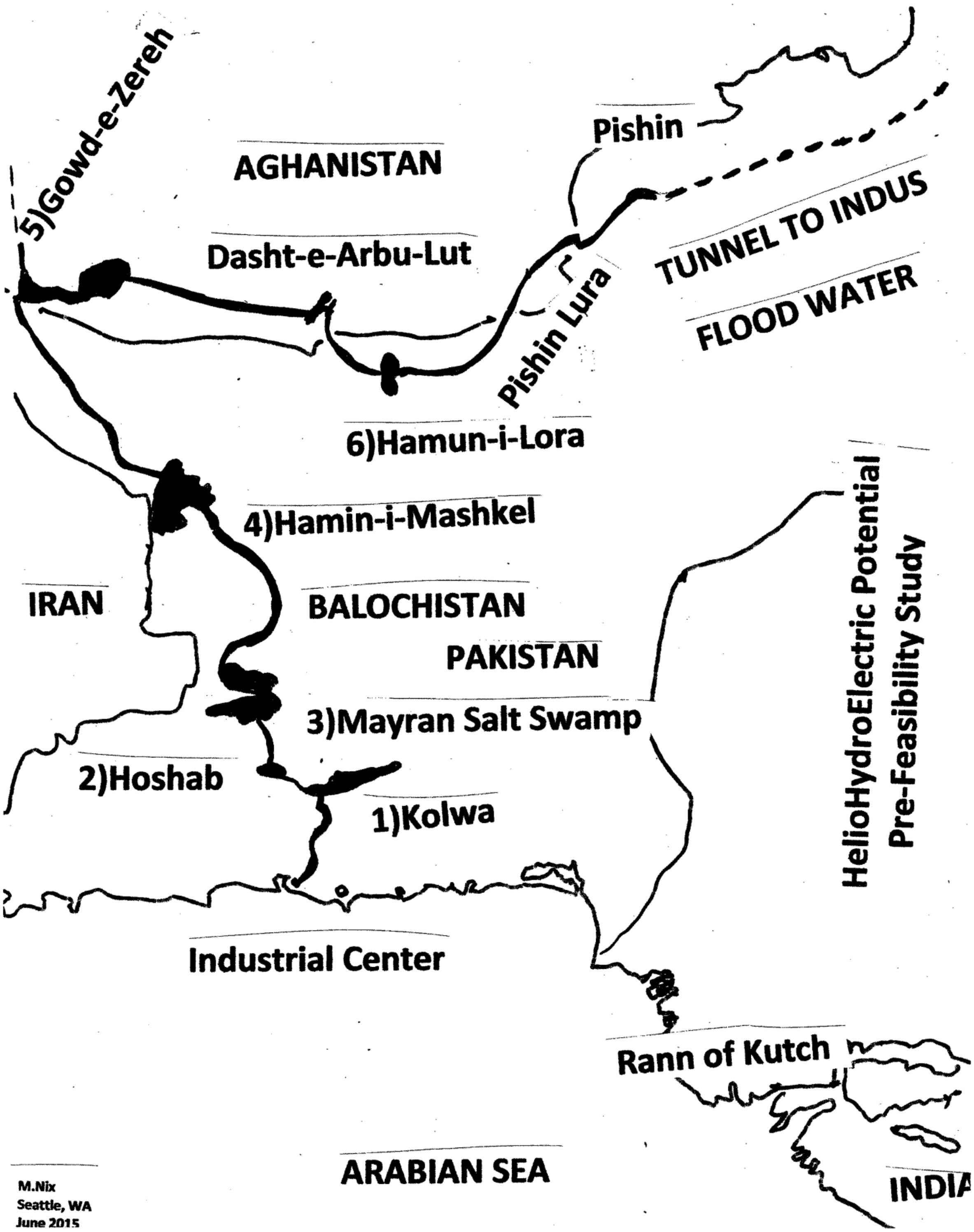
Prefeasibility Study

Pakistan and Afghanistan

Prepared by Martin Nix B.U.S, A.A.S Seattle, WA, June, 2015

ABSTRACT: HelioHydroElectric is a little known solar engineering technology, using salt/sea water and solar power to create evaporation ponds for artificial rain in deserts. Pakistan and Afghanistan have large resources. Located in the Western part of Pakistan and Afghanistan are dry salt lakes. These can be flooded with salt/sea water to create clouds from evaporation. The additional rainfall would increase vegetation, thus removing Carbon Dioxide from the atmosphere. HelioHydroElectric technology is the only technology that can actually remove Carbon Dioxide from the atmosphere. The additional rainfall in Western Pakistan and Afghanistan will increase agricultural and provide new living space. Not only can salt/sea water be used, but also flood water from the Indus River can be used to flood these dry salt lakes. Development of HelioHydroElectric has the potential of also solving the energy crisis in Pakistan, by spurring development of solar technology, and conservation. This may also help solve the conflict in Kashmir, via better watershed management. It is hoped this paper will spur conversations and funding for a full feasibility study.

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Dasht-e-Arbu-Lut
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June 2015

Extension into Afghanistan

HelioHydroElectric Potential
Pre-Feasibility Study

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June 2015

INTRODUCTION: Proposed is the pumping of salt/seawater inland to Pakistan and Afghanistan for flooding of dry salt lakes to create clouds, and thus artificial rain. This technology, known as HelioHydroElectric technology, will create more vegetation in the desert region and mountains, thus reversing global warming. But more practically, it will help the economy of Pakistan and Afghanistan. Solar pumping technology is now very well developed. This Prefeasibility study is mostly to study the potential for construction of such a project. It is hoped that funding for a complete Feasibility study can be located so as to determine the environmental impact, climate impact, and economic impact along with construction plans and cost.

METHODOLOGY: Calculations were conducted to get a general idea of the power consumption required for pumping this large volume of salt/seawater inland to Pakistan and Afghanistan. It should be noted that locating geologic information for these sites is difficult. The Author is also unfamiliar with the region, and apologizes for any misspellings of locations. Sites were identified, and surface area of these dry lakes was estimated, along with elevation. The evaporation rate is unknown for these locations; however, it was assumed that 1% of the surface area would evaporate per day. Evaporate rate data is unknown, however, it was assumed that each square foot of surface of flooded water had 2,000 btus per day of solar energy. Water boils at 212 degrees. Numerous factors are involved with evaporation rate, including reflection from sunlight, altitude, cloud cover, temperature, and so on. Despite the lack of geologic data, still a lot can be determined, and hopefully it will spur further research.

Kolwa

Surface Area (Miles)	**Elevation (Feet)**	**Square Feet Area** **Surface Area x 5280 X 5280**	**Estimate Evaporation Rate/Day** **(1% per day)**
500 square miles	**1,000 feet**	**13,939,200,000 sq. feet**	**139,392,000 cu.ft/day**

Evaporation Rate/Hour **(Divide by 24)**	**Evaporation Rate/Minute** **(Divide by 60)**	**Evaporation Rate/Second** **(Divide by 60)**	**Weight Water/lbd**
5,808,000 cu.ft/hr.	**96,800 cu.ft/min.**	**1,613 cu.ft/sec.**	**62.42769 lbd./cu.ft**

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	**Foot Pounds per Hour**	**Foot Pounds per Minute**	**Foot Pounds per Second**
8,701,958,200,000	**362,581,591,700**	**6,043,026,528**	**100,717,108**
X 0.00001569623374	**X .000376616097**	**X .0225969658**	**X 1.35581795**
136,554,064 WATTS	**136,554,063 WATTS**	**136,554,063 WATTS**	**136,554,062 WATTS**

HOSBAB

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
100 square miles	1,000 ft.	3,387,240,000 sq.ft.	33,872,400 cu.ft/day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft.
1,411,350 cu.ft./hr.	23,522 cu.ft./min.	392 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
211,458,483,200	88,107,701,350	1,468,461,689	24,474,361
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
33,182,778 WATTS	33,182,778 WATTS	33,182,778 WATTS	33,182,778 WATTS

MAYRAN

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
500 sq.miles	1,500 feet	16,936,200,000 sq.ft.	169,362,000 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft
705,650 cu.ft./hr.	117,612 cu.ft./min.	1,960 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
15,859,386,240,000	66,080,776,000	11,013,462,670	18,355,771
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
248,870,839 WATTS	248,870,839 WATTS	248,870,839 WATTS	248,870,839 WATTS

Human-E-Mashkel

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
3,045 sq.miles	1,635 feet	84,889,728,000 sq.ft.	848,897,280 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft.
35,370,720 cu.ft./hr.	589,512 cu.ft./min.	9,825 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
86,646,703,090,000	3,610,279,296,000	60,171,321,590	1,002,855,360
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
1,359,689,299 WATTS	1,359,689,298 WATTS	1,359,689,296 WATTS	1,359,689,298 WATTS

Gowd-E-Zereh

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
3,000 sq.miles	1,532 ft.	83,635,200,000 sq.ft.	836,352,000 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft
34,848,000 cu.ft./hr.	580,800 cu.ft./min.	9,680 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
79,988,399,780,000	333,284,999,100	55,547,499,850	925,791,664
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
1,255,204,957 WATTS	1,255,204,955 WATTS	1,255,201,954 WATTS	1,255,204,956 WATTS

NAMAKSAR

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
300 sq.miles	2,000 ft.	8,363,520,000 sq.ft.	83,635,200 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft.
3,484,800 cu.ft./hr.	58,080 cu.ft./min.	968 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
10,443,349,840,000	435,097,910,000	7,251,031,834	120,860,530
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
163,864,876 WATTS	163,864,876 WATTS	163,864,876 WATTS	163,864,876 WATTS

Daqq Palagan

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
100 sq.miles	2,000 ft.	2,787,840,000 sq.ft.	17,878,400 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft
1,161,600 cu.ft./hr.	19,360 cu.ft./min.	322 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
348,078,328,000	1,450,326,367	2,417,210,611	40,286,843
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
54,621,625 WATTS	54,621,625 WATTS	54,621,625 WATTS	54,621,625 WATTS

Jahil-E-Pozak

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
2,000 sq.miles	2,000 ft.	55,756,800,000 sq.ft.	55,768,000 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft.
2,323,666 cu.ft./hr.	38,727 cu.ft./min.	645 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
6,962,964,947	2,901,234,562	4,835,295,214	80,589,872
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
109,265,195 WATTS	109,265,163 WATTS	109,263,000 WATTS	109,265,195 WATTS

Daryacheh-Ye-Hamun

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
2,000 sq.miles	2,000 ft.	55,756,800,000 sq.ft.	557,568,000 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft
23,232,000 cu.ft./day	387,200 cu.ft./min.	6453 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
69,615,865,600	29,000,652,733	4,834,421,222	805,695,251
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
1,092,432,513 WATTS	1,092,432,505 WATTS	1,092,432,510 WATTS	1,092,376,085 WATTS

Dagh-E-Tundt

Surface Area (Miles)	Elevation (Feet)	Square Feet Area Surface Area x 5280 X 5280	Estimate Evaporation Rate/Day (1% per day)
1,000 sq.miles	2,000 ft.	27,878,400,000 sq.ft.	278,787,400 cu.ft./day

Evaporation Rate/Hour (Divide by 24)	Evaporation Rate/Minute (Divide by 60)	Evaporation Rate/Second (Divide by 60)	Weight Water/lbd 62.42769 lbd/cu.ft.
11,616,000 cu.ft./hr.	143,600 cu.ft./min.	3,226 cu.ft./sec.	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	Foot Pounds per Hour	Foot Pounds per Minute	Foot Pounds per Second
34,807,832,800,000	1,4503,763,670	24,172,168,118	40,278,197
X 0.00001569623374	X .000376616097	X .0225969658	X 1.35581795
546,216,256 WATTS	546,216,252 WATTS	546,216,300 WATTS	546,103,401 WATTS

SUMMARY OF RESULTS

Kolwa	136,554,064 Watts	161 cu.ft./sec.	139,392,000 cu.ft./day
Hoshab	33,182,278 Watts	39 cu.ft./sec.	33,872,400 cu.ft./day
Mayran Salt Swamp	248,870,839 Watts	196 cu.ft./sec.	169,362,000 cu.ft./day
Hamun-E-Mashkel	1,359,689,299 Watts	982 cu.ft./sec.	848,897,280 cu.ft./day
Namaksar	163,864,761 Watts	968 cu.ft./sec.	83,635,200 cu.ft./day
Daqq-Palagan	54,621,625 Watts	32 cu.ft./sec.	27,878,400 cu.ft./day
Gowd-E-Zereh	1,255,204,955 Watts	968 cu.ft./sec.	836,352,000 cu.ft./day
Hamun-I-Lora	204,831,096 Watts	161 cu.ft./sec.	139,392,000 cu.ft./day
Jahil-E-Pozak	109,263,000 Watts	64 cu.ft./sec.	55,768,000 cu.ft./day
Daryacheh-Ye-Hamun	1,092,432,505 Watts	645 cu.ft./sec.	557,568,000 cu.ft./day
Daqq-E-Tundt	546,216,256 Watts	322 cu.ft./sec.	278,784,000 cu.ft./day
TOTAL:	5,204,730,678 WATTS *	4,556 cu.ft./sec.	3,170,901,280 cu.ft./day

.* Total does not include inefficiencies, such as transmission loses, water turbine efficiencies, electric motor heat loss, friction in pipes or canals, and so on.

Amount of rain fall generated per day (at 1% evaporate rate per square mile) :
3,170,901,280 cu.ft./day
1,128,840,856,000 cu.ft./year
7.6 cubic miles of rainfall/year
Covering 38,016 square miles with 1 foot of rainfall per year.

5,204 Mega Watts of power necessary for pumping salt/seawater at 100% efficiency.
Equivalent to approximately 5 large power plants.

WATER PIPE DIAMETER OR CANAL SIZE: Assuming that the flow rate of the water in the pipe and/or canal is 1 feet per second, the canal size would be about 67 feet X 67 feet. If a pipe is used, the pipe diameter would be about 66 feet in diameter. It should be noted the separate salt brine pipe would be a smaller diameter, since it contains mostly salt and less water. It is undetermined the amount of concrete required for building, however, this can be calculated. Construction cost, labor and schedules can also be determined as part of the Feasibility study.

Rann of Kutch HelioHydroElectric Area: There is one very large area of large potential for evaporation of artificial rainwater. Bordering Pakistan and India, near the Arabian Sea is a huge dried up salt lake. This use to be a sea, but due to geologic uplifting, is now dry. The area is not that far above sea level. However, by using solar powered pumps, and also wave energy, combined with wind energy, a large volume of seawater can be pumped to flood, again this region. One interesting design is the use of "troughs" that gradually become narrow, thus allowing recovering the energy from ocean waves for pumping seawater uphill. This would add a large volume of fresh rain water to India. It would require cooperation between Pakistan and India.

Rann of Kutch

Surface Area (Miles)	**Elevation (Feet)**	**Square Feet Area** **Surface Area x 5280 X 5280**	**Estimate Evaporation Rate/Day** **(1% per day)**
10,000 sq.miles	**45 ft.**	**278,784,000,000 sq.ft.**	**2,787,840,000 cu.ft./day**

Evaporation Rate/Hour **(Divide by 24)**	**Evaporation Rate/Minute** **(Divide by 60)**	**Evaporation Rate/Second** **(Divide by 60)**	**Weight Water/lbd** **62.42769 lbd/cu.ft**
7,831,762,380,000 cu.ft./hr.	**3,263,234,325 cu.ft./min.**	**5,438,723,875 cu.ft./sec.**	

(Evaporation Rate X 62.42769 X Elevation)

Foot Pounds per Day	**Foot Pounds per Hour**	**Foot Pounds per Minute**	**Foot Pounds per Second**
7,831,762,380,000	**3,263,234,325**	**5,438,723,875**	**90,645,397**
X 0.00001569623374	**X .000376616097**	**X .0225969658**	**X 1.35581795**
122,898,657 WATTS	**122,898,657 WATTS**	**122,898,657 WATTS**	**122,898,657 WATTS***

.* Power requirements do not include inefficiencies such as transmission loses, water turbine efficiencies, electric motor heat loss, friction in pipes or canals, and so on.

Amount of rain fall generated per day (at 1% evaporate rate per square mile) :
2,787,840,000 cu.ft./day
992,471,040,000 cu.ft./year
6.7 cubic miles of rainfall/year
Covering 35,600 square miles with 1 foot of rainfall per year.

122 Mega Watts of power necessary for pumping salt/seawater at 100% efficiency.
Equivalent to approximately about 1/10 of a large power plant.

INDUS RIVER FLOOD DIVERSION TUNNEL: One option for providing rain water to the region is to build a diversion tunnel for flood waters from the Indus River. This tunnel would allow for fresh water for both Pakistan and Afghanistan, while providing evaporation. The additional evaporation would provide rain water during dry season in nearby mountains. As a general rule, rain will travel from west to east. However, there is also an additional benefit in using flood waters. It will help to flush salt brine to the ocean. If not flushed, these dry lakes, flooded for evaporation, will eventually silt up, or better said salt up. The goal is to have these evaporation lakes work centuries in the future, generation to generation. It should be noted that the tunnel could generate electrical power during flood seasons.

FLUSHING SALT BRINE: It is proposed that an underground tunnel pipe be built, using either cut-and-cover technology, or deep bore tunneling. The construction of these Salt Brine Tunnels will flush salt from the evaporation lakes, thus extending their useful lives. It should be noted that the ocean is approximately 3% salt. Concentrated salt brine (i.e. 27%) can then be piped back to the ocean. This would be supplemented by flushing with Indus River Flood waters. There are ways of separating concentrated salt brine from fresh water.

MICROCLIMATE EFFECT: It should be noted that once these salt dry lakes are flooded with salt water, the evaporation from rain water builds up in the surrounding mountains and plains. Fresh rain water is locked up in plants, fresh water lakes, and underground aquifers. Plants and trees also add moisture to the air. Each year, the evaporation is cumulative. The first year, for example, one cubic mile of fresh rain water is added to the environment, the next year another cubic mile, the year following another cubic mile. Gradually moisture builds up in the local environment.

I**MPACT ON KASHMIR:** The evaporation from these HelioHydroElectric projects will not only restore vegetation in local mountains, but also provide more rain water to the Kashmir region. The development of HelioHydroElectric could solve the conflict between India, Pakistan and China. Water in Kashmir, either flows to Pakistan, India or China. By dividing the region according to watershed, it would solve land claims. But more importantly, watershed management is very important to provide flooding and to management water during dry seasons.

IMPACT BY IRAN: It should be noted that Iran is also considering HelioHydroElectric development. Proposed is a ship canal going from the Arabian Sea to the Caspian Sea, via Tehran. Outside of Tehran is a huge land area, the Dasht-e-Kavir, which can be flooded with seawater. By adding additional seawater for evaporation, this will provide more rain water for Pakistan and Afghanistan and also India. A separate Prefeasibility study is being prepared for Iran.

IMPACT ON GLOBAL WARMING: The additional rainfall in the desert should increase the amount of vegetation. The vegetation will remove Carbon Dioxide from the atmosphere. With the upcoming treaty conference in Paris, in December, a HelioHydroElectric Treaty can be developed between India, Pakistan, Iran and Afghanistan. The Treaty would offset Carbon Dioxide emission.

POWER REQUIREMENTS: The power requirements to pump this large volume of seawater inland is huge. However, not impossible. Based on these calculations, close to1/4 to 1/3 of the entire electrical power produce by Pakistan would be needed. Pakistan generates on average 22,000 Megawatts of electrical. While it is beyond the scope of this Prefeasibility study, it is believed by the author that if rapid development of solar energy, and energy conservation was implemented, it would make this electrical power available for salt water pumping. It could supplement and potentially solve the energy crisis in Pakistan. There have been electricity shortages. There are numerous technology that could be implemented, including Photovoltaic panels that on residential and commercial buildings, that make the meter run backwards. The list is nearly endless in solar technologies that can be implemented to achieve electricity conservation: solar hot water, solar cooking, solar salt water distillation, solar lighting, micro wind turbines, paddle wheel systems on canals, solar greenhouses, rain barrels, solar smelters, solar water pumping, solar powered air conditioning, night sky radiation, biomass conversion, biofuels, energy efficient appliances and so on. This technology would employ people in Pakistan, and could be a new export industry. A lot of the problem of electrical supply is lack of distribution and transmission lines. With better load management and energy self-production, where people make their own energy, it would make electricity available for the HelioHydroElectric projects.

NATURAL GAS OPTION FOR SEAWATER PUMPING: Natural gas is often used for irrigation pumping. There are sufficient natural gas supplies in the region. Often times it is a waste product from oil production, where natural gas is flared. Natural gas can be used for pumping seawater for the HelioHydroElectric project. However, the goal is to make this project sustainable from generation to generation in the future. If natural gas is utilized, plans should also be implemented for eventual conversion to solar and wind energy. This can be done. For example, solar energy can break down water to hydrogen. It is feasible to convert coal power plants, natural power plants (and even nuclear power plants) to be powered by solar energy. The technology exist. It is unknown if the amount of carbon dioxide generated by natural gas combustion would be offset by the additional vegetation grown, but this can be determined. It will necessary to use natural gas for construction materials for the project. Concrete for pipes and canals would be need natural gas to power the factories. It should be noted that the heat of exhaust (as from a natural gas generator) or steam from a cooling tower, can evaporate salt water so that it adds additional rainfall to the region.

BETTER LOAD MANAGEMENT OF EXISTING ELECTRICAL SYSTEM: It will be impossible to achieve electricity with traditional "flat rates", where everyone pays the same. It is not commonly known, but all electrical power does not cost the same to generate. Nuclear power being the most expensive, while hydro power is often the lowest. Often times the various energy sources for generation for electrical power is averaged, mixing the cost together. By going to a "the more you use, the more you pay" rate structure, it will encourage "megawasters" to conserve. For example, the first 500 Kilowatts would be 3 cents per Kilowatt, the second 500 Kilowatts would be 6 cents, the next 500 Kilowatts 9 cents, and so on. A low income grandmother, for example, who only uses a small amount for a light and a refrigerator, would only pay a few dollars a month. However, someone with a large mansion, who consumes nearly 100,000 Kilowatts would pay on upwards to $1000 a month. It would give the mansion owner an incentive to install solar panels, or implement conservation measures. (employing people installing the equipment). Another option for businesses would be Time of Day metering, where in day, when there are shortages of electrical power, a business would pay say, 50 cents per Kilowatt. But at late when electrical is very available, the business could pay only 5 cents per Kilowatt. This gives business an financial incentive to implement conservation and energy self production. It is beyond the scope of this Prefeasibility study to discuss load management, but this could be a method by which to make electricity available for the large amount of electricity required for pumping for the HelioHydroElectric project.

MILITARY INVOLVEMENT: Pakistan spends considerable of funds on the military. The military should review spending so as to implement dual-use. Dual-use means technology that can be used to stimulate the economy while providing for national defense. For example, a national Bicycle Trail System, would conserve fossil fuels presently used by cars. But would also provide a low cost, none carbon, form of transportation. The military can use it’s corps of engineers to build these projects. The military can assist with manpower on constructing the HelioHydroElectric project. The Medical Corps for example could build and distribute solar cookers and solar salt water distillers to low/no income people. Thus improving the health of children nationwide. The military for example, can assist in better watershed management, such as reforestation. There needs to be a recognition that Global Warming is a mutual threat to both India and Pakistan. Cooperation for watershed management in the Kashmir region, for example, can be implemented by both the military of India and Pakistan. What we need is a Declaration of War on Global Warming, not “nation vs. nation”. This can be done. It is beyond the scope of this Prefeasibility to discuss the involvement of the Pakistan military, but the military does have valuable resources that can be applied.

CONCLUSION: The nation of Pakistan is strongly encouraged to explore a fossil-fuel-less and a none-nuclear energy future. Instead Pakistan should explore what other nations have done with development of solar energy and wind energy. HelioHydroElectric development could be a catalyst for such a future. It would create a more equable society where people make their own energy, and a cleaner future. The over emphasis on fossil fuels is adding carbon dioxide to the atmosphere, which is threatening the future of Pakistan from global warming. Nuclear power plants have a known problem of being dangerous. The explosion of one nuclear power plant could spread radiation, affecting the health of nearly 1.8 billion people. Nuclear power plants are more of a threat to Pakistan than even India. Heavy dependence on dangerous and polluting energy sources will create a society that is more violent. However, going to a renewable energy society will make for a healthy economy, plus, and a more free society.

ABOUT THE AUTHOR: Martin Nix is the founder of Solar Washington, a group dedicated to promotion of solar technology in the State of Washington, USA. He has 9 patents in solar technology. He is a graduate of the University of New Mexico, and North Seattle Community College. He attended the School of Regional Planning and Architecture at UNM, and also the School of Engineering at NMSU. B.U.S., A.A.S.